

## **New Forum Members / New Member**

This is my first time here. I am a regular participant at the PMQ and Pizza Today boards, as well as a very long time participant in all of the pizza shows across the country. You may also read my ramblings in PMQ (In Lehmann's Terms) and Pizza Today (The Dough Doctor). Aside from being a writer, speaker, and consultant for the retail and wholesale pizza industries, I am a fond lover of Chicago and New York style pizzas, and my motto is: "I've never had a pizza that I couldn't learn to like"

Tom Lehmann/The Dough Doctor  
6853

## **New Forum Members / Re: New Member**

Steve;

Actually, I might have been at one time, right at your inception, but due to early problems with logging in, I faded away, but I'm back now. :)

Tom  
6852

## **Dough Ingredients / Re: The unique crumb characteristics of Cake Yeast**

I'll toss my hat into the ring on this one too. Cy is indeed highly perishable, needing constant refrigeration, and even at that, it will show signs of deterioration after about 10-days of correct refrigerated storage. The aroma of fresh, compressed yeast can run from musty (like old newspapers found in a damp basement) don't ask, to an ammonia smell. These are normal for compressed yeast. A good visual indicator for old or expired yeast is its color. Dark brown and a cracked appearance are good indicators that the yeast is long in the tooth. Texturally, the yeast can be dry feeling, or it may feel somewhat gummy/slightly sticky, both are normal. As yeast ages, it dies, and glutathione is released from the cells. Glutathione is a reducing agent much like L-cysteine (PZ-44) or you can even buy "dead yeast" as a natural reducing agent. Keep this in mind if you are forced into menu labeling and find yourself in need of a reducing agent. The reducing agent breaks down a portion of the gluten, making the dough more extensible as well as making the resulting crumb structure in the baked product more tender/less chewy. From a flavor and performance point, there is no difference in any of the three yeast types (compressed, ADY, IDY) when used at the correct substitution levels, and reconstituted correctly. A lot of the "old school" bakers still like to use compressed yeast because that's what "it" is, old school, and it fits well into their concept and way of doing things.

Tom Lehmann/The Dough Doctor  
6851

## **Dough Ingredients / Re: Lindley Mills Super Sprouted Flour available from K.A.**

Thinking this one through, sprouted wheat will be very high in amylase activity. Amylase enzymes break down starches into sugars. Think malted barley flour aka sprouted barley flour. This is why wheat that has sprouted in the field prior to harvest, due to excessive rain at harvest time, has very little commercial value for going into flour that is used for baking. Hence, sprouted whole wheat flour should be able to be used in a manner similar to malt, and in fact, it should have a bit of a malty flavor (think malted milk balls). The actual use level for a product like this would be quite low, I would think something in the 1 to 3% range, based on the total flour content of the dough. The one question that I have is concerning enzyme

activity. Is the flour enzyme active (diastatic) or non-enzyme active (non-diastatic)? If it is diastatic, it will make a dough soft and sticky if used at excessively high levels, but if it is non-diastatic, it will only provide that malty flavor to the dough and act much like a sugar would.

Tom Lehmann/The Dough Doctor  
6850

### **Dough Ingredients / Re: King Arthur Malted Milk Powder**

It will all depend upon the flavor profile that you are looking for. The flavor from the malted milk powder will be that of a malted milk candy. In work that I did many years ago I used 5% of the flour weight to achieve a characteristic flavor of malted milk, if that's what you're looking for.

5% of 155-grams is 7.75-grams. Using your handy calculator: 155 X 5 (press the "%" key) and read the answer in the display window. Remember, your answer will be in the same weight units that you displayed the flour weight in.

Tom Lehmann/The Dough Doctor  
6849

### **Stones/tiles/steel, Pans & Accessories / Re: Non stick mats for kneading pizza dough**

Bruce:

Not to discourage you from kneading your dough by hand, but did you know that it isn't necessary? Try this sometime, put the water in the mixing bowl, add the yeast to the water and stir to suspend if using compressed yeast, you must prehydrate either IDY or ADY prior to adding it to the water. Then add the flour, and remainder of ingredients. Using a wood spoon (more on that shortly) stir the mass until it is wet and sticky. Remove the spoon and lightly cover to prevent drying, allow to ferment for 2 to 5-hours, turn out onto a floured bench top, fold the dough several times (I'm hesitant to call this kneading), lightly oil the bowl that the dough was fermented in, and place the dough back into the bowl to ferment for another 30 to 60-minutes. Turn the dough out onto your bench top and cut into desired size pieces, then shape into pizza skins for immediate use. The reason why I like to use a wood spoon to stir the "dough" is so you don't over mix the dough. As you stir, the dough will become tougher, and fear of breaking the wood spoon will prevail to the point where you will stop mixing, and that will be sufficient mixing in this application. The gluten development in this case is accomplished through what is known as biochemical gluten development. You can also get it by managing the dough through the cooler overnight too. This is how bakers used to develop their doughs before Mr. Hobart invented his first dough mixer. The procedure is still used in a number of developing countries around the world.

Tom Lehmann/The Dough Doctor  
6848

### **New Forum Members / Re: New Member**

Thank you for the warm welcome.  
Tom Lehmann/The Dough Doctor  
6847

### **Dough Ingredients / Re: Mea culpa, Caputo is it**

I keep seeing references to bromated flour. Bromated flour is fine for making pan breads, ain't nothin' that works much better, but when it comes to pizza, bromate is not a friend, unless you like having a dough that is tough and elastic, and likes to fight you as you try to form it into a pizza skin. That's what bromate (potassium

bromate) does. Keep in mind that bromate is frowned upon in California (it is a carcinogen) and not allowed for use in Canada. As a result, most flour suppliers have their flours available either bromated or non-bromated. For example, General Mills has Rex Royal brand that has 12.4% protein and is unbleached and unbromated #57151 and also Washburns brand at the same protein level, unbleached, but bromated #59401. A potential for a locally produced flour similar to Caputo-00, might be General Mills Pollyanna (this is an untreated flour coming in at about 10.5% protein content. I've also had good success using General Mills King Wheat brand flour. If you can't get the G.M. brand in your area, just use these names and ask your flour supplier what he has an an equivalent.

Tom Lehmann/The Dough Doctor  
6846

### [\*\*Dough Clinic / Replies to Questions\*\*](#)

Thank you everyone for the very warm welcome!

As many of you who know me are already aware, I am away from my desk here at AIB, sometimes for a week or more, as I am out on a contracted assignment working for a customer. Because I'm "old school" I feel that my customer is paying for, and should receive 101% of my attention and efforts while I'm working for them, so I seldom ever respond to e-mails, or monitor boards while out on the road, but I do get caught up again soon after returning back to the office. I mention this because next week will be one of those weeks. I'll be right back at you again as soon as I get back to the office.

Tom Lehmann/The Dough Doctor  
6845

### [\*\*Chitchat / Re: Dough is tearing\*\*](#)

Jude;

I stand to be corrected, but I believe the blue bag is a lower protein content flour than the red bag. This could well be the cause of the dough tearing, especially when mixed with your own milled wheat. If you want to use the blue bag flour, try adding about 5% vital wheat gluten to the flour. To figure 5% in weight, use your calculator, enter the flour weight, then press "X" and enter 5 then press the "%" key and read the amount of gluten to add for a 5% dosage. Remember, to increase the water content by at least 1.5 times the weight of gluten added. Also, if you enter the total flour weight (combined bag plus your milled flour) in ounces, the gluten weight will be shown in ounces. Whatever weight unit the flour is expressed in is the weight unit that the gluten weight will be expressed in.

Tom Lehmann/The Dough Doctor  
6844

### [\*\*Chitchat / Re: Pizza Oven Smoke!\*\*](#)

A.O.

You should not be having this problem if your hood and stack are working properly. You might possibly need a fan in your ventilation system to help draw the smoke up and out. We have both static and powered hoods that we use for different applications.

As for your African hard wood, what kind of flavor does it impart? Remember, all wood is not the same, just ask anyone with a smoker. Apple, cherry, hickory, oak, mesquite, pine (for what it's worth) and your African hard wood all impart a different flavor to the food.

Tom Lehmann/The Dough Doctor  
6843

## [\*\*Chitchat / Re: DiGiorno Deep Dish?\*\*](#)

Smith;

The Schwan's Freschetta thick crust pizza isn't too far from the old, DiGiorno deep-dish frozen pizza. Patty's Gourmet Pizza also makes a pretty mean Chicago style Deep-dish pizza too.

Tom Lehmann/The Dough Doctor

6842

## [\*\*Chitchat / Re: Reheating Neo-Napolitan vs. New York Slices\*\*](#)

Jah;

I wrote on this very topic about 2.5 years ago in PMQ Magazine. I wrote about reheating slices, and also about a new pizza by the slice concept that I developed, which, by the way is presently in use at a very successful pizzeria here in Manhattan, Kansas (AJ's NY Pizzeria) <[www.ajsnypizza.com](http://www.ajsnypizza.com)>.

Tom Lehmann/The Dough Doctor

6841

## [\*\*Dough Clinic / Re: Dough Temperature Formula\*\*](#)

Bruce;

Be glad to.

Friction, or "friction factor" is just a number that is used in calculating desired water temperature to account for the temperature gain of the dough, as a result of friction (dough rubbing against the side of the bowl) during mixing. The grind of the flour has no influence on "FF" but the size of the dough and the formulation do, especially the amount of water added, the use of reducing agents, such as L-cysteine (PZ-44) or dead yeast, and flour protein content. For most pizza doughs mixed in a planetary mixer, the FF will figure out to be about 35. To calculate FF:  
$$3 \times \text{actual mixed dough temperature} - (\text{sum of flour temperature, room temperature, water temperature}) = FF$$

The formula for calculating water temperature is as follows:

$$3 \times \text{desired dough temperature} - (\text{sum of room temperature, flour temperature, and friction factor})$$

Another formula that works well for doughs that will be in the 80F range is as follows: 145 minus flour temperature = water temperature needed to achieve a mixed dough temperature in the 80 to 85F range.

Tom Lehmann/The Dough Doctor

6840

## [\*\*Dough Ingredients / Re: Bakers' Percent??\*\*](#)

CIZ28;

We can't convert volumetric portions (cups, teaspoons, etc.) into bakers percent. It can only be done with weight measures (grams, kilograms, pounds, ounces, etc.). When you have a chance, portion out each of your ingredients and weigh the portion, then let me know what those weights are and I can do the conversion for you.

Tom Lehmann/The Dough Doctor

6839

## [\*\*Dough Clinic / Re: Sodium-free Dough\*\*](#)

Matt;

What you're doing is probably on par with about as good as it gets. If you are trying to make a more healthy profiled pizza, with reduced sodium content, dress youe

dough with slices of fresh tomato, and green leaf basil, reduce the cheese content to not more than 4-ounces for a 12" pizza, and use fresh vegetables and meat that you have pre-cooked yourself (without salt, of course), and you should have a pretty good sodium profile.

Tom Lehmann/The Dough Doctor  
6838

### [\*\*Dough Clinic / Re: cold rise\*\*](#)

Bricklayer;

Your 0.5% level of ADY is "spot on", as is the two days in the cooler. Your 4-hours out at room temperature to temper might be a little long though. We typically allow the dough to temper for 2-hours or three, at the most if the dough ball weights are 20-ounces or more. You should be able to continue using the dough for up to 3, possibly 4-hours once the dough has tempered sufficiently to allow you to begin forming the dough balls into pizza skins. Bottom line, if 4-hours is working for you, and you are happy with the window for using the dough after it has tempered, don't change anything.

The most rewarding part of my job is when I hear from someone like you, that I've helped get started, or turn around a failing business and make a success story out of it. I only supplied the direction, you made it all happen. :)

Tom Lehmann/The Dough Doctor  
6837

### [\*\*Commercial Ovens / Re: Correct Pizza Oven Temperature\*\*](#)

Mike;

It sounds like you might have a Bakers Pride deck oven. Normally, the top heat is expressed in low, medium or high, while the bottom (deck) temperature is set to a specific temperature. Since your oven sounds like an electric oven, some changes in temperature might be needed, but this is what I use as a basic setup for an oven of this type:

Bottom temperature 500 to 550F

Top temperature medium heat. Use the top heat adjustment to get the toppings baked along with the bottom of the crust.

Bake time will vary, but I normally look for something in the 12 to 15-minute range.

Tom Lehmann/The Dough Doctor  
6836

### [\*\*Commercial Ovens / Re: Turning On the Oven\*\*](#)

Expresso;

The very first time you fire up the oven, it should be brought up to temperature gradually. Bring it up to 300F, and then after 30-minutes, increase the temperature by 50F, hold it at that temperature for an hour, then increase it by another 50F.

Keep repeating this until you are up to full operating temperature. Once at full temperature, hold it there for a couple hours, then shut it down. The next time you use the oven, just set the temperature to where you want it, and wait for it to come to temperature. The gradual ramp-up in temperature goes a long ways in helping to prevent stone breakage/cracking and warping of the ovens superstructure.

Remember to toss some corn meal onto the deck to help season it if you are planning to bake directly on the deck surface.

Tom Lehmann/The Dough Doctor  
6835

### [\*\*Newbie Topics / Re: very quick question regarding pre-made dough\*\*](#)

Randy;

Since you are making these pizzas at home for your own personal consumption you can save a couple dollars and make your own pizza prep peel. Scrounge up a piece of tempered hardboard, 1/4-inch thickness is great, but 1/8-inch will work well too. draw out the shape and size of the peel you want, and cut it out using a jig saw. Clean up the edges with a little fine sandpaper, then, using a sanding block with your sandpaper, bevel the end of the peel to about a 45 degree angle, be sure to sand this bevel from the untempered edge. You're now ready to begin peeling your pizzas into the oven. Use your existing peel to remove the pizzas from the oven, and to spin the pizzas in the oven for a more even/uniform bake.

A good alternative to using plastic containers is to save your bread bags and use them for storing the dough in. Lightly oil the dough ball(s), and place one into each bag, twist the open end to close, forming a pony tail, tuck the pony tail under the dough ball as you place it in the fridge. Kiss it good night, and it will be ready to use over the next 24 to 48-hours. To use the dough, remove from the cooler, and set aside to temper AT room temperature for about 2-hours, then turn the dough ball out of the bag into a bowl of dusting flour, and open on your counter top, transfer to your prep peel and dress as desired, then peel into the oven for baking.

Tom Lehmann/The Dough Doctor  
6834

### **Dough Ingredients / Re: how to make a donatos pizza(want it to taste like the real thing)**

Nat;

To roll the dough out in corn meal, be sure to use a very fine grind corn meal. Begin by placing the dough ball into a bowl of corn meal and thoroughly coating it, then toss some on the bench or counter top where you will be rolling the dough out and roll the dough out in the corn meal. A dough docker is a tool with what look like spurs on it. The function is to lock the top and bottom of the dough sheet together (like spot welding) to reduce bubbling during baking. You can get a docker from just about any kitchen store. Be sure to look for one that has blunt points rather than sharp points as the dull points work better. As for flour, your local supermarket should have Pillsbury BREAD FLOUR in 5# bags, this flour has about 12% protein content and should work well for you.

Proof: To allow the dough to rise after forming/shaping, just prior to baking.

IDY: Instant dry yeast

Knead: To work the dough in the bowl to develop the proteins in the flour into gluten. You can do this biochemically through fermentation, so all you need to do is to mix the dough together thoroughly, then allow the dough to ferment for an hour or so, and you will begin to see the dough becoming more elastic as the gluten forms.

Best Vegetable Oil: Canola oil or better yet, olive oil

Water in the oven: Never, you want a dry bake for pizza

Toppings: For about a 12-inch pizza use 4 to 5-ounces of sauce and about 5 or 6-ounces for the cheese. The dough weight should be about 11-ounces.

Tom Lehmann/The Dough Doctor  
6833

### **Dough Clinic / Re: Thin crusty dough did not mix quickly into ball**

The "big lump of mostly dry dough" says it all. There is nothing chiseled in stone when it comes to dough absorption. You need to add sufficient water to the dough to make a smooth, somewhat soft and elastic dough. I would suggest experimenting with adding more water to the dough. When I make dough at home,

I will typically start out using too much water, making a dough that is too soft, and somewhat sticky, knowing that this is easily corrected by incorporating a little more flour later on while I'm working with the dough.

Tom Lehmann/The Dough Doctor  
6832

### **Dough Ingredients / Re: Question re: Storage of flour**

We occasionally need to store flour for extended periods when conducting experiments for customers. The best way we have found to store flour for extended periods of time is to freeze it for a MINIMUM of 30-days, and then hold it under refrigeration for the remainder of the storage time. To prevent drying of the flour, be sure to plastic bag it. If you won't be using the entire contents of the 50# bag all at one time, we suggest breaking the bag down into smaller bag quantities appropriate for your use needs. Lastly, pull the flour from the fridge and allow it to warm back to room temperature before opening the bag. This will prevent any condensation from forming on the flour while you're in the process of using the contents of the bag, which might be several days. Whole -wheat flour is a totally DIFFERENT story.

Tom Lehmann/The Dough Doctor  
6831

### **Dough Clinic / Re: Neapolitan pizza cooling down**

John; How did you get it to stay crispy for 10-minutes???

When you fast bake a pizza at high temps, you develop a very thin crust, like searing a piece of meat (to retain the juices). Typically, within a minute or so, the pizza begins getting soft and soggy. Some things that you might do to improve the situation are:

Use a thin crust (no sugar, eggs, or milk in the dough formula).

Make sure the dough is well fermented (one or two days in the cooler is sufficient). Very lightly oil the pizza skin, and then try using thin slices of fresh tomato rather than sauce.

Bake the pizza to the max, some charring is good to have.

That should be your best shot.

Tom Lehmann/The Dough Doctor  
6830

### **Dough Ingredients / Re: how long is dough good in the fridge**

The secret to successful dough management is temperature. If you use a suitably strong flour, like Pillsbury "BREAD FLOUR" available form most supermarkets, and have a good dough formula/recipe, and keep the finished (mixed) dough temperature in the 75 to 80F range, you should be able to keep the dough for 2 or 3-days in the fridge. For this application, I would suggest using bread bags to store the dough in. Mix the dough, immediately take it to the bench and scale it into desired weight pieces, then form it into balls, lightly oil the dough balls, and place into individual bread bags, twist the open end of the bag to form a pony tail, and tuck the pony tail under the dough ball as you place it into the fridge. To use the dough balls from the fridge, remove and allow to temper AT room temperature for about 2-hours, then open the dough ball(s) into pizza skins as you normally would.

Tom Lehmann/The Dough Doctor  
6829

### **Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza**

Norma;

Do check with one or more of your local wheat farmers as to when they will be harvesting the wheat. Wheat right from the field is referred to as "green" wheat. It will make a product, but not typically the best. Try to hold some of the wheat aside at room temperature for several weeks to age, and then grind it. It will make better products once aged to some extent. Do not grind the wheat first and then try to hold it as the wheat germ will only rancidify, making for very rancid flour. Since you did not mention anything about cleaning the wheat, I'd suggest that you first freeze the green wheat for at least 30-days, then remove it from the freezer and allow it to age at room temperature for 30 or more days. Why freeze first? The freezing of the wheat will destroy any insects or larva inside of the wheat berries, then as you age the wheat, it will not become even more infested.

Tom Lehmann/The Dough Doctor

6828

### **Dough Ingredients / Re: Question re: Storage of flour**

Most of the time the insect problem comes from within the flour itself, rather than from the outside. It can be a roll of the dice if you will have buggy/wormy flour after much more than a month of storage. The key is to keep the flour as cool as possible. I've got a small chest freezer in my garage that I use for storing things that I inherit, such as extra flour, fish from a neighbor's successful fishing trip, surplus garden vegetables, you name it. It pays for itself in savings, and when I'm not using it, I just unplug it.

Tom Lehmann/The Dough Doctor

6827

### **Dough Clinic / Re: Thin crusty dough did not mix quickly into ball**

Just to confuse things:

I have a dough formula and procedure posted in the PMQ RECIP BANK for a Chicago style thin cracker type crust. This is a very different type of procedure in that it calls for mixing the dough for less than 2-minutes. Actual mixing time typically runs about 1.5-minutes. With this short of a mixing time, what comes from the mixing bowl is more of a dry mix of ingredients than a "dough". Think of it more like that of a baking powder biscuit dough than a pizza dough. In this case you take a weighed amount of the "dough" and press it together using your hands into what we call a "puck", this is much the same way you would make a flaky pie dough, in fact that is where I got the idea from. Anyways, you press the dough together to form the puck, and place onto a lightly floured sheet pan. When the pan is filled with dough pieces, cover with plastic, or slip inside of a plastic bag and secure closed by tucking the open end under the pan as you place it into the cooler or fridge. If you're doing this at home, a plastic bread bag works well for holding each dough piece. When you come back to the dough on the following day, you will find that the dough has pretty well knit together. Bring a dough piece out of the fridge and set aside at room temperature allowing the dough piece to temper AT room temperature for about 1.5 to 2-hours, then roll the dough out very thin. You cannot stretch the dough to shape it, it must be rolled. Dress and bake the pizza in the normal manner. This makes a very crispy, cracker type crust.

Tom Lehmann/The Dough Doctor

6826

### **Dough Ingredients / Re: how long is dough good in the fridge**

John;

By taking the dough directly from the mixer to the bench for scaling and balling,

and then straight to the cooler, we are allowing the dough to be fermented under refrigeration in a very slow, uniform and controlled manner. This is much better than bulk fermentation where there are inconsistencies in the rate of fermentation throughout the dough mass. Also, the acids that are formed during fermentation at the lower temperature are different from those formed at fermentation at higher temperatures, resulting in a different flavor profile to the baked product, being it pizza crust or a loaf of bread. The refrigerated method of dough management works equally as well in a home kitchen as it does in a pizzeria. Some artisan bread procedures call for refrigeration of the dough at least overnight to develop the desired flavor profile in the finished bread.

Tom Lehmann/The Dough Doctor  
6825

**[Sauce Ingredients / Re: Can Anyone Help Me With This Insects on my San Marzano Tomatoes?](#)**

Norma;  
Send a couple of the bugs over to your county agricultural agent, or the entomology department at a local university and I'm betting that they will be able to identify it and also provide you with suggested control measures.

Tom Lehmann/The Dough Doctor  
6824

**[Sauce Ingredients / Re: Smoked Cherry, Grape or Farmers Market Tomatoes for a Pizza Topping or a Sauce](#)**

Bruce;  
I've used a BBQ with apple wood chips to smoke and bake pizza, and I've used smoked cheese on many a pizza, all with good success, so why not smoked tomato? I'm not so keen on the idea of adding any sugar to the tomatoes as this will only encourage scorching of the tomato or sauce during the baking of the pizza. On the other hand, the quest that most people go on when looking for a pizza sauce is one of that just picked, garden fresh tomato flavor. Any cooking of the tomato prior to its use as a pizza sauce actually reduces the delicate flavor profile of the tomatoes. This is not to say that a sauce made with your smoked tomatoes will be bad, it will just be different, and in the world of pizza, different can be good. Flavor, like beauty is all in the eye of the beholder.

Tom Lehmann/The Dough Doctor  
6823

**[Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza](#)**

Norma;  
Wheat typically doesn't go directly from field to mill. Instead it goes from field to a local grain elevator where it is collected for sale. It may be held there for days or weeks. From there it will go to a flour mill. While the grain would probably still be considered to be green when it arrives at the mill, the flour miller adds a maturing agent (Maturox aka azodicarbonamide/ADA) to correct for this condition. Now, on to your next question. Malted wheat is nothing more than sprouted wheat, typically dried and ground into a powder. The question is: Is it enzyme active or not? If it is enzyme active it will raise havoc on your dough, breaking down starch and turning it into sugars resulting in a soft, sticky dough. If it is not enzyme active, it will only provide somewhat of a malt flavor to your dough. You can test the material in a small dough by using it at 2% of the total flour weight and allowing it to ferment for several hours then making, or trying to make a pizza from the dough. Keep in

mind that you can also buy non-diastatic (non-enzyme active) malt powder or syrup from many bakery ingredient suppliers or Malt Products. When this product is used, many people will look at the malt only as a flavoring and a source of sugar as it is somewhat sweet.

Tom Lehmann/The Dough Doctor  
6822

**Dough Clinic / Re: Struggling with the dough!!!**

Steve;

Your procedure won't work when you use a starter as you are. Instead, after you divided the dough into pieces, place each into an oiled, plastic container and cover lightly with a piece of foil, and set aside to ferment at room temperature. I can't say how long this will take as I don't know anything about the type or strength of your starter, but it could take anything from 5 to 6-hours at the short end to 1 day or more at the long end. Watch the dough balls, when they have grown somewhat, and are resilient to the touch, try opening one up, if it opens easily, they are ready to go, if not, you will need to wait longer.

Can you add yeast? Yes you can, and then you don't need to wait nearly as long, but the yeast will become the dominant microflora, completely overwhelming the bacteria in the sour, hence your sour flavor will be lost.

One last thing, most sourdough starters are used at around 20% of the total flour weight. This is assuming a wet, active starter.

Tom Lehmann/The Dough Doctor  
6821

**Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza**

Norma;

Sprouted wheat, barley, etc. is the same as sprouted. Please do NOT be tempted to eat any of the raw sprouted grains. The mere act of sprouting is also a form of incubation which also allows for the growth of pathogens, some of which are not so people friendly. I receive notices almost daily of sprout recalls. The one in Europe, that killed and sickened many people was traced back to.....you guessed it, SPROUTS.

You should be able to sprout any type of wheat berry, just be doubly sure it is not commercial seed wheat with a red or green color to it. Farm or elevator stuff is fine and safe, or as safe as you can expect it to be. To sprout the berries, soak in water for 24-hours, then place onto a wet towel in a dark place and hold at 90F. You should see sprouting in a few days.

As for your wild yeast starter, whatever you get will be either a yeast or bacterial ferment, or a combination of the two. There is no way to predict what you will get. As you know, once you get something growing, you must culture it and propagate it until you have enough to work with. The idea then is to add enough, normally about 20% of the flour weight, to the dough so the culture becomes the dominant microflora in the dough. With this done, it will impart its characteristic flavor and aroma. Be sure to save it in different locations because if you lose it (a term used to describe a change in the microflora of the starter/sour), your chances of ever replicating it are not quite as good as your chances of winning the Power Ball Lottery this week.

Tom Lehmann/The Dough Doctor  
6820

**Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make**

## [\*\*a Pizza\*\*](#)

Norma;

In my above reply, (first sentence) I meant to say that sprouted is the same as malted.

Tom Lehmann/The Dough Doctor  
6819

## [\*\*Pizza Ovens / Re: Individual Pizza Oven?\*\*](#)

Nick;

If you have a gas home oven you can do a pretty decent job with a pizza stone, or use unglazed floor tile (works great) and it is a lot cheaper to boot. Place the stone(s) in the upper 1/3 of the oven.

Set the oven temperature at 450F, then allow at least 45-minutes for the temperature to come up and equilibrate. Get yourself a pizza screen, and place the opened pizza skin onto the screen (be sure to season the screen first). Dress the pizza as desired, and place in the oven on one of the lower racks in the bottom 1/3 of the oven. Bake the pizza there for about 5 to 7-minutes, then move to the stone and continue baking until the crust is well colored and beginning to char a little around the edge. You might need to experiment with placement in the oven and exact baking times between the top and bottom positions as all ovens are somewhat different. This is how I make my pizzas at home, and they always turn out great. By the way, do not put any sugar, eggs, or milk in the dough formula/recipe as any of these will result in premature browning of the crust, resulting in a reduction of crispiness.

Good luck, and have fun making pizzas!

Tom Lehmann/The Dough Doctor  
6818

## [\*\*Dough Clinic / Re: Dough Temperature Formula\*\*](#)

Pete;

Good point. For home use, where we are trying to get a finished dough temperature in the 80 degree range, the procedure where we subtract the flour temperature from the number 145 seems to work pretty well. In any case, it sure beats the guess and by gosh method. So, simply take the temperature of the flour and subtract that from 145 to get the desired water temperature to give you a finished dough within the range of 80 to 90F. which is quite workable when making pizzas at home. When I make my pizzas for demonstration at home, or for family enjoyment, I use this method for calculating the water temperature, and my mixer consists of a wood spoon and a suitably sized bowl. I suspend the yeast in a very small amount of water (100F) for 10-minutes if using instant dry or active dry yeast. If using compressed yeast, I just stir it into the water that I've added to the mixing bowl, then add the flour, followed by the salt, sugar (if called for), and then I begin stirring, until the mixture looks like wet oatmeal, then add the oil, and stir in for about 1-minute, I then turn the "paste" out onto a floured surface, making sure to scrape the bowl clean, I oil the bowl, then scoop up the "dough" and knead in the flour adhering to the outer surface (this just takes a few seconds) and then place the dough back into the oiled bowl where it is allowed to ferment at room temperature for anything from 2 to 5-hours. I then turn the dough (it now actually looks like a dough) out onto the bench with a little dusting flour and knead the dough for about a minute, or so, adding just enough dusting flour to it to make a nice feeling dough. Then place back into the bowl to ferment again for 30-minutes, now turn out of the bowl into some dusting flour, and roll or hand toss the dough to desired size, dress and bake. This makes for a very rustic looking pizza with a lot of

old world charm. Most people that I show this to are amazed at how little work is actually needed to make a great pizza.

Tom Lehmann/The Dough Doctor  
6817

### [\*\*Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza\*\*](#)

Norma;

Yes, you can grow your own sprouts. After sprouting, dry them in a dehydrator, then grind them into a coarse powder (a food processor might work well for doing this). I would expect no difference between fresh sprouted and a commercial product. Just resist the temptation to sample the raw sprouts without thoroughly cooking them first.

Tom Lehmann/The Dough Doctor  
6816

### [\*\*Dough Ingredients / Re: Sodium Bicarbonate\*\*](#)

Louis;

I can't come up with any good reason for wanting to add baking soda to a pizza dough formula/recipe. It will raise the pH of the dough away from the favorable lower pH (acidity) for yeast activity and flavor development. Dipping the dough into an alkali (soda) will impact both the crust color and the flavor of the finished product. This is what gives a pretzel its unique flavor. Take a piece of pizza dough, roll it out under your hands to form a thin string, dip it into hot (200F) soda water solution (15 grams soda in 85 grams of water), then sprinkle on a little sea salt, place it on a parchment paper lined baking pan and bake at 450F until golden brown in color and you Will have the beginnings of a pretzel.

Tom Lehmann/The Dough Doctor  
6815

### [\*\*General Pizza Making / Re: Rolling dough out in olive oil\*\*](#)

You are correct in that high absorption doughs are easier to roll out using oil rather than flour. The oil also helps to darken the finished crust color too, just as painting oil on the edge of the crust before baking helps to darken it when rolled out in flour. Commercially, we have the Celeste brand of frozen pizzas that are actually fried, not baked. and many crusts that are formed using the cold press forming method utilize an oil soaked dough ball to improve the forming properties of the dough under the cold press. You can identify a cold pressed crust by looking at the bottom. If it has raised circular rings, creating what appears to be a bulls eye pattern, you have a cold press formed crust in your hands.

Tom Lehmann/The Dough Doctor  
6814

### [\*\*Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza\*\*](#)

Norma;

Yes, I've used my own sprouted wheat to make both pizza and bread doughs. When thoroughly dried, and very lightly toasted, to destroy any enzymatic activity, the finished result will be a malted milk flavor in the baked bread or crust. Since I never was a fond lover of the breakfast drink Ovaltine (malted milk flavor) or malted milk balls (candy), I never pursued the flavor.

Tom Lehmann/The Dough Doctor  
6813

## **Neapolitan Style / Re: Burnt Pizzas -why are people tolerant?**

This reminds me of the time when WFO pizzas first came to Chicago, Illinois, back in the late 1970's. The number one complaint was: "My pizza is burnt!" As a resident Chicagoan, (since displaced to Manhattan, Kansas) I can attest to the fact that pizza lovers in Chicago at that time were not used to, or seldom exposed to, char of any persuasion on a pizza. Hence, if there was any char on the crust it was deemed to be burnt. With time the good people of "The Windy City" were educated in the different types of pizza, and today, char is considered to be just another characteristic on some types of pizzas. The amount of char on a pizza is purely the preference of the pizza maker, some like more, some like less, some don't like it at all. I will say this, if you have ever had an English muffin that was toasted, you probably ate something with a good bit of char on it, and for the most part, the char really adds a dimension of flavor to the pizza crust that just plain old "browning" can't provide. As for pizza char at the restaurant v/s char on a home made pizza, any commercial pizza oven worth having has pretty decent control, in one way or another between top and bottom heat (baking properties) allowing you to get a perfectly baked pizza with a controlled amount of char. Pizzas baked in a home oven, being a kitchen range, or outdoor/backyard WFO typically don't have all of the design features of a commercial oven to allow for this kind of control during the baking of the pizza, hence control of the char is somewhat more problematic, but more importantly, those home baked pizzas are a personal accomplishment, sometimes the end result of a lot of hard work and dedicated time to making a great tasting pizza with the tools at hand. This is why we see so much variation in the amount of char on home made pizzas, it's just the way it is, plus, one other important fact. When I make pizza at home, it is to MY liking, not my customer's, so if I just happen to like a lot of char, you can bet that it will be there by some design.

Tom Lehmann/The Dough Doctor  
6812

## **Starters/Sponges / Re: Starter Falls Flat**

Dan;

Just about each and every starter is different from any other one. This is why some starters or sours will sell for as much as \$20,000.00. Did you know that Panetone (a type of Italian fruit bread) is traditionally made from a sour? And it goes without saying that San Francisco Sourdough bread is also made from a sour, but with a significantly different resulting flavor profile. True, sours and natural starters are made up of a mix of wild yeasts and an assortment of different types of bacteria. It is the specific strain(s) of each, and the mix of them that is responsible for the performance of the sour or starter. In Mexico a starter is commonly used for some types of breads, and the way they make the starter is to save a quantity of dough, to this they add water and flour to feed / propagate it, then they use a portion of this to culture the new dough. Since the original dough is typically made with baker's yeast as the dominant microflora, if it is properly managed, baker's yeast should remain the dominant strain of microflora, and the flavor profile will not change very much, but occasionally, something goes wrong, the starter is left uncovered, or it is allowed to stand at an incorrect temperature (one that is not conducive to the propagation of the baker's yeast) and the starter is lost, meaning that it either doesn't perform as well as it used to, or it imparts a different, and usually undesirable, flavor to the finished product.

Developing and maintaining a sour or starter is a fun undertaking, and also to some extent, an art form where bread flavors are concerned.

Tom Lehmann/The Dough Doctor  
6811

### [\*\*Thick Style / Re: Potato Pie\*\*](#)

OHhhhhhhh, that pie sure does look good!

Right now I'm working on a project that calls for making different types of pizzas with dehydrated potatoes either in the dough (actually works quite well) and as a topping (think mashed potatoes applied with a decorating bag and a star tube), topped with bacon bits, ham/Canadian bacon, onion, and a cheddar-mozzarella cheese blend. Also thinking about what can be done with shredded potatoes mixed with a little whole egg and flour to make a potato crust (par-bake) and then top either as a breakfast pizza, or as a gluten-free pizza. Potatoes are possibly one of the most overlooked health foods that really seems to work well with pizza.

Have fun, and enjoy those potato pizzas!

Tom Lehmann/The Dough Doctor  
6810

### [\*\*Chitchat / Re: World's Largest Pizza Skin!\*\*](#)

Two things about this video.

- 1) He has done this more than once or twice! He is very good at what he is doing, and from a sitting position too! Wow!!
- 2) High tech ovens are not always needed to accomplish the task at hand.

Thank you for sharing.

Tom Lehmann/The Dough Doctor  
6809

### [\*\*Dough Ingredients / Re: coopers brewers yeast?\*\*](#)

Actually, brewer's yeast and baker's yeast are essentially the same. The only real difference is in their tolerance to alcohol. If I remember correctly, baker's yeast will tolerate about 12% alcohol and brewer's yeast will tolerate about 13% alcohol. While this may not seem like a lot, it is huge when you are a brewing company fermenting for alcohol. When I was in Saudi Arabia many years ago I would read about some poor fellow getting caught at the airport trying to smuggle in some brewer's yeast, with a VERY harsh penalty). You could buy baker's yeast in the local market, and we used it to make beer, wine, and some distilled alcohol spirits. Like I said, they're essentially one and the same.

Tom Lehmann/The Dough Doctor  
6808

### [\*\*Neapolitan Style / Re: Burnt Pizzas -why are people tolerant?\*\*](#)

#13;

You sound like a person of my type; the trip is better than the destination; the quest is better than the prize; the hunt is better than the kill; etc. The quest for the "perfect" pizza is actually much better than the pizza itself. There is no greater disappointment in life than to discover that you have fulfilled all of your life's quests. Wait a minute Lord, can you give me just one more hour? I think I may have the solution to the perfect pizza, and I've just got to test it! To my way of thinking, that's not a bad way to check out. Have fun on your quest, and be sure to enjoy a lot of great pizza along the way.

Tom Lehmann/The Dough Doctor  
6807

### [\*\*Other Types / Re: My first stromboli ! Pictures inside\*\*](#)

Not too shabby! To correct for the streaking on the top, try brushing the entire top and sides with a light coating of olive oil just before you place it in the oven. For a little extra pazzaz you might try sprinkling the top with a little shredded Parmesan cheese too just before you place it in the oven. You can also experiment with different types of cheese in the Stromboli too. My own personal favorite is a 50/50 mix of whole milk Mozzarella and creamy Ricotta. The Mozzarella helps to bind the Ricotta so it isn't so runny when hot. Also be sure to try things like fresh basil, or sundried tomatoes mixed in with the cheese. I also like to think outside of the box with a breakfast Stromboli filled with scrambled egg, sauteed onion, mushrooms, toasted bacon bits, breakfast sausage, and fresh tomato. For the cheese I like to use a blend of Ricotta and sharp cheddar. I hope this gives you some more ideas and motivation to continue your experimenting.

Tom Lehmann/The Dough Doctor  
6806

### **New Forum Members / Re: New Member**

Mario;

We are always more than glad to assist anyone where ever we can. If you are in need of some good dough formulas/recipes, I have a number of them posted on the PMQ (Pizza Marketing Quarterly) web site in their RECIPE BANK. You can access them at <[www.pmq.com](http://www.pmq.com)> and click on the Recipe Bank. It will be one of the drop downs under the Culinary heading. Be sure to use only "dough" for your search word for the dough formulas, if you use pizza, or pizza dough you will get the different types of pizzas.

I've even taught pizza production to prisoners and street kids. They all love the pizzas, and soon learn if they do well they can eat some of their pizza creations, and once they have created their own pizza, and find out how good it tastes, you will have their attention. From then on it is easy to work with them showing them how to make many different types of pizzas, and from there, you might be able to get some local support to help them transition into a pizzeria. One place that I worked with has its own pizzeria that they use to train the kids in, they are kept busy working and learning about pizza, so they are off of the streets, and eventually graduate to work in another pizzeria, or hopefully, with assistance from the local Government, go into business for themselves. Give a man a fish and he can have a meal, teach a man to fish, and he can feed himself for a life time. Give a man a pizza, and he will have a great meal, but teach a man how to make a pizza and he can go into the pizzeria business!

Good luck with your endeavors!  
Tom Lehmann/The Dough Doctor  
6805

### **Starters/Sponges / Re: Calculating Starter Amounts**

Dan;

Typically, you would look at the starter as an ingredient. So the first thing to do is to determine how much starter to use. Since all starters are different, you will need to experiment to find out how much to use. For starters, you might begin at 5% of the flour weight, and then work from there. Once you have the amount of starter determined, the next thing to do is to determine as close as possible, how much water is in the starter. Subtract that amount of water from your total absorption and you're good to go.

Tom Lehmann/The Dough Doctor  
6804

## [\*\*New Forum Members / Re: Hello from Rochester, NY\*\*](#)

How much, how many slices of what diameter pizza are you eating?

Tom Lehmann/The Dough Doctor

6803

## [\*\*Pizza Ovens / Re: Stones for Bakers Pride Countertop Oven\*\*](#)

Pat;

You might look at some unglazed floor tiles as an option for the deck material. It doesn't have to be a single piece, just set them in place and they will work just fine. Since you're making a Chicago thin crust pizza, you will want to bake on a disk or screen, and not right on the deck any ways. Look for a baking time of about 30-minutes at 475F. Remember, a Chicago style thin crust is only crispy around the outer edges, that is why those pieces go first when the pizza is brought to the table. The remainder of the pieces are soft and foldable, but Ohhhh, so good!

Lastly, remember to party cut the pizza, never wedge cut it.

Tom Lehmann/The Dough Doctor (An ex south-sider from the "Windy City")

6802

## [\*\*New Forum Members / Re: Hello from Arkanasas!\*\*](#)

Eve;

Fear not! Both great tasting breads and pizza are a snap to make at home. Your first attempts may not be gourmet, but they Will taste good, and that is the fun part, testing, eating, testing and improving, and eating some more. I have a home made pizza dough recipe posted in the RECIPE BANK at <[www.pmq.com](http://www.pmq.com)>. When you get there, look for the drop-down under "culinary" where it says Recipe Bank, click on this and use "dough" for your search word, scroll through the formulas until you find my home made pizza dough recipe. Send me a message and request my home made pizza dough recipe and I'll be glad to send it to you along with suggestions for making home made bread by a procedure that is super convenient, and won't give you biceps like the village blacksmith.

Tom Lehmann/The Dough Doctor

6801

## [\*\*Dough Ingredients / Re: Sodium Bicarbonate\*\*](#)

Peter;

I see where you are coming from. Yes, those dough formulas do contain soda, but not in the context of just soda alone. The soda in the formulas that you have referenced is shown as a constituent part of a leavening system. That is why it is shown in brackets. As you will note, there are also leavening acids included with the soda, such as Monocalcium phosphate (MCP), sodium acid pyrophosphate (SAPP), there can also be glucano delta lactone (GDL), sodium aluminum phosphate (SAPP), and now that sodium reduction is all the rage, look for calcium acid pyrophosphate (CAPP) to become more popular.

Tom Lehmann/The Dough Doctor

6800

## [\*\*Sauce Ingredients / Re: Can Anyone Help Me With This Insects on my San Marzano Tomatoes?\*\*](#)

Norma;

In addition to your pizza baking skills, I'd say it is time to develop a good recipe for groundhog. Young groundhog, pressure cooked to make it tender, breaded and pan fried is hard to beat. Hate to say this but.....it tastes just like chicken.

Yes, I am serious. Just like chicken!

Tom Lehmann/The Dough Doctor  
6799

### [\*\*Dough Clinic / Re: Neapolitan pizza cooling down\*\*](#)

I'm betting that fermentation is the culprit here. Any variations in the amount of fermentation that the dough receives would account for what you are seeing. Some of the things that can influence the fermentation are;

- 1) Variations in the dough temperature.
- 2) Variations in the amount of yeast.
- 3) Variations in the amount of salt.
- 4) To a lesser degree, variations in the amount of water used in making the dough.
- 5) The temperature at which the dough is fermented.
- 6) The time to which the dough is subjected to fermentation.

The dough temperature should be as constant as possible. Use a thermometer to measure the water temperature as well as the finished dough temperature.

If possible, scale rather than volumetrically portion the salt and yeast as small variations can make a big in the way the dough ferments.

Try to place the fermenting dough in an area where the temperature is as constant as possible. Many like to use the cooler for long, but consistent fermentation times. Keep in mind that doughs made without any shortening/oil will always be somewhat tough and chewy. To see a good example of this, just buy two packages of tortillas, one with normal fat, and the other fat-free.

To some extent, variations in baking can also influence the texture of the finished crust too, crusts that are not baked quite as long will tend to be tougher and more chewy.

Tom Lehmann/The Dough Doctor  
6798

### [\*\*Pizza Ovens / Re: Stones for Bakers Pride Countertop Oven\*\*](#)

Pat;

You New Yorkers are just in love with corn meal. LOL :)

Because they use reel type ovens so much in Chicago, they like to use some type of carrier under the pizza, screen or disk to prevent getting all that corn meal into the oven. Smaller stores with deck ovens certainly do bake right on the deck, or bake on a piece of parchment paper (not my favorite). But those true, Chicago style deep-dish pizzas are baked in a 2-inch deep pan. As for the long baking times, in Chicago, it is common to wait 45 to 60-minutes or more.

Tom Lehmann/The Dough Doctor  
6797

### [\*\*Dough Ingredients / Re: coopers brewers yeast?\*\*](#)

Bob;

We have never found there to be a difference in flavor of the baked products made with either bakers or brewers yeast. It is not a good idea to freeze fresh yeast/compressed yeast as this significantly impairs its activity due to damaged yeast cells resulting from being frozen.

Tom Lehmann/The Dough Doctor  
6796

### [\*\*Specialty-Grain Pizzas / Re: 80% Whole Wheat with Levain\*\*](#)

Norma;

With a whole-wheat flour, or multi-grain blend, it is all but impossible to achieve

full hydration unless some form of a soaker is employed. In this case the soaker is water, whole-wheat flour and salt. It is set aside and allowed to hydrate for roughly 12-hours. I normally allow 1 to 2-hours or overnight in the cooler, to hydrate the whole-wheat flour. Failure to use a soaker can, and usually does result in a dry, stiff dough that doesn't expand well during baking (lacks ovenspring) and has a dense, heavy crumb structure.

Tom Lehmann/The Dough Doctor  
6795

### [\*\*Newbie Topics / Re: Bottom-Cooking Issues\*\*](#)

Dan;

Pizzas are baked from the bottom up, to get a stronger bottom bake you will need to reduce the top heat in your oven. The color of the stone doesn't make any difference in this case as you are baking with latent conduction heat. Commercial pizza ovens all have some facility for balancing top and bottom heat. You mention convection, which is nothing more than heat transfer through fairly gentle airflow, but, convection does increase the top heat significantly, so you might want to see if you can turn off that feature in your oven. Also, by placing the pizza lower in the oven, you will create a higher crown height in the oven, which is just another way of saying that you are moving the pizza further away from the top of the oven where it is the hottest (heat rises), thus, you will reduce top heat, and because you are moving the pizza closer to the heat source, you are also increasing the bottom heat, just the ticket to getting a better baked pizza.

Tom Lehmann/The Dough Doctor  
6794

### [\*\*Newbie Topics / Re: First time using KASL flour... no rise?\*\*](#)

Yeast and salt do not play well together, especially for 20-minutes. There is an excellent probability that you damaged the yeast by mixing it with the salt. You also don't say what the water temperature was that you made the yeast-salt suspension with, but if it was much above 100F again, you could have caused some damage to the yeast. Try again, but this time, try this, use a thermometer to get your water temperature to 95F. Put the yeast into the water and stir to suspend, add to the dough and mix in for a couple minutes, then add the salt, no need to suspend in water, and continue mixing as you normally would. Check your finished dough temperature after kneading, it should be in the 80 to 85F range. See if this doesn't give you better yeast activity.

Tom Lehmann/The Dough Doctor  
6793

### [\*\*Dough Clinic / Re: Roux pie\*\*](#)

The reason for making a roux paste/flour is because it does not contribute to a stringy gravy because you have destroyed the gluten forming properties of the flour. Hence, you would not get a very good pizza if you made it in this manner. Please let me know if I misread your question.

Tom Lehmann/The Dough Doctor  
6792

### [\*\*Dough Clinic / Re: Roux pie\*\*](#)

If you brown the flour in the oven, you will still destroy the gluten forming properties of the flour.

There may be an opportunity to get the flavor that you are looking for by using a roux as an added ingredient to the dough, by that I mean adding it at somewhere's

between 5 and 20% of the total flour weight. You might need to beef up the protein content of the dough a little through the addition of some vital wheat gluten (available at most supermarkets). In this case we're looking at the roux only as a flavoring material. A good level of added gluten to add, for openers, would be 15% of the weight of flour in the roux that you are adding. You will need to take into account the water and oil content of the roux as well as the hydration requirements of the gluten (for each ounce of gluten that you add, you must add 1.5-ounces of additional water). It might take a little experimenting, to get the absorption just right, but I think it is "doable".

Tom Lehmann/The Dough Doctor  
6791

**[Stones/tiles/steel, Pans & Accessories / Re: conveyor oven - stick with the screens or is there something better ?](#)**

Bill;

What kind of pizzas are you making. If you are trying to make a hearth style pizza in an air impingement conveyor oven, Pizza Tools.Com has a Hearth Bake Disk (cloud pattern) that is designed specifically for this application. You must reset the oven temperature to between 465 and 500F, and delete all sugar, eggs, or milk from the dough formula. The pizzas made on these disks are very similar to those baked directly on a stone hearth. If you were to try this on a screen you would get a totally different bottom with a hard "pizza bone" around the edge. You might contact them to get a disk or two to work with for testing purposes. We have discussed these disks quite a bit in the Think Tank at <[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor  
6790

**[Dough Ingredients / Re: how to make a donatos pizza\(want it to taste like the real thing\)](#)**

Nat;

Actually, if your dough is properly fermented, it really doesn't need to be docked at all. But if you want to dock it, keep the docker about 1/4 to 1/2-inch away from the edge of the dough piece to allow for a nice raised edge. Also, the best dough docker will have very blunt pins, not sharp and pointed. The purpose of the dough docker is to lock the top and bottom parts of the dough together (like spot welding) to control bubbling. If you hold a salting or club cracker up to the light, you will see that the docker holes actually have a thin membrane of dough/crust closing the bottom of the docker holes, this what a docked is supposed to do. The dockers that we use actually have square/flat tips rather than pointed tips.

Tom Lehmann/The Dough Doctor  
6789

**[Dough Ingredients / Re: Question re: Storage of flour](#)**

Scott;

Even when stored in the freezer, flour will gradually change with storage time. The most significant change will be in oxidation of the flour. This has a significant strengthening effect upon the flour as far as dough performance is concerned. If the flour was "natural" or not fully matured when originally tested, and then put into the freezer for an extended period of time, and retested, say, a year later, it would perform differently, probably exhibiting more oven spring and a higher raised edge than the first test.

Tom Lehmann/The Dough Doctor  
6788

## [\*\*Chitchat / Re: Reheating Neo-Napolitan vs. New York Slices\*\*](#)

Peter;

Your memory is better than mine!

I might add a few updates.

We now recommend that the par-bakes be given only about 1/2 of the normal sauce application, and no cheese. This allows the par-bakes to be stored at room temperature during the day without issues from your local health department. It also allows for the addition of sauce again when dressing the crust for improved freshness and flavor.

The slice is then dressed to the order, and shredded cheese is applied to hold it all together. I have been recommending Grande Whole Milk Mozzarella because of its flavor, but any good, flavorful cheese will work. Keep in mind that you are not adding all that much cheese to the slice, and considering your return on a 16 or 18-inch pizza, cheese cost is not a big issue, at least it shouldn't be. Quality and taste/flavor should be consideration #1.

I have worked extensively with XLT oven company to identify a profile that works very well with their ovens. Profiles for other makes of ovens can be worked out, but I haven't worked with any of them to do that yet.

The Hex Disk from Pizza Tools.Com is the only carrier/disk that we recommend for baking the slices on with this process as it sheds any spilled toppings, such as cheese like water off of a duck's back.

Tom Lehmann/The Dough Doctor

We have the total bake time for a slice down to 3.5-minutes and 4-minutes for a whole pizza. So you can see the potential for a high volume store.

6787

## [\*\*Dough Ingredients / Re: coopers brewers yeast?\*\*](#)

Craig;

It is true only for top brewers yeast as it ferments at roughly the same temperature range as bakers yeast. The bottom fermenting yeasts ferment at a temperature lower than what bakers and top fermenting brewers yeast can ferment at. As a result, there is a difference in the balance of acid and alcohol formed, hence a difference in flavor too.

Tom Lehmann/The Dough Doctor

6786

## [\*\*New York Style / Re: Essen1's NY-style pizza project\*\*](#)

Essen;

If your dough will handle it, I would suggest adding a little more water. Dough absorption can be somewhat variable, so my advice to get a more open cell structure would be to begin adding incrementally more water. When the dough begins to get difficult to handle you will know that you are at or near the limits of your flour/dough. Once you are at that point, if you still don't have what you want, begin increasing the yeast level, but keep in mind that as you do this, one result might be a loss of refrigerated holding time.

Tom Lehmann/The Dough Doctor

6785

## [\*\*General Pizza Making / Re: 2 Hour Dough Rise Pizza Cooked Well Done\*\*](#)

CP;

Good lookin' pizza!

You're right about the longer baking time helping to make a firmer crust. This is

why I seldom ever use much, if any sugar in my doughs, as it allows me to bake the pizzas longer without developing excessive crust color.

Tom Lehmann/The Dough Doctor  
6784

### [\*\*New York Style / Re: Thermal question\*\*](#)

Mike;

The problem with placing the stone, or the pizza at the top of the oven is the excessive top heat that the pizza receives there. Pizzas are best baked from the bottom up. By placing the stone and pizza low in the oven, they are closer to the heat source, while the excess heat rises to the top of the oven allowing the pizza to be baked longer for a crispier crust without burning the toppings.

In some of the very large wood burning ovens with 4 to 6-inch thick decks, and high oven crowns (ceilings) we often use the oven peel to raise the pizza up into the crown of the oven, where the heat is much more intense, to achieve the desired level of top color to the pizza (usually a dark brown color to the cheese, but not burned).

Tom Lehmann/The Dough Doctor  
6783

### [\*\*Dough Clinic / Re: Pizza stone surface temps for cooking pizzas\*\*](#)

Jay;

Deck temperatures of 500 to as high as 1000F have been used to bake pizzas, but we see temperatures of 600 to 850F used more commonly for traditional, or rustic type of pizzas. I think you will do well if you are getting your stone up to 850F. Just be sure not to use any, or very little sugar in the dough. Don't use any eggs or milk either as these will only lead to excessive crust color development or excessive charring at those temperatures. If your finished pizzas lose their crisp too fast, you may want to consider reducing the baking temperature, allowing for a longer bake and better crisp on the bottom of the pizza. You may also need to balance the bottom (stone) temperature with the bake to the top of the pizza. If the bottom is done, but the top is still not done to your liking, you may need to lower the temperature to allow more time for the top of the pizza to bake. It is a bit of a balancing act.

Tom Lehmann/The Dough Doctor  
6782

### [\*\*Dough Clinic / Re: thin crust dough\*\*](#)

No, the California thin crust is moderately thin and crispy, more crackery than what you have described. What you have described sounds more like a Philadelphia style crust. This type of crust gets its characteristics from the high oven temperature (800F) that it's baked at along with the requisite short baking time, typically about 90 to 120-seconds. Paper thin, crispy, but does not maintain the crisp for very long.

The dough is a pretty basic one, just flour (high gluten), salt, yeast and water. The formula looks something like this: Flour: 100%; Salt: 2.5%; Yeast: (compressed) 1%; Water: 60%. The Dough is allowed to ferment overnight in the fridge, then opened into dough skins on the following day, and baked directly on the oven hearth. In Philly they eat this type of pizza with a knife and fork.

Tom Lehmann/The Dough Doctor  
6781

### [\*\*General Pizza Making / Re: What Happened To My Dough?\*\*](#)

Bill;

Rerun the test a couple more times to see if you get the same results.

Peter is correct in his assessment, but if there is a difference, it should be consistent and occur each time you run the test.

Tom Lehmann/The Dough Doctor

6780

### **New Forum Members / Re: going from greek style pizza to ny style pizza**

Something to be aware of:

We offer a pizza class every year in October, here in Manhattan, Kansas. It is designed for both experienced and soon to be pizzeria operators. In the class we teach everything from the technology of the different ingredients, to how to make dough, sauce, and assemble pizzas, including all of the various dough shaping procedures. This is a fun filled week long class with both classroom and hands-on instruction. You can get more information on the class by contacting Jeff Zeak at <jzeak@aibonline.org> and requesting information on the Practical Pizza Production Course.

Tom Lehmann/The Dough Doctor

6779

### **Chitchat / Re: pies stick to the peel when starting out**

Actually, the metal peels are meant for removing the pizzas from the oven, while the wood peels are meant for use as "prep" peels. The wood doesn't result in condensation formation between the peel and the dough during the prepping of the dough skin, while a metal peel will. Think of it like this, cool/cold dough and warm peel. While there are any number of favorite recipes for peel dust, my own personal favorite is as follows: Equal parts of white flour, semolina flour and fine corn meal.

Tom Lehmann/The Dough Doctor

6778

### **New Forum Members / Re: Hello from Knoxville, TN**

Regina;

If you haven't already done so, do a Google search using the search word Celiac, or Celiac Diet. This will expose you to the world of gluten-free, which also includes many other food allergies too

[www.celiac.org](http://www.celiac.org)

[www.csaceliacs.org](http://www.csaceliacs.org)

[www.glutenfreediet.com](http://www.glutenfreediet.com)

[www.celiac.ca](http://www.celiac.ca)

[www.wellnessfoods.com](http://www.wellnessfoods.com)

[www.glutensmart.com](http://www.glutensmart.com)

[www.glutenfreemall.com](http://www.glutenfreemall.com)

[www.amazinggrains.com](http://www.amazinggrains.com)

Hopefully some of these will provide you with some direction.

Tom Lehmann/The Dough Doctor

6777

### **Newbie Topics / Re: American Style: How much sauce?**

Here's another option to using sauce. Use thin slices of fresh tomato rather than "sauce". Slice a ripe tomato (any garden variety works well) into approximately 3/16-inch thick slices and arrange as you would sauce, except, you don't need to go for 100% coverage as you would a sauce, just arrange around the edge, keeping an exposed dough edge of about 1/2-inch, then fill in to the center, don't worry about

the gaps between the round slices. This makes for a wonderful flavor as well as presentation.

Tom Lehmann/The Dough Doctor  
6776

### [\*\*General Pizza Making / Re: Techniques for Forming a Rectangular Dough\*\*](#)

Pete;

Another good trick to getting the dough to stay put in the corners of the pan is to first put shortening (Crisco) in the corners of the pan, then use olive oil on the rest of the pan. The dough will adhere to the shortening and help it stay put until the dough relaxes sufficiently so as not to pull back out of the corners. This trick also works well when you are trying to get the dough to hold to the vertical sides of a round pan too.

Tom Lehmann/The Dough Doctor  
6775

### [\*\*General Pizza Making / Re: the secret to ULTRA-THIN crust!\*\*](#)

What you have described for rolling the dough out on "greased" foil is exactly what we do when making a pan style pizza. We use Crisco, margarine, or butter in the pan, then place the fermented dough ball in the center of the pan and push it out to the edges of the pan using your fingers. The dough adheres to the fat and doesn't slide around as it does with oil. We do this same thing using a coupe pan for thin crusts when we want to hand stretch. Just wipe or spray the coupe pan with the fat, and then roll the dough to just about full diameter, and finish stretching the dough to the pan size by hand, then dress and bake as normal.

Tom Lehmann/The Dough Doctor  
6774

### [\*\*Prep Equipment / Re: Another "need mixer advice" thread...\*\*](#)

As mentioned, the Hobart N-50 is a beefed-up, industrial version of the K-5A mixer. It is also a gear drive rather than a rheostat drive, so the speeds are much more positive (consistent) when under a load. Another, often over looked mixer suitable for home use is one of the Hobart bench top mixers such as the A-120 or A-200. These are 12 and 20-quart capacity mixers respectively. I see them being offered at restaurant sales and on the internet from time to time. They are both 110-V, but they will probably require a dedicated circuit of 15-amps, or, you can do as we do at home, use a regular wall receptacle, and just don't use anything else on that circuit while the mixer is running. Note: While these are called bench top mixers, they are still a fairly large mixer, too large for the common home counter top, but we got around that by putting the mixer on its own stand, this lowers the mixer height making it easier to use, and we can easily roll it aside when it is not being used.

Mine is an A-120 that I got with three attachments (whip, hook, and flat beater/paddle) when a local restaurant went out of business for just under \$1,000.00, expensive, but I'll never need to buy another one.

Tom Lehmann/The Dough Doctor  
6773

### [\*\*Dough Clinic / Re: Minimal kneading technique\*\*](#)

Adam;

Due to the fact that during hand mixing of the dough there is a possibility that the ingredients, especially the yeast won't be uniformly dispersed throughout the dough mass. This is the reason why we like to suspend the compressed yeast in the

water prior to adding it to the dough. In the case of ADY, it has to be pre-hydrated in water at 100F before addition, but once it has been hydrated, you can safely add it to the regular dough water for addition. In the case of IDY, while it doesn't need to be pre-hydrated when a mechanical mixer is used, when hand mixing, it is suggested that it first be pre-hydrated in 95F water, and then added to the regular dough water for addition.

Folding the dough is indeed the same as kneading it, but in this application we are only folding/kneading it a few times, not for several minutes as many typically do. When forming the dough piece into a pizza skin, we begin opening the dough ball from the center out, without ever touching the outer edge of the dough piece. This provides for a light, very porous rim to the baked crust. In some cases we will use a rolling pin to pin out the dough ball to only about 2/3 of the desired diameter, and then complete the opening process by hand stretching. This process also results in a decent raised edge. The main difference between mechanical gluten development and biochemical gluten development is that biochemical gluten development, when taken at the right time gives you full gluten development without any toughness or memory in the dough, while a dough that is mechanically mixed to full gluten development will be tough and rubbery. There is nothing to fear when hand mixing or kneading and then giving the dough time to ferment for biochemical gluten development as this will not result in excessive gluten development, but do keep in mind that the time needed for complete biochemical gluten development may be a little shorter when a significant amount of kneading has already been done to the dough. I hope I have answered your questions, please feel free to ask if you should have any more questions.

Tom Lehmann/The Dough Doctor  
6772

### **Newbie Topics / Re: Pizza School - 101**

JJP;

Actually, we do a pizza school. It is a pizza class that we offer once a year, we've been doing it for over 25 years now. The name of the class is Practical Pizza Production and Technology. Before getting into dough formulations, sauce formulations, etc., we cover the basic function of ingredients that make up each of the component parts of the pizza (dough/crust, sauce, cheese, and meat toppings, then we go on to pizza pans and tools, this year we are adding a presentation on (POS) systems, and a suppliers presentation period, then we go into the fun part and begin making dough and sauce, followed by lots of pizzas. The class is designed for everyone from home pizza makers thinking about opening their own shop, to existing store owners wanting to know more about the technology side of pizza production. To learn more about this class, go to our web site at <[www.aibonline.org](http://www.aibonline.org)> and look under seminars/ School of Baking.

Tom Lehmann/The Dough Doctor  
6771

### **Dough Ingredients / Re: Whole wheat cinnamon smell?**

Yep, some way or another it got contaminated with cinnamon. They are both dark in color, and someone might have gotten the two confused, or failed to wash out a cinnamon container before filling it with whole-wheat flour. You should bring this to the attention of the manufacturer along with a sample of the flour. The ramifications of an error like this could be devastating, so please bring it to their attention as soon as possible.

Tom Lehmann/The Dough Doctor  
6770

## **Cracker Style / Re: St. Louis (Imo's) Style Crust**

For the Provel cheese try a blend of 75% Provalone cheese and 25% Velveeta cheese.

Tom Lehmann/The Dough Doctor  
6769

## **Dough Ingredients / Re: Whole wheat cinnamon smell?**

PC;

The only aromas associated with clean, whole-wheat flour, bought as a ready milled product, or milled at home are 1) A grainy aroma which is normal. 2) A rancid aroma, slightly sharp and heavy. This is not a desirable aroma as it is due to rancidity of the wheat/flour. Whole-wheat flour will go rancid within a month of milling if not correctly stored (frozen or refrigerated) due to the germ oil being present in the whole-wheat flour. I would consider any other aromas to be "foreign".

One of the foreign aromas that we pickup occasionally is a musty aroma (think old, wet/damp newspapers), this can be caused by improper storage of the flour or wheat prior to milling/grinding. In this case the wheat/flour was stored in a damp location and it may have begun to mold (reason to discard). In some baked products made with whole-wheat flour we find a fruity/melon like aroma. This aroma is due to "rope" spores. Rope is a spore forming bacteria that is not destroyed during the baking process, and is in fact activated in the oven. It manifests itself by forming the characteristic aroma. Rope is soil borne, so it tends to be more prevalent in whole-wheat items, but it can still affect products made with regular white flours too. Rope is not dangerous, but the aroma is not desirable, so any products found with this aroma should be immediately discarded. In a bakery setting the rope infection can be transferred to other parts of the bakery making it extremely difficult to get rid of. FYI: Vinegar will kill rope spores on contact. So if you ever find that you have this pesty little number as a visitor to your kitchen, just wipe everything down with a sponge or towel soaked in regular, household vinegar.

Tom Lehmann/The Dough Doctor  
6768

## **Dough Clinic / Re: Minimal kneading technique**

Adam;

I'm like you, and firmly believe in the KISS principal, so, following this rule, I like to say "use between 1/2 and 1-cup of water to hydrate the yeast in."

One question that I always ask our students: What one common denominator do water, electricity and man all have in common?

Answer: They all take the path of least resistance.

I'm with you, keep it simple.

Tom Lehmann/The Dough Doctor  
6767

## **Dough Clinic / Re: Minimal kneading technique**

Peter;

You are correct. The usual recommendation is to use about 4 to 5 times the weight of yeast as water to hydrate it in. When I teach home pizza baking most of the time we are using a pound or more of flour so the total weight of water will be at a cup or more, putting the amount of water used for hydrating the yeast in at most 1/2 cup, but probably better at 1/4 cup or even a little less. I stand corrected.

The main thing I try to teach is that the amount of water used to hydrate the yeast in isn't as important as having enough water left over to add at a lower temperature to achieve the desired finished dough temperature.

Thanks for calling that one.

Tom Lehmann/The Dough Doctor  
6766

**Dough Clinic / Re: Dough not uniform.....**

Oz;

Part of your problem might have to do with the dough temperature. What is the temperature of the dough immediately after mixing?

We normally look for something in the 80 to 85F range, but this is not hard and fast, so it can vary to some extent.

Try forming the dough into a ball after mixing, wiping it with oil and placing it into a bread bag, then twist the open end into a pony tail and tuck it under the dough ball as you place it in the fridge (DON'T TIE IT CLOSED). Allow the dough to ferment overnight (16 to 48-hours), then bring the dough out of the fridge and allow it to temper AT room temperature for about 90-minutes, turn the dough out of the bag into a bowl of flour, turn the dough ball to thoroughly dust it with flour, then pick it up and dust off the excess flour, place the dough onto a lightly floured surface and, using a rolling pin, roll the dough out to about 2/3 of the diameter you want to have. Now, using your hands, begin stretching the dough out to the desired diameter, making sure to keep your fingers about 1/4-inch away from the edges.

This will help to give the finished crust a nice raised edge. From that point on, process it in your normal manner, then with a bit more practice, you will become more proficient, and make a better looking, more uniform skin each time, and enjoy some great pizzas along the way.

Tom Lehmann/The Dough Doctor  
6765

**Dough Ingredients / Re: Yeast stopped working. Dough-y no rise-y anymore!**

Wow, In our microwave, that much water for 50-seconds at full power the water will be very hot. The thermal death point for yeast is about 140F, or a little less. It could be that the water was too hot and killed the yeast. For hydrating the yeast (ADY) you want to use 100F water (use a thermometer), if you are rehydrating IDY the correct water temperature is 95F.

Yeast does have a shelf life. If it is unopened, IDY will have about a 1-year shelf life, while ADY will have about a 6-month shelf life. Once opened, you will probably see some loss of yeast activity (but not total loss) after two weeks for either IDY or ADY, and you should try to use it up within 30-days. Yeast is cheap, and it just makes good sense to use fresh yeast whenever possible. By the way, we have kept IDY, in unopened packages, in the freezer for up to two years and only lost about 25% of the yeast activity, not bad, all things considered.

Tom Lehmann/The Dough Doctor  
6764

**Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza**

Hi Norma;

When comparing the nutritional properties of a whole-wheat crust against those of a crust made from enriched white flour, the whole wheat crust has a much higher fiber content (which is good for you), but the crust made with enriched white flour has an equally as good nutritional profile (it's enriched to the same nutritional

profile as whole wheat flour), or possibly better due to the additional fortification of folic acid, but as indicated above, it is still lacking in fiber content. I guess it all depends upon your definition of "more nutritious". Putting on my technical hat for a moment, I would say that for women of child bearing age, the crust made with enriched white flour would be the better pick due to the fortification of folic acid. Personally, I like the texture and chew of the whole wheat crust, as for flavor, yes, it is different due to the bran being present. At home, I cannot tell you the last time we bought white bread.

By the way, did you finally get those garden pests under control?

Tom Lehmann/The Dough Doctor  
6763

## [\*\*Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza\*\*](#)

Norma;

Because the sprouted grains are so high in amylase activity, you have two options, one is to dry them, but make sure they get above 160F during the drying process to make sure you have deactivated all of the amylase enzyme, or another option is to simply add the damp, sprouted grain very late in the dough mixing process, much like you would add raisins to raisin bread. I like to add them about 3 to 4-minutes before the dough mixing is completed. This limits the length of time the enzymes have to work so it also limits their effect upon the dough, while still contributing flavor and mouthfeel top the finished product.

Our garden is going great guns! We are sauteing the peppers and freezing them, and cutting all of the surplus tomatoes into small pieces and drying them (like sundried tomatoes) for use later in the year in stews, pizza, and soups. Squash is doing well too, but running out of ideas for using it. We are making a butternut squash soup once a week...really good!! And or favorite for zucchini and yellow summer squash is to grate two medium size squash (coarse grated), then fine grate about an inch of fresh ginger root. Then grate the zest from 1/2 of a medium size lemon, combine in a sautee pan and heat thoroughly with an ounce or two of butter. Add 1/2 pint of whipping cream and heat to a medium boil in the sautee pan, plate up wide noodles and spoon the squash over the two plates equally, sprinkle with Parmesan cheese add a little black pepper to taste, and enjoy!!

Tom Lehmann/The Dough Doctor  
6762

## [\*\*Dough Ingredients / Re: Yeast stopped working. Dough-y no rise-y anymore!\*\*](#)

Here's my two cents worth.

ADY and IDY, the instant part of IDY is in reference to the rate of hydration for the yeast. IDY hydrates more quickly than ADY, this is why it can be added to the dough without prehydration, this is also why it tends to tolerate cold water hydrating better than ADY. The whole thing about prehydrating yeast is to minimize the flushing effect of cold water entering into the yeast cells and flowing out, bringing with it the plasma material from within the yeast cells (glutathione). When this happens, the yeast cells are not killed, but they don't ferment nearly as well as sound yeast cells do. Also, there is a reducing (softening) effect upon the dough from the glutathione. This may not be seen as readily by home pizza makers as it might be interpreted as just a little too much water, but in a pizzeria or other large production facility it can mean difficult dough handling properties, or even collapse of the dough at some point. Is it absolutely necessary to prehydrate IDY or ADY in water at specified temperature? In home made pizza dough, the answer is no, will it hurt anything if you do prehydrate it? The answer again is no. So what

is the benefit to prehydrating ADY and IDY? The answer is better, overall yeast performance and consistency. How hard is it to get a small amount of water at 95F for IDY or 100F for ADY? Not hard at all. Just remember that both of these temperatures are at near skin/body temperature, it only takes a minute, actually, just a few seconds.

Tom Lehmann/The Dough Doctor  
6761

### [\*\*General Pizza Making / Re: Pizza Anarchy\*\*](#)

I hear you loud and clear. Person after my own heart!

I teach pizza and bread baking to local farm families and one of the things that I try to get across in each session is that making pizza dough, as well as bread dough isn't rocket science, and toppings need not be expensive. I ask that each person attending the class clean out their fridge, and bring the "cleanin's" with them in a plastic bag. These become the toppings. We have used things like hotdogs, polish sausage, mashed potatoes, steak, pork chops, one lady thought she had me when she brought a bowl of bean soup. We blended it into the sauce to add a background flavor note. Like you, I also show how to use common toppings such as garden tomatoes and spice them up a bit to make some truly great pizzas. Making pizzas and breads at home can be a complex/technical, or as simple/easy as one wants it to be, and for the most part, it is all good, sometimes better than others, and sometimes even superb, but always a treat for the family, and ultimately, that's what it's all about. Having fun, making good food, and enjoying our mistakes as well as our masterpieces.

Welcome aboard!

Tom Lehmann/The Dough Doctor  
6760

### [\*\*Dough Ingredients / Re: Grinding Flour Fresh from a Wheat Field to Make a Pizza\*\*](#)

Norma;

I would recommend working in 5% increments based on the weight of the flour. So, begin with 5% addition of sprouted grain, then go to 10%, and work your way on up until you see something you really like, or don't like. I've probably mentioned this before, but one of the unique things that I found when I was doing a lot of work with sprouted grains in bread dough formulas was the development of a malted milk like flavor....interesting. Also, if you have dried the sprouted grain, be sure to hydrate it in warm water before adding it to the dough. You just want the grains to be soft to the bite, not hard or crunchy. In this way the sprouted grains also provide a unique mouthfeel, much like that of a multi-grain bread.

As for the sun dried tomatoes, we have been using both our cheery tomatoes and the heritage varieties for drying. The cherry tomatoes we just cut in half, and place on the dehydrator trays cut side up. For the heritage tomatoes, I cut them into wedges, 4 to 8, depending upon the diameter/size of the tomato. I then cut each wedge in half, and place onto the dehydrator screens with the cut side up/skin down. We set the temperature at 125F and it takes about 14-hours until the tomato pieces are soft and leathery. It might take a little longer if the dehydrator is completely full. We then transfer the dried tomato pieces to a sandwich size baggie and place in the freezer for storage. To use, either add just as they are, or soak in a little olive oil for a few hours. When used in soups, chili, or stews, we like to add them just as they are and let them hydrate in the juice of the dish, but when we use them on pasta or pizza we like to soak them in olive oil first. They provide a WONDERFUL flavor.

Tom Lehmann/The Dough Doctor  
6759

**[Dough Ingredients / Re: Yeast stopped working. Dough-y no rise-y anymore!](#)**

Peter;

I'd bet that Luigi is just doing it the way he learned to do it. I don't think abusing the yeast by re-hydrating it in cold water is the correct way to slow down fermentation, but to each his own. I'm in your court, in that if I want to slow down the fermentation I'll just save a few pennies and use less yeast, or adjust the temperature of the dough water to give me a slightly cooler dough off of the mixer, hence a slower fermenting dough, but that is using a technology that everyone is not familiar with, which, underscores one of my main objectives, to provide useful information and increase the technical understanding of the ingredients and processes that go into the making of our favorite food PIZZA.

Back when I first started at the PMQ web site I was accused of speaking and writing in a foreign language. That was the language of "bakers percent". Today they all speak that language over there, and many of the long time regulars have developed an excellent understanding of the more technical aspects of dough, sauce, and pizza production.

Tom Lehmann/The Dough Doctor  
6758

**[Dough Ingredients / Re: How Long Does IDY Last???????](#)**

We did a study on IDY a number of years ago and we found that unopened packages lost about 25% of their activity, as compared to fresh stock, when stored in a freezer for a period of two years. When we stored it in a south facing window for the same length of time the deterioration was in the neighborhood of 40%. That really isn't bad, all things considered. Once opened, the two mortal enemies of IDY are air and moisture. If you open a bag and plan to use it over the next two weeks you are probably better off storing it at room temperature (65 to 75F) as this will prevent condensation from forming on the yeast each time you remove it from the fridge and open it to use. If you will not be using it for some time, the best way to store it is to either leave it in the original bag, and roll the bag down tight onto the yeast, excluding as much air as possible, securing it with a rubberband, and then storing it in the fridge. The biggest mistake that people make when storing it is putting it into an air tight container that has a huge head space of air above the yeast. It is much better to place the yeast into a plastic bag, in this case, such as a Baggie, and press out the air before sealing it. This will ensure the best activity when you go to use it the next time.

Tom Lehmann/The Dough Doctor  
6757

**[General Pizza Making / Re: White Sauce recommendations or recipes anyone?](#)**

My own personal favorite is an Alfredo sauce to which I add some basil pesto that I make from my home grown basil. This year we are drying tomatoes, it seems by the bushel, so I'm looking forward to making some home brewed dried tomato pesto and using that in the Alfredo.

The Alfredo sauce is great when making a chicken topped pizza, or even a vegetarian presentation. Try Alfredo sauce sprinkled with dried dill weed, and top with a variety of seafood, add some onion, a few slices of fresh tomato, top lightly with Mozzarella cheese and finish with a sprinkle of grated Parmesan cheese.

Tom Lehmann/The Dough Doctor

6756

**General Pizza Making / Re: White Sauce recommendations or recipes anyone?**

I make a quick and easy Alfredo sauce by cooking together 1/4 stick of butter, 1-cup of whipping cream, 2-cloves of garlic (minced) and 1.5 cups of Grated/powdered Parmesan cheese. To this I like to add a couple tablespoons of my home made basil pesto, or you could use any commercial basil or sundried tomato pesto.

Tom Lehmann/The Dough Doctor  
6755

**Dough Clinic / Re: High Altitude**

Abe;

With yeast leavened products there is no need to make any adjustments until you reach about 7,000-feet (think Cree). With chemical leavening (baking powder) you do need to make an adjustment of roughly 8% less for every 1000-feet increase in elevation above from the elevation that the product was formulated at. You will find that the baking is somewhat different in Denver than in Chicago. I would recommend that you bake at 15 to 25F higher temperature.

Tom Lehmann/The Dough Doctor  
6754

**General Pizza Making / Re: White Sauce recommendations or recipes anyone?**

I make a great dessert pizza using a cheese base and fresh fruit. To make the cheese base:

16-ounces of cream cheese or creamy Ricotta

8-ounces powdered sugar

Mix together until smooth, then add 2-whole eggs (about 100-grams) and mix in well.

Then add 16-ounces of sour cream and mix until smooth and creamy. The mixture should have the consistence of mayonnaise or soft butter. If it is too stiff, add a little milk or cream to thin it slightly.

Apply about 1/4-inch thick to the dough skin, then add the fruit of your choice, such as thin slices of apple, banana, halved grapes, sliced strawberries, blue berries, Mandarin orange slices, mango slices, peach slices, or slices of kiwi. Bake as you would any thin crust pizza. Allow the baked pizza to cool for a couple minutes, then drizzle with a powdered sugar icing. Serve: Fresh and hot as is, or alamode, or serve it cold.

Tom Lehmann/The Dough Doctor  
6753

**Dough Clinic / Re: Any New Ideas?**

Norma;

You should be able to make pizzas on a fried crust (think Indian Bread), like is sold at Arizona and New Mexico festivities. You could also roll the dough out very thin, cut into squares and fry. After frying, dust with a cinnamon sugar mixture and serve. You might also try making something like a fried breadstick, and roll it in a cinnamon sugar mixture after baking, or serve it with a small plastic cup of cinnamon sugar dipping icing (powdered sugar and water plus a little cinnamon). Here is one that might be a bit far out on the limb; Push a wood Popsicle stick into a length of Italian sausage (kept hot in your heated cabinet) then wrap it in pizza

dough, and fry it like a corn dog, serve with a plastic cup if pizza sauce for dipping.  
Note: Some of these items will probably need to be fried submerged, so be sure to have a submerging screen handy when you're testing these out.

Tom Lehmann/The Dough Doctor  
6752

**Dough Clinic / Re: Advice on dough and cooking times for the perfect Neapolitan delivery pizza**

Kate;

Neapolitan pizzas are a poor choice for a delivery pizza due to their thin crispy bottom crust. It either turns to mush or gets soft and leathery within minutes of going tint the box, not to mention the insulated bag where it will be nicely steamed for nearly 30-minutes. But id you insist: Reduce the oven temperature to 500, not more than 550F, and bake the pizza as long as possible, then place onto a cooling rack for about 60-seconds before boxing and bagging for delivery. This will allow a good deal of the steam to move off of the pizza before packaging. Another option that you have is to package the pizza on an ovenable disk, similar to what is used be Papa Murphy's on their take and bake pizzas, I'm thinking just a flat disk in this case, the consumer is instructed to put the pizza into a HOT oven to dry and re-crisp the pizza. If they'll bake a take and bake pizza, why wouldn't they do this too? As I see it, those are your best shots.

Tom Lehmann/The Dough Doctor  
6751

**Dough Clinic / Re: Minimal kneading technique**

Adam;

We do cracker type crust this way and we use only 45% dough absorption. There is still a lot of dry flour in the bowl after we mix it, but by the following day, after 4-hours at room temperature plus overnight in the fridge, we have a cohesive dough mass that can be folded a couple times (literally) and then portioned and formed into balls (not very pretty dough balls). The dough balls are then allowed to ferment at room temperature until they can be opened into pizza skins using a rolling pin (remember, this is a thin, cracker type crust).

Tom Lehmann/The Dough Doctor  
6750

**Dough Clinic / Re: Dough problem**

Most home type, stand mixers, like the Hobart K5A have a very narrow dough hook configuration which does not do an especially good job of catching the dough, as a result, it may take a considerable time for it to sufficiently develop the gluten sufficiently for it to form a ball and actually begin mixing, so don't worry about the long mixing time. As for the bready crust condition, begin increasing the dough absorption to achieve a softer dough, this will expand more freely during the early baking stage (oven spring) resulting in a lighter, more porous crumb structure that will actually bake out better and produce a crispier finished crust texture.

Tom Lehmann/The Dough Doctor  
6749

**General Pizza Making / Re: from peel to oven....**

Wood peels (with a beveled edge) should be used as your prep-peel (the one you make your pizza on and then use to peel the dressed dough skin into the oven with). The metal blade peels are best reserved for spinning and removing the pizzas from the oven. I like to use use a mix of equal parts regular flour, semolina

flour, and fine corn meal for my peel dust, but I've seen rice flour, whole wheat flour, wheat bran, corn meal, semolina flour, regular white flour, and even coarse rye flour used as a peel dust. Regular white flour is perhaps my least favored as it will scorch and take on a bitter taste, plus, it doesn't provide the same level of "slip" on the peel as some of the others do. Corn meal is perhaps the easiest to use as the dough just seems to want to slide off of the peel when it is used. Experiment to see what works best for you.

Tip: Just before putting the dressed dough into the oven, give the peel a to and fro shake to get it moving a little on the peel, then place it into the oven.

Tom Lehmann/The Dough Doctor  
6748

### **New York Style / Re: dough very stretchy and was tearing...**

IDY at 0.6% is about double of what we typically use. That amount will work OK for making bread, but I think 0.3 to 0.4% IDY will work better for you in pizza dough. You should also have taken the dough directly to the fridge after mixing and balling rather than letting it set out and ferment first. A fermented dough is very hard to cool when you put it into the fridge. If you still find the dough to fragile, increase the protein content of the flour by using all KA flour.

Tom Lehmann/The Dough Doctor  
6747

### **Stones/tiles/steel, Pans & Accessories / Re: Home Made Pizza Peel**

Ron;  
Forget the pizza! Don't get me wrong, it looks great, but the peel is even better!  
Go into the peel making business!!  
I bet there are a lot of readers here that would "belly up to the bar" to buy one.  
Great work.  
Tom Lehmann/The Dough Doctor  
6746

### **Dough Clinic / Re: can to much clorine in tap water bleach out unbleached flour?**

Actually, no. When commercial bread is made with unbleached flour, the flour has that creamy color, but the color cannot be seen in the dough. Fast forward to the finished bread and you can see that same creamy color in the crumb that you saw in the flour. Due to the huge variation and inconsistency in the crumb structure of a baked pizza crust it is all but impossible to see the creamy color unless you actually do a side by side comparison of two different crusts, one made with bleached, and the other made with unbleached flour, then you can see an overall, slightly creamy or yellow color in the crumb of the crust made with the unbleached flour. However, when chlorine, or a chlorine like compound is added to the water, it lowers the water pH, making it more acid, which is not good for plumbing fixtures, so the municipality buffers the water back to close to 7.0 (neutral), but in many cases they actually get the water too high in pH (slightly alkaline), and this is what has such an adverse effect upon yeast activity (yeast is an acid loving organism). I know this because this is what our problem is here in Manhattan, Kansas. How do you correct for this, simple, just add a small amount of vinegar, or cream of tartar to your doughs to correct for the high pH of the water. You can also check your water pH by using some litmus paper strips available from any drug store. Also, remember not to mix the yeast with the salt, and/or sugar as they do not play well together.

Tom Lehmann/The Dough Doctor

6745

**[Pizza Cheese / Re: raw organic milk mozzarella](#)**

Hi Norma;

Just a cautionary warning.

Working with raw milk is like working with raw, shell eggs (like putting an egg wash on calzones). The milk or egg will be heated to a point where it is safe, BUT, cross contamination now becomes the issue, think about how aprons, towels, work surfaces might become contaminated prior to the heating process. Even your hands can/will contribute to cross contamination. Be smart, be careful, be safe.

Tom Lehmann/The Dough Doctor

6744

**[Chicago Style / Re: Chicago crust from America's Test Kitchen](#)**

Actually, if you go back a few years ago, you might remember when Tony's introduced its Italian Pastry Crust Pizza. This was sold in the frozen food case at your local supermarket. It was a type of laminated crust, but rather than putting the fat onto the dough as an unbroken layer, it was added in the form of hard fat flakes and mixed into the dough toward the end of the dough mixing cycle, then, during the dough processing (forming) it was given several simple folds and reduced it thickness to about 3/16-inch, and die cut into skins of target diameter. During baking, the dough delaminated, and also produced voids where the fat flakes were, resulting in a finished crust with pastry like characteristics. Around this same time we saw pizzas that were made on a croissant dough base, made exactly as you have described, or very close to it.

Tom Lehmann/The Dough Doctor

6743

**[Dough Clinic / Re: dough storage advice](#)**

Neither, a loose fitting lid will work fine. I've used a piece of foil loosely crimped over the pan and that works fine, or you can oil the dough and put it into a bread bag, then twist the open end closed to form a pony tail, and tuck the pony tail under the dough ball as you place it into the fridge.

Tom Lehmann/The Dough Doctor

6742

**[Dough Clinic / Re: can too much chlorine in tap water bleach out unbleached flour?](#)**

Craig;

Both salt and sugar can/will irreparably harm the yeast if allowed to remain in direct contact with it for any length of time. Both the salt and sugar will plasmalize the yeast by drawing the plasma material out of the yeast cells. To see this first hand, just take some fresh yeast (cake yeast) and put it into a container with some salt or sugar, the salt or sugar will begin to absorb moisture from the yeast, thus damaging it. True, it does take some time for this to happen, and if you are careful to not let the salt/sugar yeast mixture set for any period of time, little if any real damage will be done, but everyone isn't so diligent, that's why we always say not to allow the salt and/or yeast to come into direct contact with each other.

Tom Lehmann/The Dough Doctor

6741

**[Dough Clinic / Re: can too much chlorine in tap water bleach out unbleached flour?](#)**

I've never seen "potable" water with a chlorine level so high so as to kill the yeast. While some municipal water supplies might reek of chlorine, there is actually very little chlorine in the water. Chlorine is a recognized carcinogen and as such it is regulated in drinking water supplies to I believe 100 parts per billion residual chlorine. Like I said in my previous post, I think the pH of the water will have a much more dramatic effect upon yeast performance than the chlorine content.

Tom Lehmann/The Dough Doctor  
6740

### **Dough Clinic / Re: Question, about how two doughs mixed together became okay?**

Norma;

When you first mixed the two doughs together the resulting dough became what we call very "bucky", meaning tight and elastic. You can see this very same thing happening if you take a dough ball that is properly fermented and re-round it just before trying to open it into a dough skin. When you allowed the dough to continue fermenting the gluten relaxed due to exposure to the acids and enzymes of fermentation, thus allowing the dough to become soft and extensible once again. This is why we always say to never re-round the dough balls just prior to opening them into skins.

Tom Lehmann/The Dough Doctor  
6739

### **Dough Clinic / Re: Dough Storage - Dough tray vs sheet pans**

Aero;

What kind of cooler are we looking at using? A reach-in cooler limits your options to sheet pans, while a walk-in cooler allows for the use of dough boxes or sheet pans. I like to use food contact approved plastic bags to cover the sheet pans as they can usually be reused a number of times, while Saran wrap must be discarded after every use. Both Saran wrap and plastic bags constitute a parasitic cost, while dough boxes, being more costly up front, are actually cheaper to use in the long term as there is no parasitic cost associated with them except for an occasional washing. In production, we typically don't need to wash the boxes after every use, we just scrape them out (they scrape out very easily) and reuse them. The sheet pans need to be scraped and washed after each use as the dough has a tendency to adhere to the metal pans, resisting all attempts to scrape them clean. Oiling the pans can alleviate this, but then you need to be very careful that the dough pieces don't skate around on the pan to form a cluster, you then end up with one large piece of dough on the pan on the following day.

Tom Lehmann/The Dough Doctor  
6738

### **Dough Clinic / Re: Dough problem**

I have a number of different thin crust dough formulas posted in the RECIPE BANK at [www.pmq.com](http://www.pmq.com). Go to their home page and the recipe bank will show up as a drop down under the heading of "culinary". Use the word "dough" for your search word.

Tom Lehmann/The Dough Doctor  
6737

### **New York Style / Re: Problems with Dough**

Varun;

If you are looking to make a softer, more tender eating crust try adding fat, either

as oil or shortening to the dough. If you add 6% fat (based on the total flour weight) you will get a softer eating crust with reduced chew/toughness, especially in the edge portion. In new York that toughness in the edge is a desirable feature, but in other market areas it is not. I've seen the fat levels as high as 15% in some pizzas crusts that had a very tender eating characteristic. One more thing, if you use oil, be sure to reduce the amount of water added to the dough by the same amount as you are increasing the fat content. Failure to do this can result in an excessively soft, and sometimes difficult to manage dough.

Tom Lehmann/The Dough Doctor  
6736

### **New York Style / Re: Problems with Dough**

Varun;

For a 12-inch pizza we use anything from 9 to 16-ounces of dough weight. Obviously, the 9 and 16-ounce weights make a very thin and thick crust respectively, but these are more or less the extremes for a 12-inch pizza. I think anything between 11 and 12-ounces is a good starting point for most 12-inch pizzas, and you can adjust the dough weight accordingly from there to achieve the crust thickness you're looking for.

With proper dough fermentation (biochemical gluten development) and a stainless steel table, you shouldn't have any problem in opening the dough to 12-inches. One trick that I teach to our students is to use a dough roller/sheeter, or just a rolling pin, and open the dough ball to about 3/4 of the target diameter, then finish opening the dough by hand tossing or stretching on the stainless steel table top. I mention stainless steel as it is really easy to open the dough on it by the hand stretching method. On a wood table top the dough is very difficult to open by the hand stretching method.

Tom Lehmann/The Dough Doctor  
6735

### **Dough Clinic / Re: Dominican Dough**

Try this and let me know what the result is:

Put 3-cups of flour, and 1-tablespoon of salt in a bowl, add 9-ounces of cool water and your yeast. Mix for a couple minutes, cover with a piece of plastic and come back to it 2 to 3-hours later. Turn the dough out of the bowl onto a floured table top. Is the dough manageable, or is it extremely soft and sticky, to the point where you can't do anything with it? Let me know. If it is manageable, I can work it out with you. If it is totally unmanageable, you have flour with high starch damage, and the yeast is hydrolyzing the damaged starch into sugars. The only option you have then is to limit the total fermentation of the dough to not more than 1-hour.

I've been to and worked in the D.R. a number of times, and you do have some decent flour with normal starch damage available, but it may not be available outside of industrial size orders.

Tom Lehmann/The Dough Doctor  
6734

### **Dough Clinic / Re: What is the Dough Doctor's favorite dough?**

I think my all time favorite crust is a thin, cracker crust (Chicago style), my least favorite, boy, that's a hard question to answer, as my motto is: "I've never had a pizza that I couldn't learn to like", would probably be any crust that is not well fermented, as for type, it would have to be a poorly made deep-dish pizza that would get my vote for my least liked pizza. Toppings, that's an easy one, fresh tomato slices, onion, green peppers, sausage, and mushrooms (in addition to the

normal sauce and cheese). One more thing, I've really grown fond of using fresh basil in place of the dried stuff, and I like to add a healthy sprinkle of Parmesan and Romano cheese to the pizza too. You do realize that this is making me really hungry! I've gotta make a stop at my all time favorite pizza place: AJ's New York style pizza (Manhattan, Kansas). No, he doesn't make the cracker type crust that I'm so fond of, but he has the best, and crispiest New York style slice I've ever had, and the service is great. You can see his web site at <[www.ajsnypizza.com](http://www.ajsnypizza.com)>.

Tom Lehmann/ The Dough Doctor  
6733

### **Pizza Cheese / Re: raw organic milk mozzarella**

Just a cautionary note, there is a major epidemic with Listeria as I write this, a number of people have died since August. Listeria is fairly common in raw milk and can also be found in cheese. When consuming raw milk, and especially if you plan on ever selling/sharing any raw milk or product made from it, be sure to have it micro tested, and tested often. If you want to see the latest articles, please send me a request.

Tom Lehmann/The Dough Doctor  
6732

### **Dough Clinic / Re: Freezing dough**

Rumper;

Well, yes and no. When the dough will be frozen, even in a very inefficient home freezer, it will hold up remarkably well for a week to ten days, without the need to add any "secret" ingredient. If I was going to put my money on a "secret" ingredient it would be ascorbic acid which acts as an oxidant in the dough, thus strengthening it to some extent, but it really isn't needed, so in my opinion, it is just a waste of money.

Tom Lehmann/The Dough Doctor  
6731

### **Pizza Cheese / Re: raw organic milk mozzarella**

Here is a sample of what comes across my desk all too regularly.

<[www.yakima-herald.com/stories/2011/09/20/granger-dairy-recalls-raw-milk-over-e-coli-concerns](http://www.yakima-herald.com/stories/2011/09/20/granger-dairy-recalls-raw-milk-over-e-coli-concerns)>

Caution and food safety awareness are key issues with raw milk and products made from it. I'm not saying don't do it, but be educated, and be careful.

Tom Lehmann/The Dough Doctor  
6730

### **Dough Clinic / Re: What is the Dough Doctor's favorite dough?**

Actually, AJ's is a slice operation that I helped Adam Peyton (the owner) develop. You can read about my new slice concept in PMQ Magazine (A New Approach to Pizza By the Slice). It was published about three years ago. AJ's is the third store to use this concept, that is different from all others. The first store opened in Bangkok, AJ's was the second, and the third was in San Antonio, TX (now defunct due to mismanagement). We use a well fermented dough, top shelf, whole milk Mozzarella cheese, all fresh prepared toppings, accompanied by a generous helping of great, and friendly service. We use an open kitchen concept so customers can see the dough skins being passed through a sheeter to partially open them, and then hand tossed to full diameter (this method of opening results in a more uniform dough thickness), the pizzas must be baked on the Hex Disks from Lloyd Pans, and they must be baked in one of the new generation of air

impingement ovens with a specially developed finger profile developed specifically for this application.

By the way, to answer your question of why do I like the Chicago style thin cracker crust, the answer is because I'm originally from Chicago, and that is the type of crust that I remember growing up with. In case you're wondering, there ain't anything crispy, except for the four corner pieces (party cut) of a Chicago cracker crust. But since the crispy corner pieces are everyone's favorite pieces, and the first ones to go, I developed a process for making a Chicago style cracker crust that is crispy across the entire bottom. Now, I can REALLY enjoy my Chicago style cracker crust pizzas!

Tom Lehmann/The Dough Doctor  
6729

### **Dough Clinic / Re: Caputo Flour**

W.W.;

If you have done as much formula testing as you say you have and still have not achieved a crispy bottom crust on your pizzas, I don't think changing to a Caputo (red) will make much difference, I think I would concentrate instead on how I was baking my pizzas. What can you tell us about how you bake your pizzas?

Tom Lehmann/The Dough Doctor  
6728

### **Dough Clinic / Re: Caputo Flour**

W.W.;

The blue is a little lower in protein content. We don't like it as much as the red as the dough is somewhat softer and more difficult to work with especially when you're tossing the dough as we do.

I think you answered your question as to why you are not getting the crispy bottom on your pizzas. With a 2-minute baking time you are getting a very thin bottom crust which will go soft very fast after removing it from the oven. For a test, see if you can find a seasoned pizza screen and bake a pie on it. The air gap created by the screen will reduce the heat to the bottom of the dough, thus slowing down the bake. With a longer bake, you will develop a heavier bake on the bottom of the pizza, and a crispier crust which will hold its crisp for a longer time. If that works, you will need to reduce the deck temperature to some extent. In wood burning ovens, I normally look for a 4-minute bake time for the crispiest pizzas that will hold their crisp for more than a couple minutes.

Tom Lehmann/The Dough Doctor  
6727

### **Dough Clinic / Re: What is the Dough Doctor's favorite dough?**

Ted;

Here is a good N.Y. style dough formula based on 25# of flour (All Trumps, or equivalent)

Flour 100% 25-pounds  
Salt 1.75% 7-ounces  
IDY 0.375% 1.5-ounces  
Olive oil 2% 8-ounces  
Water (65F) 58% 14.5-pounds

Note: To use whole wheat and semolina flour in the above formula:  
Replace 3.75-pounds of white flour with Con Agra Ultra grain flour.  
Replace 2-pounds of the white flour with semolina flour.

Increase the total dough absorption to 65% (16.25-pounds) This may need to be adjusted depending upon the actual absorption properties of the flour that you are using, plus your handling techniques. Remember, the dough will be slightly tacky immediately after mixing, but this is normal for this type of dough. It should dry up to some extent by the time you are ready to use it on the following day. This is due to the slower hydrating properties of the semolina flour and the whole wheat flour.  
Tom Lehmann/The Dough Doctor  
6726

### **Dough Clinic / Re: Frozen Commissary-Produced Dough Balls**

Peter;

Yes, then can use static freezing rather than blast freezing, but.....the freezing time will be unacceptably long in most cases, so they employ blast freezing to get the freezing time down to something in the 30 to 40-minute range. The now defunct, Pizza Magia used to use a static, walk in freezer to freeze all of their commissary production. The freezing time was 6-hours on wheeled racks. The only reason why they were able to use static freezing was because they were producing for only a very limited number of stores. Their production schedule was to produce the order of dough balls and get them into the freezer as quickly as possible, then they would begin clean up, followed by building the boxes for the dough balls, then they would take a break, and begin setting up to package the frozen dough. As the boxes were filled, they were labeled and sealed, and placed back into the freezer. The boxes of dough were shipped out from the commissary later that night.

Donato's, Domino's, Pizza Hut, all employ blast freezing for their dough for the efficiency it affords. You can run the dough through the blast freezer and package it as it comes out, then pallet the cases of dough and move them back into a holding freezer at -10F until you're ready to ship.

Tom Lehmann/The Dough Doctor  
6725

### **Dough Clinic / Re: Cant seem to get that fat brown crust**

F.C.;

From the picture, it looks to me like insufficient oven temperature. Have you checked the temperature of your oven lately with an oven thermometer? We normally don't use sugar in any of our dough formulas and they brown quite nicely, even in a home oven, if we want to have a lot more crust color we will brush the edges of the dough skin with oil just before it is put into the oven for baking. Regardless of what your oven thermostat is saying, try bumping it up another 50 to 100F to see if that improves the bake.

Tom Lehmann/The Dough Doctor  
6724

### **Dough Clinic / Re: Cant seem to get that fat brown crust**

F.C.;

While your crust really doesn't look all that bad, if you are looking for even more volume/height, try increasing the dough absorption. With more water, the dough will be softer, and raise more easily during the early stages of baking, giving you more baked height. Getting back to the color issue, the fact that you have made dough with added sugar, and didn't get the desired color, and that you have tried different recipes with the same result, no color, this leads me to think you might have an oven issue. Your local hardware store will have a cheap oven thermometer that you can place on or hang from one of the racks to get a better idea of the

actual temperature. Also, if your home oven is heating from the bottom, try placing the baking rack closer to the bottom to see if this will help. By placing the baking rack closer to the bottom, you will increase the heat to the bottom of the pizza while reducing the heat to the top of the pizza, allowing you to bake it a little longer for better crust color development without overbaking the top.

Tom Lehmann/The Dough Doctor  
6723

### **Dough Clinic / Re: Cant seem to get that fat brown crust**

F.C.;

Putting the pizza in a lower position in the oven will bring it closer to the heating element/burner at the bottom of the oven, while at the same time moving the pizza further from the hottest part of the oven (the top). This will allow you to bake the pizza longer without developing excessive top color, and hopefully, get a better overall crust color. In some ovens I will bake a pizza for about 10-minutes on a lower rack, and then rotate the pizza 180 degrees and place it on a higher rack position to finish baking. This allows me to get a decent bake on both the bottom and top of the pizza. Remember, home ovens are really not the best pizza ovens, not by a long shot, so we need to be creative in how we bake our pizzas in a home oven, and every home oven is a creature onto itself, no two seem to be alike.

Tom Lehmann/The Dough Doctor  
6722

### **Dough Clinic / Re: Frozen Commissary-Produced Dough Balls**

Peter;

After blast freezing, the dough balls are held at the same holding temperature as static frozen dough balls are, -5 to -10F, so the slackout time for both will be the same. As for Domino's using all in house made dough, not true. I have recently been in their Michigan commissary more than once. Granted, there might be some store out there that are too far off of the beaten path to be served by a Domino's commissary truck, and those stores might still be making their dough in house, but I'll bet the majority of their stores are served by a commissary.

Tom Lehmann/The Dough Doctor  
6721

### **Dough Clinic / Re: Chicago style thin cracker crust**

BTB;

Ed and Joe's is the pizza that I was raised on as a kid! I remember them from back in the 50's! Best of all, they're still out there, and everytime I get back to the south side I get one of their pizza.

For the improved (crispy version) of the Chicago thin, cracker crust, go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> and under "culinary" click on the RECIPE BANK drop down. Then type in "Pizza dough" for your search words. You will find my Chicago thin cracker crust posted there. After step #11, parbake the formed dough skin (be sure to dock it well) These can be saved for use later, or used right away. Resume with step #12, or dress the parbaked shell in your perferred manner and bake in an airimpingement oven for 5-minutes at about 465F. We make this version at all of the pizza shows that we attend. It is also a great buffet pizza as it holds its crisp so well.

Tom Lehmann/The Dough Doctor  
6720

### **Dough Clinic / Re: Chicago style thin cracker crust**

The dough formula is correct as you have shown it. To use ADY you will use half (50%) of the compressed yeast amount and to use IDY you will need to use 40% of the compressed yeast amount. Keep in mind that regardless of the type of yeast used, they should all be suspended in water prior to adding it to the dough. You are right about the procedure (step #12) being incorrect. They must have taken that from the Chicago deep dish formula when they transcribed and entered the formula in the Recipe Bank. Just sauce the par-baked crust, then add the toppings, and finally the cheese, as the cheese goes on last in the Chicago presentation. Remember, the mixing time is VERY SHORT. The resulting "dough" looks more like a biscuit or pie dough than what you might think of a pizza dough as being. If there ain't dry, white flour in the mixing bowl when you're through mixing, you have over-mixed the dough. Trust me.

Tom Lehmann/The Dough Doctor  
6719

### **Dough Clinic / Re: Cant seem to get that fat brown crust**

F.C.

Bakers percents are used when weight measures are used rather than volumetric portions. To find the weight of any ingredient using bakers percent, follow these steps:

Flour is always 100% you decide what weight of flour you want to use, then mark it down as 100%.

Using your calculator, enter the flour weight, then press "X" and enter the percentage shown for the ingredient that you want the weight for, then press the "%" key and read the ingredient weight in the display window. Remember, the weight of the ingredient will be given in the same weight units as the flour weight was shown in (pounds, ounces, grams, kilograms, etc.)

Example:

You want to use 500-grams of flour. This is shown as 100%

Salt: 1.75%

Oil: 2%

ADY: 0.5%

Water: 60%

500 X 1.75 press the "%" key and read 8.75-grams.

500X 2 press the "%" key and read 10-grams

500 X 0.5 press the "%" key and read 2.5-grams

500 X 60 press the "%" key and read 300-grams

Now you have the weight of each ingredient.

Tom Lehmann/The Dough Doctor  
6718

### **Dough Clinic / Re: Name That Crust**

Sweetpea;

What you have described is a Chicago style thin crust, not to be confused with the thin cracker. Here is a good formula for making the dough:

Flour: Ceresota 100%

Salt 2%

Oil 3%

Compressed yeast 1%

Water (65F) 48%

Procedure: Put water in the mixing bowl, add salt, then flour, yeast and the oil, mix

until the dough just comes smooth, then set aside to ferment for 4-hours, divide the dough into desired weight pieces and form into balls, set aside and allow to proof for about 90-minutes, or until you can roll the dough out without too much difficulty. Roll the dough quite thin (about 1/8-inch thick), place onto corn meal dusted peel and dress as desired, bake at 450 to 475F about 20 to 25-minutes on a baking/pizza stone.

For weights: decide how much flour you want to use, this will be 100%. Then, using your calculator, enter this weight X 2 (press the "%" key and read the weight of salt to use. Repeat this for each ingredient and you will have your formula in weights.

Tom Lehmann/The Dough Doctor  
6717

### **Dough Clinic / Re: How do you get that nice shiny blistered dough crust?**

F.C.:

The secret to getting that characteristic is to use higher levels of L-cysteine, a reducing agent in the dough. You can find L-cysteine in a product called PZ-44 available from Foremost Farms <[www.foremostfarms.com](http://www.foremostfarms.com)>. Be careful when using this though as it can/will quickly turn a dough into something that more closely resembles a cake batter. I would recommend starting out at 2% of the total flour weight, and working up in 0.5% increments from there. Another option to explore is to form your dough into pucks and freeze it for several days. This will damage the yeast, releasing glutathione (first cousin to L-cysteine) into the dough, and it may give you some of the characteristics you're looking for. In this case experiment with the holding time in the freezer. Something between 3 and 10-days should give you some result similar to what you are looking for. Note: If you buy frozen pizza dough you will see this characteristic right from the start.

Tom Lehmann/The Dough Doctor

EDIT (2/7/13): For a link to the PZ-44 product, which was recently sold to another company, see <http://web.archive.org/web/20060311221117/http://www.foremostfarms.com/products/ingredient/pdf/450PZ44.pdf>.

6716

### **Pizza News / Re: Order a Pizza or Get Out!!**

When I worked in Chicago, Illinois, we used to visit a local deli called Jerry's Deli, as you entered the store Jerry would point at you and say "what you want?" At that moment your lips had better be moving and you had better be ordering, because if you were not, he would say "next!" and he was pointing at someone else and taking their order, and trust me, it could take some time for him to get back to you, and you had better be playing the game when he did! The deli was ALWAYS packed, I guess that was just the ambiance of the store, and those who went there either liked to be abused or watch it happen to others (a lot like the Soup Nazi, but dated 1970).

Tom Lehmann/The Dough Doctor  
6715

### **Dough Clinic / Re: Why did my dough turn out tasting sour??**

It might be that you have just over fermented the culture, or that you have some form of a lactic acid producing bacteria present that is giving you the very sour/acid taste where as a different lactic acid producing bacteria strain might give a totally different flavor profile. This is one of the things that can happen with these natural ferments, it is also what makes working with them so much fun and so rewarding at the same time. If it isn't over fermented, and if you are not using too

much, you might need to start over again and hope for better luck the next time. One other thing, are you sure you used the correct amount of inoculant when starting your culture? If you don't use enough to inoculate with, you may not get enough of the desired bacteria and yeasts to propagate the microflora in the culture, and hence you run the risk of ending up with something totally different.  
Tom Lehmann/The Dough Doctor  
6714

### [\*\*Dough Clinic / Re: should i toss this dough?\*\*](#)

SO? What? You don't like the smell of beer? LOL

Actually, it might be pretty good. You have come this far, I'd make a pizza from the dough and see if you like it or not.

Tom Lehmann/The Dough Doctor  
6713

### [\*\*Dough Clinic / Re: Hand Kneading = Anger\*\*](#)

Sure;

You must be a "GLUTEN" for punishment to try to mix a dough for 30-minutes by hand. Just stir it together using a wooden spoon. Total mixing time about 90-seconds. Cover, allow to rise for 2-hours, turn out of the bowl onto a floured table top and fold several times until you can handle the dough with relative ease, then oil the bowl and place the dough back into it to continue fermenting for another 3 to 3-hours, then turn the dough out of the bowl and divide into whatever size pieces you need to make your pizza skins with. Form into balls, cover with a piece of plastic and allow to rise for about 30 to 45-minutes, then open into pizza skins, dress and bake as you wish.

I teach this process to people all the time and it really works well as a simple way to make dough using biochemical gluten development. Once you have this mastered, you can begin experimenting with any of the many other ways to make dough by hand.

Tom Lehmann/The Dough Doctor  
6712

### [\*\*Dough Clinic / Re: Heston Blumenthal: Adding the yeast after flower+water\*\*](#)

Dennis;

I agree, that for anyone making pizza at home it is best to first suspend the yeast in a small portion of water before adding it to the mixing bowl. My own personal preference is to suspend it in a small container, and then add it to the dough water in the mixing bowl, which is my first ingredient going into the bowl, then I like to add the salt and sugar, followed by the oil and lastly the flour, since the salt and sugar are now in direct contact with the yeast, it is imperative that you begin mixing the dough right away. I know that the instant dry yeast (IDY) people say that you can add the IDY after mixing the dough for 4 to 5-minutes, but that is based on the presumption that you are using a mixer, and that you will be mixing the dough for an additional 5-minutes, or more, after adding the yeast. I don't even like adding it in the flour, when I'm hand mixing as I am not fully convinced that my style of hand mixing (minimal) will result in proper yeast dispersion.

Tom Lehmann/The Dough Doctor  
6711

### [\*\*Dough Clinic / Re: Target leavening volume\*\*](#)

Jim;

It is all just a matter of preference. I've seen numbers as low as 1.5 fold increase

and as high as 2.5 fold as cited in the article. I normally shoot for a 2 fold increase in size. Remember, you will not be fermenting the dough in a graduated glass beaker, as they were in the article, but rather you will be "eyeballing" the dough to ascertain the magnitude of size increase. Why do I use a 2 fold increase? Because it is easier to say "Yup, that looks to be about twice as large as it was when I started".  
Tom Lehmann/The Dough Doctor

6710

**[Pizza News / Re: A sobering look at today's commecial pizza business...](#)**

When you're feeding the masses, that's how it is done. Personally, I'm more concerned about some of the big box wholesale stores putting a vast array of different types of stores and businesses out of business.

Tom Lehmann/The Dough Doctor

6709

**[Dough Clinic / Re: Some advice for perfect dough -pizza party with G3 and 00 flour](#)**

PK;

I would suggest using only flour, salt, water and yeast for the ingredients.

A good starting point might be as follows:

Flour 100%

Salt 1.5%

Compressed yeast 1%

Water 68% (70F/21.1C)\

Put the water into the mixing bowl, add the yeast and stir until the yeast is suspended, add the flour and the salt and mix just until the dough begins to come together, then set aside and allow to ferment for about 2-hours, turn the dough out onto a floured bench and knead for a minute or so. Form into dough balls, and lightly oil, place each dough ball into a plastic bag, seal by twisting the open end of the bag into a pony tail, and tuck the pony tail under the dough ball as you place it into the fridge. Allow to ferment for 18 to 24-hours, then remove from the fridge and allow to temper AT room temperature for 1-hour, then turn the dough out of the bag into a bowl of flour and open into pizza skins. There are many methods for making the dough but this is one of the easiest I've come across.

Tom Lehmann/The Dough Doctor

6708

**[Chicago Style / Re: Chicago crust from America's Test Kitchen](#)**

Some of the things that we do to product the typical Chicago style crust are as follows:

Dough absorption around 55% (will vary with absorption requirements of the flour).

Flour protein content should be around 11%.

Some use corn meal, some don't, if you elect to use corn meal, try 8% based on the flour weight.

For the color, use "egg shade" a type of yellow food coloring.

Bake at 450F and plan on a bake time of 25 to 30-minutes for a thin crust and 40 to 45-minutes for a thick crust pizza.

Assemble with sliced cheese going on first, and sauce going on last.

Can't use anything but RAW sausage in Chicago.

Butter or margarine is commonly used in place of olive oil in the dough.

Margarine is commonly used to grease the pans (Bluebonnet).

Chicago thin crust pizzas are NOT crispy with exception for the very edges.

Always party cut a Chicago style thin crust pizza.

Chicago style pizzas are not laminated. The key to getting that open crumb structure is in allowing the dough to rise in the pan before dressing.

Tom Lehmann/The Dough Doctor  
6707

**Dough Ingredients / Re: Caputo flour freshness**

While some may say that flour can be stored for up to a full year at room temperature, unless you know how the flour was stored prior to your purchase (fat chance of that) you would be best advised to re-bag the flour into double plastic bags (like bread bags) and then store anything that you will not be using within the next month or so under refrigeration or in the freezer. Your main concern is insect infestation. You may not always see the black or reddish appearance of flour beetles (looks like pepper in the flour) as you can also have the larval stage present. This is when the flour is said to be "wormy". About the only way you'll be aware of this is if you sift the flour, then you will see the larva in the screen after sifting the flour. An old baker's trick is to freeze the flour for 45-days, this will kill all of the insect stages (from adult to eggs), then transfer the flour to a cooler where it can be stored for a much longer period of time if necessary. For the most part, flour is pretty free from insects as it comes from the mill, it is the post packaging contamination that gets it. The problem can/will occur in a warehouse, truck, or other transport, and all too often on a store shelf. And don't over look your own kitchen, I've had to discard buggy flour more than once from my own kitchen, especially when you store the flour in a drawer as I used to do. I now store it in a large glass jar.

Tom Lehmann/The Dough Doctor  
6706

**Dough Clinic / Re: Little confused about flour dusting**

Sour? Flour adhering to the dough will not give the finished crust a sour taste, but it will impart a bitterness to the crust, maybe that's what you mean? As you handle the dough, during the forming process, you should find that you really don't need much more flour after the first "dunk" in the flour bowl, as you continue to shape the dough the dough will have a dry skin and much of the excess flour will simply fall off. A light dusting of flour on the dough is normal. We have our annual pizza seminar coming up next week and I'll try to see if I can get some video footage shot showing the dough balls being opened into pizza skins.

Tom Lehmann/The Dough Doctor  
6705

**Dough Clinic / Re: dough temp question**

Paul;

The answer to your questions are yes and yes. Home mixers just don't provide the mixing action that the larger mixers provide, so you are safe to hedge your bets by suspending the yeast, be it instant dry yeast, active dry yeast, compressed yeast, or instant rise yeast in a small portion of water (95 to 100F), leaving the remainder of the water at a lower (calculated) temperature to adjust your finished dough temperature.

Tom Lehmann/The Dough Doctor  
6704

## Dough Clinic / Re: Finally, the perfect dough..but..

If you can give me your weights for the honey, salt, and yeast I can put your dough into a formula that you can manipulate to give you any weight of dough you desire.  
Tom Lehmann/The Dough Doctor  
6703

## Dough Clinic / Re: Finally, the perfect dough..but..

F.C.;

With reference to replies #1-3, the dough formula looks like this:

Flour:	358g.	100%
VWG:	10g.	2.79%
Water:	225g.	62.85%
IDY:	3g.	0.84%
Salt:	6g.	1.67%
Honey:	23g.	6.42%

Total%      174.57%

All you need to do now is to decide how much dough you want to make and divide that amount by the total formula % divided by 100. Here's an example: Lets say you want to make 28-ounces of dough. Divide 28 by 1.7457 and you get 16.03911-ounces (call it 16-ounces) of flour needed. Doing it in grams: Lets say you want to have a total of 1000g. of dough. Divide 1000 by 1.7457 and you get 572.83611-grams (call it 573-grams) of flour needed.

Once you have the flour weight, the rest is easy, using your calculator, just enter the flour weight, then press "X" enter the ingredient percent and press the "%" key and read the ingredient weight in the display window. The ingredient weight will be in the same weight units that you showed the flour weight in.

Example: 573-grams of flour.

573 X 2.79 (press the "%" key) and read 15.9867 (call it 16-grams) of VWG needed. Repeat this for each ingredient and you will have your ingredient amounts for your new dough weight.

Tom Lehmann/The Dough Doctor  
6702

## Dough Ingredients / Re: Caputo flour freshness

Peter;

Sifting out the adult beetles and larvae might make you feel a little better about using the flour, but you have not sifted out the eggs, which will soon hatch and begin the cycle all over again. Your best bet is to break the bag of flour down into smaller bags and freeze them for at least 40-days. This will kill any beetles, larvae, and eggs. The flour can then be stored plastic or metal containers at room temperature for a much longer period of time.

Tom Lehmann/The Dough Doctor  
6701

## Dough Clinic / Re: Chicago style thin cracker crust

In response to replies #4 and 5 above;

ADY is typically, and correctly substituted for compressed (cake) yeast at 50%, or 1/2 of the compressed yeast weight or percentage.

The type of flour used to make the Chicago style cracker crust would be Ceresota brand, but any flour with around 11.5% protein content would work equally as well.

When baking in a home oven, I like to par-bake the crusts at 400F, and bake on a stone if possible, or on a dark colored pan if a stone is not available. When baking the dressed dough/crust, I increase the oven temperature to 475 - 500F, and bake on a dark colored, solid pan, like the Lloyd's cutter pan, but any dark colored, solid pan will work. The baking time will be about 25-minutes on a raw dough skin, or about 15-minutes on a par-baked crust. Some experimenting will be needed due to the vast differences in the way different home ovens bake.

Tom Lehmann/The Dough Doctor

6700

### **Dough Clinic / Re: dough temp question**

Paul;

That is correct. Some might argue that some of that water is needed to meet the hydration requirements of the yeast, and that is correct. About 70% of the weight of the yeast is required to fully hydrate it. My feeling is that in a home made pizza or bread setting, we're now splitting hairs and making things more complex than they really need to be, so I just simplify things by saying to subtract the same amount from the dough water that you used to hydrate/suspend the dry yeast in. In short, if you used 4 tablespoons of water to hydrate/suspend the yeast, just remove 4 tablespoons of water from the dough water to keep everything in correct balance and it will be close enough for making dough. If we were making rocket fuel, well, that might be another matter.

Tom Lehmann/The Dough Doctor

6699

### **Dough Clinic / Re: what to do about bubbles**

BP;

If your dough is in proper balance with regard to yeast level, and the temperature is not too high, the dough should not exhibit much of a tendency to bubble as you've described. A good dough temperature is 80 to 85F (probably favoring the 80F side). A dough that has too much yeast or one that is too warm will typically exhibit a greater tendency to bubble during storage in the fridge/cooler. Also, if you leave the dough rest at room temperature for an extended time prior to putting it into the fridge, this may increase the odds of having the dough bubble. If you put the dough into a plastic bowl in the fridge, be sure to leave it uncovered for the first 90-minutes or so, then cover it. This can also reduce the bubbling tendency. If all else fails, put the dough into a bread bag for refrigerated storage. Twist the open end of the bag to close it, and tuck the pony tail under the dough ball as you place it into the fridge, then kiss it good night. No need to leave anything open. Just be sure to oil the dough ball prior to dropping it into the bag, then just turn the dough ball out of the bag into a bowl of dusting flour and begin opening the dough ball into a dough/pizza skin, dress and bake. If the dough develops a bubble, I normally ignore it until I'm ready to use the dough, then just pop the bubble and open the dough ball.

Tom Lehmann/The Dough Doctor

6698

### **Dough Clinic / Re: what to do about bubbles**

Norma;

I should have added to lightly oil the dough ball when you place it in the container as this helps to control any possible skin formation while it is uncovered, and it also helps when its time to pop the dough out of the container, as it just plops out when you have oiled the dough ball.

Tom Lehmann/The Dough Doctor  
6697

**Dough Clinic / Re: Finally, the perfect dough..but..**

Waste good pizza dough? No way!

Make one or two breadsticks out of it, or roll it thin and add a little cheese and meat filling, then fold it over and crimp the edges, tear a small hole in the center of the filled pocket and bake along with your pizza. The cook/chef can then enjoy a little appetizer before the main course.

Tom Lehmann/The Dough Doctor  
6696

**Resources / Re: Anyone have any sources for some of these flours near eastern Ohio?**

A quick trip to your local supermarket, and a stroll down the baking goods aisle should put you in front of Pillsbury Bread Flour. This flour comes in at around 12% protein content, and should work quite well for a deep-dish pizza. While you're there, pick up a dark colored cake pan, it will work better than your silver colored cheese cake pan.

Tom Lehmann/The Dough Doctor  
6695

**Off-Topic Foods / Re: Panimatic couche?**

Biz;

If you're looking for a proofer, go to Belshaw Bros., Inc. at <[www.belshaw.com](http://www.belshaw.com)> They have a vertical, multi door proofer with about a 30" X 36" footprint and it plugs into a 110V outlet. It takes standard size sheet and screen pans. I believe they call it their Proof and Bake unit. Sells for around \$1,300.00 if I remember correctly. Look at used bakery equipment suppliers, there is a lot of good equipment out there just waiting to be adopted.

Tom Lehmann/The Dough Doctor  
6694

**Off-Topic Foods / Re: Panimatic couche?**

Biz;

I stand corrected on the name of that proofer I mentioned in my above response. It is the Econo-Proof, not Proof and Bake.

Tom Lehmann/The Dough Doctor  
6693

**Dough Clinic / Re: what to do about bubbles**

Actually, most bubbles are the result of insufficient dough fermentation. Another major contributor to the cause is use of a cold dough (failure to allow the dough to temper AT room temperature for at least two hours after removing it from the fridge (if using cold fermentation). Occasionally, we do find an excessive amount of yeast being used, but if the yeast level is around 1% of the flour weight for compressed yeast, 0.5% for active dry yeast or 0.375% for instant dry yeast you're good on the yeast level

Tom Lehmann/The Dough Doctor  
6692

**Dough Clinic / Re: Finally, the perfect dough..but..**

FeChef;

If you want to fry the dough, not a problem, just make sure you set the formed pieces (mini calzones) aside to proof/rise for about 20 to 30-minutes before you place them into the fryer. I like to fry submerged, as they look better, but they can be surface fried if you don't mind the white line. Note: don't put a pressure release hole in the dough if you plan to fry it.

Tom Lehmann/The Dough Doctor  
6691

### **Dough Clinic / Re: thickness factor explained please**

To take the T.F. (thickness factor) one step further, now all you need to do is to calculate the surface area of your new pan size/pizza size and multiply your T.F. by that number to get the correct dough weight for the new diameter.

Example: You now want to make your pizza on a 12-inch diameter format.  $\pi \times R^2 = 3.14 \times 36 = 113$  square inches in a 12-inch diameter pizza.  $113 \times 0.084\text{-ounces} = 9.49$  (call it 9.5-ounces). Note: The decimal point was in the wrong spot in the original response. 13-ounces divided by 154 = 0.085 T.F. Another way to express T.F. is ounces of dough per square inch of surface area.

Tom Lehmann/The Dough Doctor  
6690

### **Dough Clinic / Re: Corn meal on stone**

Since we're on the topic of peel dust, while a lot of people think it is just a matter of preference as to what is used as a peel dust, it is actually a lot more than that. A soft dough, one that has a high dough absorption, when placed onto a peel with just flour will tend to hydrate that flour quite fast, thus losing the slip characteristics provided by the flour. In this case something that won't hydrate as fast is needed, this is where semolina flour comes into play (it hydrates very slowly). If the dough is really wet, as some are, corn meal will help to actually hold the dough off of the peel surface, thus facilitating slip. In actual application, we seldom ever use 100% of any of these products, but instead, use a blend of them to make our peel dust, which is all based on the properties of the dough that is on the peel at the moment. My own personal favorite blend is made from equal parts of regular flour, semolina flour, and fine grind corn meal, and I've yet to have a pizza stick to a wood peel when I did my part. By the way, you are absolutely correct, shaking the dressed dough skin on the peel occasionally before taking it to the oven is vitally important to ensuring a release every time regardless of what you're using as a peel dust.

Tom Lehmann/The Dough Doctor  
6689

### **Newbie Topics / Re: Question about Active Dry Yeast please...**

Moose;

ADY should be mixed with four to five times its weight of water (100 to 105F) and allowed to hydrate for about 10-minutes, stir again, and add to the mixing bowl. I like to add the hydrated yeast to the dough water to further disperse it when making pizza dough at home, you can also rinse out the container that you hydrated the ADY in with the dough water. With IDY you have the option of adding it directly to the flour if you will be mixing the dough by machine for 5-minutes or more. If you will be mixing by hand, or mixing for a very short time, you should hydrate the IDY in four to five times its weight of water (95F) and allow to hydrate for about 10-minutes, then stir once again and add to the dough. Again, I like to add the hydrated IDY to the dough water just as I do the ADY.

Tom Lehmann/The Dough Doctor

6688

### [\*\*Dough Ingredients / Re: Confectioners Sugar In Doughs?\*\*](#)

Powdered sugar and granulated sugar are one and the same except for particle size. Keep in mind when using volumetric portions that they are NOT interchangeable, but from a functionality standpoint, they are the same. Infact, you can make your own powdered sugar in a food processor.

In case you're wondering (inquiring minds want to know) donut sugar, that stuff that looks like powdered sugar on a cake donut is not actually powdered sugar, even though it is called a powdered sugar donut, or coating. Donut sugar is made with powdered dextrose (not as sweet as sucrose) along with added starch and fat. It is designed specifically for use as a coating sugar on donuts and is never used a a substitute for powdered sugar.

Tom Lehmann/The Dough Doctor

6687

### [\*\*Dough Ingredients / Re: Confectioners Sugar In Doughs?\*\*](#)

Norma;

An inquiring mind is a terrible thing to waste.

The most thought provoking word in the English language is the word "why?".

Have a great Thanksgiving!

Tom Lehmann/The Dough Doctor

6686

### [\*\*Newbie Topics / Re: My Lehmann style fail\*\*](#)

Phil;

From what you have described, I'm guessing that the water temperature was too cold. You said that the dough had hardly risen by the following day, and a cold dough temperature would explain that. With the 6 to 7-minutes of machine mixing it is OK to add IDY directly to the dough as you did. It is designed for that method of application when machine mixing is used. For a finished dough temperature, you want to look for something in the 80 to 85F range. The reason why the dough didn't color up might be due to the fact that it didn't expand very much during baking (lack of oven spring), this would allow the bottom heat to pass through the dough into the sauce, where it is dissipated as steam. In order to get the crust to brown, you've got to get the dough surface temperature up to around 300 to 400F. When the dough expands during baking, it creates an open structure which prevents the heat from being conducted through the dough, hence allowing the surface temperature to rise sufficiently high to allow for the browning reaction to take place.

Tom Lehmann/The Dough Doctor

6685

### [\*\*Prep Equipment / Re: Digital scale accuracy?\*\*](#)

What is the stated range and accuracy of your scale? Exactly how does it read on the box?

Tom Lehmann/The Dough Doctor

6684

### [\*\*Prep Equipment / Re: Digital scale accuracy?\*\*](#)

Normally it will also give an accuracy range, such as 11-pounds X -ounces, so I looked it up on the internet and found your Model #7918 listed as a Walmart item, and absolutely no specifics are given. If you read the reviews you will see that one

review isn't very complimentary, citing lack of accuracy as an issue. It states that this scale will not weigh less than 0.6-ounce/17-grams (sound familiar?) With this range of accuracy I wouldn't post it on the box either. For all practical purposes, this scale has a maximum capacity of 11-pounds X 0.5-ounce/16.5-grams. Meaning that it will weigh in ounces to the nearest half ounce to a maximum of 11-pounds, or in metric to a maximum of 5-kilograms in 16.5-gram increments. This is NOT a very good scale for the advertised application. I hope you saved your receipt.

Tom Lehmann/The Dough Doctor

6683

### **Dough Ingredients / Re: Confectioners Sugar In Doughs?**

Bill;

I think you've just got a sweet tooth. LOL :)

Tom Lehmann/The Dough Doctor

6682

### **Prep Equipment / Re: Digital scale accuracy?**

Mark;

So, what is the scaling accuracy of the Taylor 10-C scale that you list for just under \$50.00? I sure wish manufacturers and merchants would show the specs on their scales. How is one supposed to know if the scale is appropriate for what they want to use if for without that vital information???

I think for what most home bakers do, a scale that has a capacity of 5-pounds/2.27 Kg. and will weigh to the nearest 1-gram in the metric mode would work well. This Will allow the user to scale the half gram increment by watching the display screen, and when it flashes between two numbers, such as between 7 and 8, this would indicate "approximately" 7.5 grams, close enough for our work.

Tom Lehmann/The Dough Doctor

6681

### **Dough Clinic / Re: still looking for that "flexible" dough**

Try this, it will make your day a lot easier.

After you mix the dough, immediately divide it into three pieces and form into balls, then lightly oil with salad oil and place into individual plastic bread bags. Twist the open end to close and tuck the pony tail under the bag as you place it into the fridge. allow the dough balls to remain in the fridge for 16 to 48-hours. To use, remove the dough balls that you want to use and allow to temper AT room temperature for about 2-hours, then turn out into a bowl of flour and begin opening the dough ball(s) up into pizza skins, then handle in your normal manner. I'm betting the dough will open a lot easier for you with out nearly as much memory.

Tom Lehmann/The Dough Doctor

6680

### **General Pizza Making / Re: White Sauce recommendations or recipes anyone?**

When most people think white pizza sauce, they think Alfredo sauce, or some variation based on it. Alfredo sauce is a wonderful compliment to chicken or seafood on a pizza. When I make a seafood pizza I put on a light spread of Alfredo sauce and then apply dried dill weed, followed by the sea food (shrimp and fish), then some red onion, sun dried tomato, and a blend of 75% Mozzarella/25% Shredded Parmesan cheese. Keep it simple, to die for!

Tom Lehmann/The Dough Doctor

6679

## [\*\*Dough Clinic / Re: How to get a soft crumb?\*\*](#)

Moose;

Are you wanting to get a softer crumb? If so, the addition of oil or shortening/butter to the dough will give you that added characteristic. But I was also getting the impression that maybe the you wanted the cell structure (crumb) to be more open too? If this is the case, the you may need to add a little additional water the dough. You also brought up the question of do I have enough dough to get the desired crumb characteristic. Remember, you need dough to get an open crumb characteristic, so by all means don't be afraid to experiment using more dough to make your pizza skins.

Tom Lehmann/The Dough Doctor  
6678

## [\*\*Dough Clinic / Re: Baker's Pride model P22S\*\*](#)

Kerry;

The oven you're looking to buy, is it new or used?

Do you have a dedicated 208-V circuit that you can plug it into?

The oven should work just fine otherwise.

I see these being used in bars from time to time.

Tom Lehmann/The Dough Doctor  
6677

## [\*\*Dough Clinic / Re: Caramelized Cheese Crust\*\*](#)

Changing the brand of cheese can certainly help as some brands will color more than others. Many times I will sprinkle shredded Parmesan cheese around the edge of the crust to achieve the same effect. Also, moving your pizza to a higher rack position in the oven may also help by putting more top heat to your pizza, or you might experiment with doing the bulk of the baking at a lower rack position to get the bottom of the crust baked properly, and then moving the pizza to a higher rack position to get the desired browning on the cheese.

Tom Lehmann/The Dough Doctor  
6676

## [\*\*General Pizza Making / Re: Advice On How to Cook Pizza In a Home Oven Without a Pizza Stone. Need help.\*\*](#)

I am also an advocate of starting the pizza on a low rack position and then moving it to a higher rack position when I don't have a pizza stone to bake on. Additionally, make sure the cookie sheet, or the pan you're baking the pizzas in are dark colored. TIP: DO NOT use an airbake pan. The bottom crust won't color up.

Tom Lehmann/The Dough Doctor  
6675

## [\*\*Dough Clinic / Re: Too much flour on finished pizza.\*\*](#)

Semolina flour also makes for a very good peel dust. The larger particle size of semolina flour gives good release from the peel, and since it is slow to hydrate, it doesn't adhere well to the dough. You might try dipping the entire dough ball into semolina flour before you open it up into a pizza skin, this normally minimizes the amount of peel dust needed to get a good release from the peel. Make sure you use a wood, not metal peel for your prep peel.

Tom Lehmann/The Dough Doctor  
6674

## **Dough Clinic / Re: dough ball problem question**

Finfan;

The easiest way to correct the condition which you describe is to oil the dough balls and then place them into individual plastic bags. Bread bags are an excellent choice. DO NOT tightly close the bread bags, but instead, twist the open end to close it, forming a pony tail, then tuck the pony tail under the dough ball as you place it into the fridge. To use the dough, simple remove a dough ball from the fridge and allow it to temper AT room temperature for about 1.5-hours, then turn the dough ball out of the bag into a bowl of dusting flour and begin opening the dough ball into a pizza skin. This process works perfectly all the time.

Tom Lehmann/The Dough Doctor  
6673

## **Dough Clinic / Re: Fresh yeast**

Craig;

The end result from using fresh compressed yeast and IDY are exactly the same, no difference. ADY, due to the presence of damaged yeast cells provides a little softening to the dough, but nothing else to the finished bread. A number of years ago we did a seamless transition to IDY in our Experimental Bakery where we used it exclusively for several years, and then ultimately transitioning back to using compressed yeast (a political move) just as seamlessly.

Tom Lehmann/The Dough Doctor  
6672

## **Dough Clinic / Re: Not Using Delayed Fermentation**

We have done a huge amount of work on short time doughs, including emergency doughs, if at all possible, incorporate at least 2.5 hours of fermentation time into your dough making process. This will significantly improve the crust flavor as well as reducing the bubbling and blistering of the dough during baking. Ain't nothin' that speaks of a great pizza like a huge bubble on the pizza during baking that causes the cheese and toppings to slide off and burn in the oven.

Tom Lehmann/The Dough Doctor  
6671

## **Dough Clinic / Re: Fresh yeast**

Jackie;

IDY and CY (compressed yeast) are closer together than CY and ADY. While IDY also has its share of damaged yeast cells due to the drying process, the issue has been addressed through the addition of a small amount of ascorbic acid to the dry yeast, while the ADY (active dry yeast) has not had any ascorbic acid added, so the doughs made with ADY actually end up slightly softer than when made with IDY. The biggest problem that we have seen is with conversion of one type of yeast to another. When used at correct conversion levels, there is no difference in finished product flavor between IDY, ADY, or CY. The trick here is in using the CORRECT conversion, and the conversion recommended by the manufacturer, may not always be the correct one for your particular dough formula. For bread makers, the correct conversion level is the one that provides the same final proof time as the yeast type being replaced. For pizza makers, I like to use a plastic glass or cup, oil the inside and place a weighed amount of dough into the cup/glass, flatten the top so it is as even as possible, lightly cover with a piece of foil and set aside to proof/rise until the dough reaches the top edge of the glass/cup, then record the time required for the dough to rise to that height, now, replace the yeast with the type you want to use, and repeat, adjust the yeast level until the time needed for

the dough to rise to the top edge is the same as with your original yeast. Now, divide the new yeast level by the original yeast level and you will have the correct conversion for your specific dough.

Tom Lehmann/The Dough Doctor  
6670

**[Dough Clinic / Re: How does the Micro Mixer sp5 compare to the Electrolux](#)**

When making pizza at home hand mixing gets my vote too. It really isn't hard, and when done right, the total mixing time will only be a couple of minutes, and you won't get biceps like the village blacksmith either.

Tom Lehmann/The Dough Doctor  
6669

**[Dough Clinic / Re: What is procedure for taking out a frozen dough Ball](#)**

Lester;

There are two ways that I slack out frozen dough balls and get them ready to use for making pizza skins.

First, oil the dough ball and place it into a plastic bag (think bread bag), twist the open end to close and tuck under the dough ball as you place it into the fridge. Allow to thaw for 12 to 16-hours, then open and use for making your pizza skins. A better method (I think) is to remove the slacked out dough ball from the fridge and set it at room temperature for about an hour, then place it back into the fridge for use on the following day. When removing the dough ball from the fridge to use, leave it in the plastic bag and allow it to set at room temperature for 1.5-hours, then turn the dough ball out into a bowl of dusting flour and open into a pizza skin. The second method described allows the dough to develop a little more fermentation flavor than the first method.

Tom Lehmann/The Dough Doctor  
6668

**[Dough Clinic / Re: Pizza Dough over rising and deflating?? Help](#)**

Also, make sure you have a sufficiently high protein level in your flour. We normally like to see about 13% protein content in the flour. A quick call to the manufacturer should get you the protein content, or you can add some vital wheat gluten to the dough formula. I would suggest adding 8% (flour basis) of additional gluten plus 12% (flour basis) additional water. Be sure to dry blend the gluten into the flour before adding the water.

Tom Lehmann/The Dough Doctor  
6667

**[Dough Clinic / Re: Want to use caputo in 270cl oven](#)**

10% protein content is a bit too low for making the best pizza. You will be much better served by using the 13% protein content flour. With this higher protein content flour, you will be able to ferment the dough for a sufficiently long time to develop some really good flavor in the finished crust.

You will need to experiment a bit at first to find the correct absorption for the flour. Typically, I would start at 58% dough absorption (58% water based on the weight of the flour) make a dough and see how it performs, then make any needed adjustments on future doughs.

Tom Lehmann/The Dough Doctor  
6666

**[Dough Clinic / Re: Frozen dough ball](#)**

Franko;

The reason why your commercially made frozen dough can be worked right out of the fridge is because it contains a healthy dose of L-cysteine (you will see it listed as an ingredient on the package label). The L-cysteine is a reducing agent used to make the dough softer and more extensible. The manufacturer uses it to help reduce the dough mixing time and achieve full gluten development during mixing at low temperatures. As long as you are not experiencing problems with the dough bubbling during baking there should be no issues with using the dough right out of the fridge. By the way, unless the dough balls are marked/labeled as pizza dough, it is probably a bread dough that you are working with. The biggest problem with any of the commercial frozen doughs is they don't receive any fermentation at all prior to freezing, hence, the dough balls, when slacked out still don't have any fermentation on them and that can have an impact upon the flavor of the finished crust. To some this is important, to others it is not.

Tom Lehmann/The Dough Doctor  
6665

**Dough Clinic / Re: Can a Wet Gluten Mass be incorporated into another dough?**

Norma;

We do a wet gluten test where we manually wash the gluten out of the flour under very COLD water. You can then weigh the wet gluten ball weight and divide it by the weight of the flour that you washed it from to get a WET GLUTEN PERCENT, but doesn't mean a lot to most people since when citing gluten we speak in DRY gluten terms, you need to dry the gluten ball in an oven (typically overnight) and use that weight divided by the flour weight. There is a machine that is used to do all of this automatically, it is called the Glutomatic Gluten Washing Machine.

As for incorporating wet gluten into a dough, lotsa luck! That gluten ball is so tough and rubbery that it is impossible to incorporate into any kind of a dough. It kinda reminds one of a well chewed rubber band.

Tom Lehmann/The Dough Doctor  
6664

**Dough Clinic / Re: Please look at my recipe**

To use IDY (instant dry yeast use 1/4 less IDY than ADY (active dry yeast) so your new yeast level will be 0.2474 (call it 0.25-ounce) of IDY.

As for how to manage the dough, immediately after mixing, divide the dough into desired size dough balls, wipe with salad oil and place into individual plastic bags (bread bags work well), twist the open end into a pony tail and tuck under the dough ball as you place it into the fridge. Allow to ferment in the fridge (3-days in your case), then remove and allow to temper AT room temperature for about 2-hours, then turn out into a bowl of dusting flour and open into a pizza skin by hand, then brush with olive oil and dress as desired.

Tom Lehmann/The Dough Doctor  
6663

**Dough Clinic / Re: Using melted lard in dough**

Not a problem, no worse than using butter, and we all know how hard that gets when its cold. You will certainly pick up the flavor of the bacon or lard. That is why so many people say the tortillas taste so good in Mexico, because in Mexico they're made with lard that has not been as heavily deodorized as the lard which we have here in the U.S.

Tom Lehmann/The Dough Doctor

6662

### **Neapolitan Style / Re: Indulge Me- Potatoes**

We have used all sorts of potato on pizzas. Thin sliced, grated (really looks good) as well as cooked and mashed with butter and garlic. When using mashed potatoes I like to apply it in rosettes using a decorating bag and a large star tube, then apply by making little swirly (rosettes). Garnish with a little fine crumbled bacon and a little cheddar cheese in addition to your favorite pizza cheese. Makes for a really nice presentation.

Tom Lehmann/The Dough Doctor

6661

### **General Pizza Making / Re: Emergency pizza**

Scott;

Here is my emergency pizza dough.

Start with your regular dough formula.

1) Double the yeast.

2) Cut the amount of sugar in half.

3) Increase the water temperature used in making the dough by 15F.

Procedure:

Mix just until all of the ingredients come together and make a fairly smooth dough.

Immediately divide into pieces and ball.

Oil the dough balls and place into individual plastic bags, twist the open end to form a pony tail and tuck under the dough ball as you place it on the kitchen counter.

Allow the dough balls to ferment for 60 to 90-minutes, then turn out into a bowl of flour and open into pizza skins, dress in your normal manner and bake as normal.

Tom Lehmann/The Dough Doctor

6660

### **Dough Clinic / Re: Do different flours or a combination of them rise more than others?**

My experience is that the Caputo flour tends to make a slightly softer dough than K.A., so I'm guessing that the 50/50 blend dough was a little tighter and as such it didn't show as much rise, or gain in volume as the softer 100% Caputo flour dough. The amount of fermentation both doughs received was the same, the softer dough just visually got a little bigger because it was a softer dough. You can demonstrate this by using the same flour for two doughs and adding more water to one dough, the dough with more water will be the softer of the two and show more rise.

Tom Lehmann/The Dough Doctor

6659

### **New York Style / Re: In Desperate Need of CHEESE Help**

I totally agree, the look of the pizza with the "bad cheese" is more like what we see when using diced cheese. Also, you might be hitting the cheese with too much heat. To correct this, try moving the pizza to a slightly lower position in the oven if you can. Most stores sell a fresh mozzarella cheese in a ball form. Try one of these, but don't grate it, instead, peel it like an orange so you get random size pieces to place over the top of your pizza, then grate or buy some grated Parmesan cheese and sprinkle about 2-ounces over the top of your regular cheese (be sure to get some on the outer edge too) as this will add more depth to the cheese flavor.

Tom Lehmann/The Dough Doctor

6658

## [\*\*Dough Clinic / Re: Pizza Dough Calculator Weighing Water Question\*\*](#)

Yes, you should. Your scale probably won't be accurate enough to weigh to the 1/10-gram, so just weigh to the closest number your scale will allow. I normally round my numbers to the nearest whole gram too.

Tom Lehmann/The Dough Doctor  
6657

## [\*\*General Pizza Making / Re: Making pizza for several people with only one stone\*\*](#)

We also do a number of pizza parties each year and a couple of things that I've found to work well when I've got the better part of a dozen people looking for food is to put out bowls of pasta and several different sauces along with the first pizza. Also, consider using a party slice rather than a conventional pie slice, this gives more pieces and believe it or not, more time for that next pizza to get baked.

Remember to have FUN, talk to your guests as they are sampling your pizza, tell them about how you love making pizza and how honored you are to have them as guests, go on to talk about the next pizza coming up. As people listen, they tend to eat slower, and good conversation slows them down too, just what you need to get that next pizza to their plates.

Tom Lehmann/The Dough Doctor  
6656

## [\*\*Dough Clinic / Re: Dough ball\*\*](#)

Franko;

It's not recommended as the dough has warmed and has expanded to some extent (becoming less dense) as such, it is a better insulator and it will not cool very efficiently, leading to the possibility of a blown dough or excessive fermentation. A much better approach would be to at least partially open the dough ball, thus reducing the cross section and making it easier to cool down. By doing this we have been able to save the dough from one day to the next in a home baking situation, however, in a store setting, we don't recommend this practice as it is too difficult to manage properly which could lead to a disappointed customer (s) something we never want to do at the store level.

Tom Lehmann/The Dough Doctor  
6655

## [\*\*Dough Clinic / Re: Too much oil\*\*](#)

Make a half size batch without any added oil, then blend the two together. You can freeze the extra sauce that you have for later use.

Tom Lehmann/The Dough Doctor  
6654

## [\*\*Dough Clinic / Re: Storing and keeping flour fresh\*\*](#)

Shaun;

While the flour miller takes steps to ensure the flour is bug free and devoid of any insect eggs, nothing is 100% so there is always a possibility that there can be some viable eggs in the flour. When they hatch they will be larvae and the flour will be "wormy", then they mature into adults and you have "buggy" flour, soon to be followed by the laying of eggs and a repeat of the cycle. This can all take place in as little as a month. So, at the very least, you should take steps to ensure the flour is not infested from the outside of the package, this means putting it into a plastic or metal container, no need to be air tight, just bug tight. Flour does change

during storage, it oxidizes, meaning that it gets stronger. This may not be a good thing as it can result in excessive dough memory/snap-back during the forming operation. For this reason, we suggest storing the flour in the fridge if at all possible. If you plan to store it for an extended length of time we suggest first freezing the flour for 45-days or more, then storing it in the fridge.

Tom Lehmann/The Dough Doctor  
6653

### **Dough Clinic / Re: Storing and keeping flour fresh**

Peter;  
Yes.  
Tom  
6652

### **New York Style / Re: Lack of gluten development = hollow edge crust?**

I don't like to use a Zip-Lok bag as it seals the dough too tightly, instead, I like to use something like a bread bag, first lightly oil the dough ball, and drop it into the bag, then twist the open end to close and tuck it under the dough ball as you place it into the fridge. Leave the dough ball in the bag when you remove it for tempering AT room temperature, just turn the dough ball out of the bag into a bowl of dusting flour and begin opening the dough into a pizza skin. A couple things to keep in mind are the amount of yeast you're using and the finished dough temperature. Too much yeast or a dough that is too hot/warm will result in an over fermented dough after three days in the fridge.

Tom Lehmann/The Dough Doctor  
6651

### **New York Style / Re: Lack of gluten development = hollow edge crust?**

Actually, the dough formula looks to be quite good. You might try lightly brushing the dough with oil when you take it out of the fridge rather than dusting it with flour which can dry the dough, or just leave the dough in the plastic bread bag or container to temper AT room temperature for about 2-hours, then turn it out into the dusting flour and open into a skin as normal. From the pictures of your pizza, it really looks quite good. Those bubbles around the edge of the crust are normal and add character and texture to the pizza. The area directly under the bubbles as seen in the photos appears to be a bit dense. There are two ways that you might address this, 1) Increase the IDY level to 0.375% of the flour weight. 2) Experiment with a slightly higher dough absorption. 3) Allow the dough to set out at room temperature for an additional 30 to 60-minutes before opening it into a pizza skin. Keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
6650

### **New York Style / Re: How long out of refrigerator before cooking?**

While we normally advocate leaving the dough out of the cooler for 1.5 to 2-hours before opening it into a pizza skin, we have also put a thermometer into the dough to find out what the temperature of the dough is at this time. We found that the dough is typically at 50 to 55F. I don't like using the Zip-Lok bags for dough storage as there is a possibility of the pressure within the bag opening the seal, or blowing out a seam in the bag, in either case the dough will crust over :(, this is why I like to use something like a bread bag. Oil the dough ball, drop it into the bread bag, twist the open end of the bag to close and tuck the pony tail under the bag as you place it into the fridge. This will allow for some expansion of the bag

while not allowing it to open, thus saving the dough.

Tom Lehmann/The Dough Doctor  
6649

**New York Style / Re: How long out of refrigerator before cooking?**

Jackie;

You'll find the October class to be a tremendous asset in getting your pizzas developed for your planned shop. Many of our students are in your exact same position of preparing to open a store. The dates for this years pizza seminar are October 22 through 26, 2012.

Tom Lehmann/The Dough Doctor  
6648

**Starters/Sponges / Re: Sourdough Culture Contamination Concern**

Dan;

Most bacterial starters take a bit more than just a few hours before they show any real leavening power, but possibly the starter that you got is not a bacterial starter, but rather a yeast (wild yeast) starter? What does the manufacturer say about how long it should take before you begin to see the development of leavening gas?

Tom Lehmann/The Dough Doctor  
6647

**Prep Equipment / Re: Kitchenaid mixer time limits**

Patdf;

I totally agree, give hand mixing a try. You will be surprised at how easy it is, and as for being low cost, nothing will beat it. That's the way pizza was first made, and it still makes a great pizza. If you will send me your e-mail address I'll send you a copy of my home made pizza dough recipe/formula to get you started. Roll up your sleeves, grab a wooden spoon and a bowl, and prepare to have fun learning how to make great pizza. Remember, the journey is as much fun as the destination, and as a side bonus, you get to eat your mistakes as well as your successes.

Tom Lehmann/The Dough Doctor  
6646

**Dough Clinic / Re: Sticky Dough**

I can't say for sure without actually having the dough ball in my hands, but I'll put money on one of two things.

1) Essentially all commercially made frozen dough contains either L-cysteine (think PZ-44) or glutathione (think dead yeast) as a reducing agent to both reduce the dough mixing time and to improve processing of the cold dough. If they are getting inconsistent doses of this material into the dough (not hard to do), this might explain the unusually soft and overly sticky dough you are occasionally experiencing.

2) As you note, temperature abuse. Frozen dough does not tolerate temperature abuse well at all, and this could well be the culprit here. In either case, I would contact the manufacturer of the frozen dough and notify them of the problem. You may well need to change suppliers or go to making your own dough to get away from the problem if the dough manufacturer isn't getting flooded with dough performance complaints.

Tom Lehmann/The Dough Doctor  
6645

**New York Style / Re: My New York pizza**

I would suggest deleting the oil, taking the water up to 70% and increasing the IDY to 0.5%. That should go a long ways toward opening the crumb structure. BTW, that is not a bad looking pizza.

Tom Lehmann/The Dough Doctor  
6644

**[Other Types / Re: Mark's -Stir 'n' Roll pizza dough - NO Yeast](#)**

Mark;

Your chemically leavened (baking powder) dough reminds me a lot of the first pizzas I ever made using the Chef Boyardee (not sure of the spelling) pizza mix. Yep, tasted a lot like a biscuit with a poor excuse for pizza toppings on it, but considering the time (early 1950's) it was pretty good, and like today, a novel to make at home.

There are still a lot of people who use the refrigerated Pillsbury biscuit dough as a base to make their pizzas on.

Tom Lehmann/The Dough Doctor  
6643

**[Other Types / Re: Mark's -Stir 'n' Roll pizza dough - NO Yeast](#)**

Mark;

If you can find it give it a try. Just remove the individual dough pieces and place them together in a pan, press them together, then flatten to make something that looks like a pizza skin, then top, dress and bake. That's how I've seen it done and it seems to work pretty well for what it is.

Tom Lehmann/The Dough Doctor  
6642

**[Dough Clinic / Re: hydration rates and cracker doughs](#)**

John;

Actually, we have found that absorption values of 45 to 50% work better in cracker type doughs than the very low absorptions in the 30 to 40% range. The reason for the low absorption values is to prevent full hydration of the flour, however, we have found that if you make the dough in much the same manner as you would a pie dough you can achieve the same results while having an easier to work with dough. This is what we have found to work best for us;

Put water into the mixing bowl (45 to 50% of the total flour weight), then add the yeast (be sure to suspend the yeast in the water), add salt and sugar (we don't recommend using sugar but do so if you must), now add the oil and immediately add the flour. Mix at low speed for about 90-seconds (I know, it doesn't look like a dough, but trust me). Take the "shaggy" dough to the bench and scale to desired weight (be sure to scale about 2 to 3-ounces heavier than what you want as there will be scrap dough), roughly form the "dough" into pucks as you would for a pie dough, or better yet, place into individual plastic bags, then place into the fridge to ferment overnight. If you made pucks, place them onto a pan and cover with plastic before placing it in the fridge. On the following day, remove the dough from the fridge and allow to temper AT room temperature for 2-hours, then turn the dough out of the bag, and place onto a dusted surface, using a rolling pin, sheet the dough out to about the thickness of a quarter. Trim the dough to the desired diameter, dock well, sauce and dress as desired. Pizzas made on these dough skins should be baked on a hearth surface at 500F.

Tom Lehmann/The Dough Doctor  
6641

## [\*\*Dough Clinic / Re: hydration rates and cracker doughs\*\*](#)

Peter;

You are absolutely correct. The gross under mixing of the dough that I outlined produces a finished crust that actually shatters as you bite into it, yes, it is that tender and flaky, and if that isn't enough to satisfy ones crispy tooth, try par-baking the docked dough skin, then dressing it and finishing in the normal manner, it is like having a giant saltine cracker under those toppings (I've been known to boast just a little), but it does produce a pleasantly crispy and tender eating finished crust. The key is not to over mix the dough, it must look something like either a long flake pie dough or a good home made baking powder biscuit dough (that biscuit dough might be just a little over mixed as an example for this application).

Tom Lehmann/The Dough Doctor

6640

## [\*\*New Forum Members / Re: Hello from Hesperia, California\*\*](#)

Doug;

To get you started, New York style pizza crusts are made with a high protein flour. With the selections you show, I would go with Kyrol or Mondako. They are not quite as high as is typically used in New York, but they should work well for you at home. As for the yeast, go with the SAF red label. The gold label is intended for use in high sugar/low salt applications, and the truth be known, it will work just fine in your cinnamon roll dough too, so you really don't need to have two different bags sitting around. I would experiment a bit with hand mixing. Put the water (75F) in the bowl first, then add the SAF red label which has been pre-hydrated in a couple ounces of warm water (95F) for 10-minutes, followed by the flour and salt. You probably won't need to add any sugar. Using a wood spoon, begin stirring the mix together for a couple minutes, as you gradually add the oil. When the "dough" looks something like wet oatmeal, stop mixing, and cover the bowl with a piece of plastic. Allow the dough to ferment at room temperature for about 2-hours, then turn out onto a floured counter top, and knead just for a minute. Oil the mixing bowl, form the kneaded dough into a ball and place into the mixing bowl. Lightly oil the top of the dough and cover again with the plastic. Allow to rise for 1 to 3-hours more. I like to schedule this with the meal time so meal time is about 45-minutes after the fermentation time. Turn the fermented dough out of the bowl and cut into the desired number of pieces (I normally figure on 2 dough balls for each 3-cups of flour in the recipe). Using minimal handling, roughly form each dough piece into a loose ball and set aside to rest for about 30-minutes (cover if necessary to prevent drying). Hand stretch or roll each dough ball into a pizza skin about 12-inches in diameter. Brush with olive oil, add some diced garlic and fresh pieces of basil, then add fresh tomato slices (about 1-tomato per pizza ) or use drained tomato strips or drained diced tomato for your sauce. Finish with torn pieces of fresh Mozzarella cheese, or your favorite cheese, then finish with an ounce of grated Parmesan cheese and bake on a pizza stone in the center of your oven at 450F until the bottom begins to brown, then move the pizza to a higher rack position without the stone to finish the top of the pizza. Keep in mind that you will probably need to experiment with the baking as all ovens are different. This should get you started.

Tom Lehmann/The Dough Doctor

6639

## [\*\*New Forum Members / Re: Hello from Hesperia, California\*\*](#)

Scott;

Please remember that this formula and procedure are for a bio-chemically developed dough, one that has already had a lot of fermentation time. With a bio-

chemically developed dough you have a very soft and extensible gluten structure as opposed to a tighter gluten structure that is common with machine mixed doughs. As for the flour, I should have said my selections would be Kyrol or Mondako (the Mondako is the one that is not as high in protein content, but still works well in a home setting). As for putting fresh basil on a pizza (pre-bake) we do it all the time, just make sure it is at the bottom of the pie where it is protected from the oven heat and the aroma can infuse the entire pizza during baking. I don't see the Mozzarella cheese being sold in bricks very often at the supermarket, but I do see fresh Mozzarella sold there quite frequently, so like the sailor says "any port in a storm", it sure beats using the stuff out of a bag. The lower oven temperature by the way works very well with the fresh Mozzarella. If he had indicated that he was in a pizzeria, my advice would have been entirely different, and more true to form, but that was not the case. I did forget to add that a few fresh basil leaves should be applied to the top of the pizza immediately upon removal from the oven.

Tom Lehmann/The Dough Doctor  
6638

### [\*\*New Forum Members / Re: Hello from Hesperia, California\*\*](#)

Peter;

Big Spring is shown on their data sheet as being appropriate for use in making French and Italian breads, as such it should work well in a home, or pizzeria setting for making a New York style pizza dough/crust. It is interesting to note that PFM shows only their whole wheat, Morbread (12% protein), Mondako (12% protein), and Blendako (11.5% protein) as recommended for thin to medium pizza crust production, and the Big Spring (14.5% protein) for thick pan pizza crust production. All of our research that we have done over the years shows that thick crust and pan pizzas are best made with a flour having from 11.5% protein at the low end to 12%+ at the high end. When a super high protein content flour is used to make thick crust and pan style pizzas there is a potential for the finished crust to become overly tough and chewy if it is not given sufficient fermentation. This was true of Pizza Hut's first departure from thin crust pizzas. Back in the late 60's they introduced a type of pizza appropriately called their Thick and Chewy, and that it was, on both counts!

Tom Lehmann/The Dough Doctor  
6637

### [\*\*Cracker Style / Re: The Dough Doctor's cracker!!\*\*](#)

Because of the greatly abbreviated mixing process, this is one case where I have found it necessary to put the salt as well as the oil into the water, but I am always careful to begin my "dough mixing" process as quickly as possible.

Tom Lehmann/The Dough Doctor  
6636

### [\*\*Starters/Sponges / Re: Preferment in place of a long, cold straight ferment?\*\*](#)

Garvey;

Flavor development is a function of fermentation and its byproducts combined with the heat of the oven. You can get some very good flavors using a preferment, but if they are not fermented under refrigeration as your refrigerated dough management procedure calls for, the resulting flavor may be different due to the differences in acids formed (room temperature v/s refrigerated). You will probably want to include as much flour as possible, if not all of the flour in the preferment to retain the protein degradation for digestability. I think you could work out a refrigerated preferment that would meet your needs with just a little

experimentation. There is a possibility that you could develop a "running" ferment, aka, Madre De La Masa (mother dough). This would be like a preferment that you could use from on a regular basis, and replenish (refreshen) as you go to retain its vitality (something like a sour). Remember, the journey is as much fun as the destination.

Tom Lehmann/The Dough Doctor  
6635

**[Pizzeria & Restaurant Reviews / Re: ½A slice of Brooklyn' on the Travel Channel on Wednesday March 7th](#)**

Norma;  
Grimaldi's aka Patsy's is my all time favorite pizza. Gotta set me recorder to record it so I can see it when I get home (I'm traveling for the next two weeks).

Tom Lehmann/The Dough Doctor  
6634

**[Pizzeria & Restaurant Reviews / Re: ½A slice of Brooklyn' on the Travel Channel on Wednesday March 7th](#)**

Norma;  
I like the flavor of the crust as well as the chewiness, and we can't overlook the fresh basil.  
I do a lot of work for a baking company, Damascus Bakery just down the street from there on Gold Street.  
Enjoy looking at the pictures of their famous customers on the wall while you're there.  
Then, you will be able to fully appreciate the fact that you are eating a piece of New York history. There is a pretty nice restaurant over in Battery Park too. I consider New York City the Mecca of both pizza and restaurants. It's just a great food city, I hope you enjoy your visit!

Tom Lehmann/The Dough Doctor  
6633

**[Newbie Topics / Re: Time sensitive: choosing toppings for three pizzas with these ingredients](#)**

For one, I would use some of the pesto as a sauce and top with some precooked pieces of chicken breast, slices of onion, maybe some fresh tomato, garlic, and mushrooms, then finish with some of the fresh Mozzarella, torn or sliced not shredded, then sprinkle on a little shredded or shaved Parmesan...that's making me hungry already.

Tom Lehmann/The Dough Doctor  
6632

**[Sicilian Style / Re: Trying a different Sicilian pie tomorrow](#)**

Norma;  
On your formula sheet it shows the malt as being DIASTATIC. This is an active, (enzyme active) malt that should only be used with a non-malted flour, and even then, the recommended use level is only 0.25% of the total flour weight, not 2% as your formula shows. If the malt was non-diastatic you could use it at the 2% level without any problem. High malt levels will always result in a gummy, wet crumb structure, and in some cases it may also inhibit oven spring. My advice is to totally eliminate the diastatic malt form your dough formula.

Tom Lehmann/The Dough Doctor  
6631

## [\*\*Shop Talk / Re: Anyone know any pizzerias which are popular but serving bad pizza?\*\*](#)

Kinda reminds me of the old, Show Biz Pizza. Great fun and entertainment but fifth rate pizza at best. When our kids were younger they wanted to go there all the time, not for the pizza but for the fun and games. Even with bad pizza the place was always packed.

Tom Lehmann/The Dough Doctor  
6630

## [\*\*Chitchat / Re: who likes to fish?\*\*](#)

As a kid growing up in Chicago I had an Aunt and Uncle living up in Minocqua, Wisconsin. They owned a resort up there. As soon as school would let out I'd be on a bus up to Tomahawk, WI where they would pick me up and bring me to the resort. I'd fish for walleye, northernns, muskie, and yellow perch for the next 30-days, then back home to pick up the airline ticket that my grandparents would send me each year to come down to Clearwater, Florida where I would stay with them and use my grandfather's boat to fish Clearwater Bay for about a month. We also owned two party boats and a charter boat, so when they were not booked full I could always be found on one them fishing for grouper. In the bay I would fish for sand sharks, sea trout, pompano, and lady fish, and always did very well. Today, I fish local lakes here in Kansas as well as the Kenai River in Alaska, and Boot Lake in northern Minnesota, plus just about any other body of water where I can get a line into. When I'm not fishing, I'm deer hunting or predator hunting, thinking about it or planning a trip, and when I'm not doing that, I'm trying to look like I'm a productive member of society by holding a regular job here at the American Institute of Baking in Manhattan, Kansas. Life is tough, but someone has to do it!

Tom Lehmann/The Dough Doctor  
6629

## [\*\*Sicilian Style / Re: Trying a different Sicilian pie tomorrow\*\*](#)

Norma;

It is normal for the crust volume/height to be slightly suppressed where you have sauce. This is an old trick that we use when making par-baked crusts to prevent bubbling. Just lightly sauce the dough skin prior to baking and you can reduce the bubbling issue significantly. This is even greater when you have a heavy sauce application as your pictures suggest. Aside from par-baking the crust to some extent prior to dressing it, or using less sauce, what you are getting looks to be pretty normal. I've never seen a deep-dish pizza that was even across the entire diameter, there is always at least some loss of volume/height just under the sauce. This is one reason why a lot of the big box pizza stores use such a light application of sauce on their deep-dish pizzas. My expression for this is to say that those pizzas were blessed by the Italian sauce man.

Good lookin' pizza!

Tom Lehmann/The Dough Doctor  
6628

## [\*\*Sicilian Style / Re: Trying a different Sicilian pie tomorrow\*\*](#)

Norma;

We make one where we par-bake the dough until it is just set, then remove it from the oven and dress the crust, then put it back into the oven to finish baking. It is an extra step, but it does result in a finished crust that is essentially as flat as a board across the entire diameter. As a side benefit, it seems to dry the crust out a little

more than baking it all at one time, resulting in a crispier finished pizza. If nothing else works for you , you might give this a try.

Tom Lehmann/The Dough Doctor  
6627

**[Sicilian Style / Re: Trying a different Sicilian pie tomorrow](#)**

Norma;

There are two aspects to using a par-baked crust and getting what you are looking for. The first is to par-bake and then IMMEDIATELY dress the crust and place it back into the oven. The second, and equally as important is not to overbake the crust during the par-baking stage. Some will say that the par-baked crust shouldn't have any color on it at all, while I'm a little more generous and say that it can be tinged with a little light brown, especially on the bottom.

Good luck,  
Tom Lehmann/The Dough Doctor  
6626

**[Stones/tiles/steel, Pans & Accessories / Re: Frozen pizza on hot stone?](#)**

The only raw dough frozen pizzas that I'm aware of at the supermarket is the bake to rise type. These pizzas are leavened using both yeast and chemical leavening and for the most part they are designed to go directly from freezer to the oven. The package directions for baking should confirm this. As for a refrigerated pizza, there is a deli pizza from the supermarket, typically sold by the pound. These are made on a refrigerated, yeast leavened dough skin. This type of pizza can benefit from being allowed to temper at room temperature for up to about an hour before going into the oven. The other refrigerated pizza is the take and bake type of pizza, like you might get from Papa Murphy's. The dough that these are made from seems to be all over the board. Some are formulated with both yeast and chemical leavening, like the bake to rise pizza mentioned above, while others are made from a dough that is leavened only with yeast. This means that you might need to experiment with the brand of your choosing to see how it bakes the best. If it is from one of the big box pizza chains it can probably go straight from the fridge to the oven, but if it is from an independent pizzeria it might perform better if allowed to temper AT room temperature for a while prior to baking. Also, be sure to watch the bottom of the crust with any of these pizzas as they tend to be formulated with fairly high sugar levels to improve the baking properties in a conventional home oven without a pizza stone. If you get too much browning or burning, you may need to reduce the oven temperature when using your stone.

Tom Lehmann/The Dough Doctor  
6625

**[Stones/tiles/steel, Pans & Accessories / Re: Frozen pizza on hot stone?](#)**

Warrax;

You described the type of pizzas that I was referring to in my response. The cracking that you mention is why you will need to experiment a little with your baking stone. The bake to rise type of pizzas are designed specifically to go from freezer to oven. If you experience cracking with your type of frozen pizzas, I would suggest that you experiment with different thawing times. Begin with 15-minutes, and then progress longer in 15-minute increments until the problem no longer exists. When using a pre-made refrigerated dough skin it is usually beneficial to allow the dough skin some time to temper AT room temperature before baking. In this case you can either go by time, typically about 60 to 90-minutes at room temperature, or you can go by temperature. Look for a dough temperature of about

50F/10C before placing it into the oven.

Tom Lehmann/The Dough Doctor

6624

### **[Shop Talk / Re: Anyone know any pizzerias which are popular but serving bad pizza?](#)**

As beauty is in the eye of the beholder, taste is in the palate of the diner. I always remember the story about a U.S. air base that was closed down in Turkey many years ago. In the emergency shelter they had tons of survival biscuits (high calorie biscuits loaded with fat). As these were at out of date by the time of base closing it was decided to bury the biscuits in a trench. This was done and all was good until the base was turned over to the locals, who, upon gaining access to the base, were curious as to what was buried in that trench so they dug it up and found what they perceived to be a treasure trove of a local delicacy, rancid fat. The local delicacy was essentially rancid yak butter, and evidently those survival biscuits, however rancid they were, became a delicacy to the local palate, and all was good. Not exactly my cup of tea, but who am I to argue?

On a side note: I was living in Chicago when the first woodfired pizzas were introduced there. What a fiasco that was! You see, the locals were not used to that type of pizza so it was perceived to be burnt, and they were sent back to the kitchen with the admonishment "this pizza is burnt!" Then the word went out that "you don't want to eat at a pizzeria that has one of those wood burning ovens, because they burn the pizzas". That really slowed down woodfired pizzas in the Windy City. It's all good now because they are used to it, and know what to expect, but it sure didn't begin that way.

Tom Lehmann/The Dough Doctor

6623

### **[New Forum Members / Re: Anchovy pizza](#)**

While I am not a fond lover of anchovy pizza, I do enjoy a good seafood pizza. We make them at the NAPICS Show every year and everyone really seems to like them. I begin with a regular dough skin for a thin crust pizza, then apply Alfredo sauce and sprinkle with dried dill weed, red onion slices come next, followed by some fresh tomato slices (I like to cut them in half) then add some fresh fish (raw), I either cut it into pieces about 1/4-inch thick, or tear it into pieces for application, depending upon what appearance I'm looking for, then apply a very light application of Mozzarella cheese, followed by about 2-ounces of shredded Parmesan cheese (for a 12-inch pizza), bake as you would any other pizza. These are light and crispy and don't have that "fishy" flavor associated with anchovy. I've also made this pizza using popcorn shrimp, or a medley of seafood (fresh fish, clams, shrimp, and scallops). Makes me hungry just thinking about it!

Tom Lehmann/The Dough Doctor

6622

### **[Dough Clinic / Re: Dough: Hard and rubbery or floppy. No sweet spot!](#)**

Also, let us know how long you're fermenting the dough after mixing, and what the temperature of the dough is at the conclusion of mixing.

Tom Lehmann/The Dough Doctor

6621

### **[New Forum Members / Re: Anchovy pizza](#)**

C.K.;

I like to use sockeye salmon, grouper, sea bass, halibut, or orange roughy. I don't

care to use the more oily types of fish like king salmon, mackrel, or tuna. That's just my own personal preference though.

Tom Lehmann/The Dough Doctor  
6620

### **Dough Clinic / Re: New Pizza Shop**

I can certainly help you.

Based on what you have provided, here are the changes I suggest.

Reduce the salt level to 1.75% (385-grams)

Increase the dough absorption to 58% (12.76-Kg/Lts.)

Adjust the water temperature to 65F.

Add all of the water to the mixing bowl, then add the flour and other dry ingredients, mix for about 2-minutes at low speed, or just until all of the flour is wet, then add the oil and mix for one more minute at low speed. Finish mixing in your normal manner.

Target finished dough temperature after mixing is 75 to 80F.

Take the dough to the bench for scaling and balling immediately after mixing.

Place dough balls into plastic dough boxes and wipe the top of the dough balls with salad oil.

Immediately take to the cooler and cross stack for 2-hours, then down stack and nest the boxes to prevent drying. The dough will be ready to begin using after 16-hours.

To use the dough, remove a quantity from the cooler, leaving them sealed in the boxes and allow to temper AT room temperature for 2-hours, then begin opening the dough balls into pizza skins for immediate use.

Any dough balls that will not be used within a 3-hour window of time after you begin opening them should be opened and placed onto a baking screen and then stored in a wire tree rack in the cooler (cover with plastic to prevent drying). These will be good to use later in the day. To use, just remove from the cooler and allow to temper AT room temperature for about 30-minutes, then remove from the screen and restretch if necessary to size, then dress to the order and bake. The dough balls left in the cooler will keep for up to 72-hours.

Tell me something about your oven and baking conditions.

Tom Lehmann/The Dough Doctor  
6619

### **Shop Talk / Re: leaving pizza out/bacteria**

Lindsey;

You will need to check with both state and local health departments to find out what regulations they have in place regarding pizza/pizza by the slice. As a general rule, you will need to hold the pizzas at a minimum of 140F, but if it is allowed to drop below 140F, you may be required to reheat it to a minimum of 160F (this actually means 165F) before serving. In some places the delivery time for pizza is limited to that in which the pizza can be maintained at a minimum of 140F (which actually means 145F). In some places they recognize what is called the 4-hour rule (product may be allowed to remain at a temperature which will support bacterial growth for a total accumulated time not to exceed 4-hours. Unless each pizza has a tag on it, this can be difficult to document, hence the reason why some places don't follow this rule. I believe the 4-hour rule is why New York pizzerias (slice shops) can get away with allowing the slices to sit in a display case without heat while waiting to be sold. Again, be sure to check with state and local health departments for the rules governing your location.

Tom Lehmann/The Dough Doctor

6618

**[Dough Clinic / Re: New Pizza Shop](#)**

I would keep the sugar where it presently is if you like the result from that sugar level. The salt and sugar levels are independent from each other. Yes, the 58% is the water absorption level based on the total flour weight. Since you are doing all of your mixing at low speed, it becomes a matter of staging the ingredients in the mixing bowl (order of addition) rather than a change in the dough mixing process. Your total mixing time will remain unchanged. As you are using individual dough containers, You should NOT cover the containers until after they have been in the cooler for at least 2-hours uncovered. This will allow for more even cooling of the dough without the undesirable sweating which you mentioned seeing.

Tom Lehmann/TDD

6617

**[Stones/tiles/steel, Pans & Accessories / Re: eating pizza from wooden dishes?](#)**

You could serve the pizza on a heated stone, much like Pizza Hut toyed with many years ago. This is very effective, just remember the old admonishment "Be careful, this is very hot!".

Tom Lehmann/The Dough Doctor

6616

**[Pizza Cheese / Re: Grande:Not Blown Away Just Yet](#)**

Mozzarella cheese really doesn't have a very spectacular flavor by itself, the main quality attributes are the way it strings, melts, and lack of oiling out during baking. If you want flavor, you're going to need to blend it with a more flavorful cheese. My own personal favorite is to blend 2-ounces of Parmesan (shredded) with 14-ounces of Grande whole milk Mozzarella (shredded) to make a pound of topping cheese. If you want even more flavor, blend in some Romano into the blend. Now we're talkin' !

Tom Lehmann/The Dough Doctor

6615

**[Chicago Style / Re: Weird white spots on my deep dish doughball?](#)**

Can you tell us what your dough formulation/recipe was and how you made it? This might provide some insight into what the problem is.

Tom Lehmann/The Dough Doctor

6614

**[Shop Talk / Re: Power Pizzeria; Healthier Pizza or Hype?](#)**

It sounds like pizza made on a protein enriched crust. Still the same number of calories, if not more, with protein added for "redeeming social value". I too would be interested in seeing the nutritional profile of that pizza. With the new menu nutritional labeling regulations coming down the pike, we may not have to wait very long to see them as they may be mandatory depending upon city/state/Federal regulations.

Tom Lehmann/The Dough Doctor

6613

**[Dough Clinic / Re: New Pizza Shop](#)**

LaSera;

Not to worry. You did good.

Just think, a few short years ago bakers percent was like a foreign language to most pizzeria operators and home pizza makers.

Tom Lehmann/The Dough Doctor  
6612

### **Chicago Style / Re: Weird white spots on my deep dish doughball?**

Phytonic;

What kind/type of yeast are you using? From the photo that you provided, it appears that the spots are all about the same size. If flour or fat were the culprit, I would expect to see a more random size pattern formed, but because of the uniformity maybe we need to be looking at the yeast, especially if it is ADY or IDY, and how it is added.

We make a VERY undermixed Chicago cracker type crust that resembles a pie dough rather than a pizza dough (just 45 to 60-seconds of mixing time) In this dough we see a lot of flour lumps but they have a very random size distribution and they are hard when squeezed, and when broken, you can identify the flour, this is why I am leaning away from the flour in this case. However, it might be dried dough pieces from a surface that the dough was scraped off of at some point, just a thought.

Tom Lehmann/The Dough Doctor  
6611

### **New York Style / Re: Baking the best pies of my life in a coal oven. Why is it different than wood?**

Scott;

Think about it for a minute....how much moisture is in the wood that is being burned? Probably double digit, and it can/will vary from lot to lot, if not piece to piece. Now switch over to coal, how much moisture in that lump of coal. For every pound of coal burned you get more BTU's of heat energy than you get from the same weight of wood, but without putting the moisture into the oven. We see a similar response when comparing gas heat (moist) to electric heat (dry). This might explain what you are seeing.

Tom Lehmann/The Dough Doctor  
6610

### **Neapolitan Style / Re: 10 hour dough**

Thezaman;

After seeing those pictures, I've got a hankerin' to come by your place for a short visit and a few slices of your pizza!

They look great!

Tom Lehmann/The Dough Doctor  
6609

### **Chitchat / Re: 6 Ingredients You May Not Want In Your Food**

Norma;

Welcome to the wonderful world of scary, sounding, as well as misread ingredients. All are not what some might like us to believe what they are.

Wood pulp, also known as micro crystalline alpha cellulose: Truth is, cellulose is cellulose, if it comes from bran (anyone objecting to eating whole-wheat/whole-grain cereals? Didn't think so. The cellulose in the bran portion of grains (that's where most of the nutrients are stored) is the same as that in wood pulp, is the same as that in grass clippings, like I said, cellulose is cellulose, it don't make no matter where it comes from.

Propylene Glycol does not have a comma after it in this application, it is Propylene glycol monoesters (PGMS), and it is an ester emulsifier in cake batter and whipped toppings, can also be used in bread products as an emulsifier.

TBHQ (Tertiary Butylhydroquinone) is not the same as butane; It is used as an anti oxidant to prevent the development of rancidity in fats and oils.

Maybe that raspberry flavoring made from the anal gland of a beaver isn't the most visually sounding flavor out there, but then you have such things as blood sausage/blood pudding AKA black pudding (ask any Brit about it), or how about chitlin's? (fried intestine), then to you can always Google Dihydrogen Monoxide (DHMO) this nasty stuff is present in most of the foods that we eat, and believe me, it is a real killer, responsible for hundreds if not thousands of deaths every year! I almost died from it when I was a youth of 17.

My advice, don't sweat the little stuff, beware of the sprouts, raw milk, raw eggs, and anything else with the potential to do serious harm to you through unwanted microbial contamination.

Tom Lehmann/The Dough Doctor  
6608

### **Dough Clinic / Re: Kneading Issues - Kitchenade w/ Dough Hook**

I think the newer reverse spiral dough hook is the real solution. We have had the same problems with the dough climbing up on the hook with all of our Hobart mixers from the K5-A to the M-802. The problem is due to hook design not the mixer design. We have replaced all of the straight "dough arms" AKA "J" arm with the reverse spiral design hooks and the problem has ceased. I don't know if Hobart has a reverse spiral design dough arm for all of their smaller consumer mixers or not, but it would be worth an e-mail to find out. If not, the advice from Jackie Tran is spot on.

Tom Lehmann/The Dough Doctor  
6607

### **General Pizza Making / Re: Dough Rising Overnight at Room Temp**

Not to worry about food safety issues, but, depending upon the actual dough formulation, there is a possibility that it might be so acid that the finished crust will have a bit of an acid bite, or the acidity might also inhibit browning of the crust during baking. In some cases this can work to your advantage in that it will force you to bake the pizza longer, thus developing a thicker, heavier, and crispier bottom crust characteristic so long as you can avoid over baking the top of the pizza.

Depending upon the protein content of the flour, the dough might become overly soft and difficult to handle or form into a pizza skin due to the effects of yeast fermentation on the flour proteins. You might hedge your bets a little by brushing the exposed edge of the skins with a little olive oil just before you place them into the oven as this will help them to develop a nice golden crust color during baking. One final note, try not to degas the dough during the forming procedure. A good way to do this is to open the dough into pizza skins by hand stretching (do not use a rolling pin), as this will retain most of the leavening gas in the dough allowing for a better rise in the oven if the yeast has been damaged or if it has exhausted all of its food supply during the fermentation period.

Tom Lehmann/The Dough Doctor  
6606

### **Prep Equipment / Re: Spiral Mixer**

Matthew;  
Don't worry about the slightly slower mixing speed. Spiral mixers have an entirely

different mixing action than that of a planetary mixer. Spiral mixers are notorious for being able to efficiently mix doughs of different sized much better than a planetary mixer can. Without knowing how efficiently your old mixer was mixing the dough (did the dough climb up on the hook, did the dough ball just go for a ride on the dough hook, did the dough ball just seem to get batted around by the dough hook rather than driving through it?) these are all indications of less than desirable mixing action. You shouldn't see any of these issues with the spiral mixer. When you mix your first dough, just mix it until it takes on a smooth, satiny appearance, that's all the mixing a pizza dough needs. Bread doughs, on the other hand, should be mixed to full gluten development to achieve the desired fine, close internal cell structure.

Tom Lehmann/The Dough Doctor  
6605

### **Sauce Ingredients / Re: Pizzaiolo Pizza Sauce**

TomN;

One of my personal favorites is to use the 74/40 tomato filets from Stanislaus. Just drain them and apply just as they are. Prior to application of the tomato filets I like to add a very light application of garlic infused olive oil, then add a smattering of diced garlic, followed by several fresh basil leaves, after that, the tomato filets. I don't go for complete coverage, but rather something closer to 60%, then add your favorite cheese or cheese blend (mine id Mozzarella and Parmesan), then finish by dressing to the order. This provides a great natural, fresh tomato taste along with some texture that sauce doesn't provide.

My other personal favorite is to use slices of fresh, whole ripe tomato to replace the tomato filets. Leave the skin on the tomato for the extra flavor they bring to the pizza. No dried herbs please. Either of these makes a truly outstanding "sauce" if you like fresh tomato flavor and texture.

Tom Lehmann/The Dough Doctor  
6604

### **Newbie Topics / Re: Sauce first or cheese first**

Cheese first then sauce is also practiced in Chicago. One of the downsides to this assembly method is that if the cheese is applied very last, it covers everything, good for holding everything together, but if you tend to be a little heavy handed with the vegetable toppings, the cheese will trap a lot of the moisture under it, thus making for a softer finished crust. This isn't too bad with a deep-dish type of pizza, but it can be a real bummer on a thin crust unless you are in Chicago where no one expects a thin crust pizza to have a crispy bottom anyways.

Tom Lehmann/The Dough Doctor  
6603

### **Chicago Style / Re: First Deep Dish Attempt, Third Pie Ever**

RcBaughn;

Did you use raw sausage on your deep-dish pizza? In Chicago the sausage is buried down under the sauce and it is applied as raw sausage. This gives the finished pizza a very unique flavor that you just can't get using pre-cooked sausage. Going this route, you may want to bake the pizza a little longer, about 45-minutes total baking time. If necessary, use a screen or something under the pan to prevent burning the bottom with the longer baking time. Also, try adding some "egg shade" a type of yellow food coloring to your dough. This is what they do in Chicago to give the dough the unique yellow color.

Tom Lehmann/The Dough Doctor

6602

### **Chicago Style / Re: First Deep Dish Attempt, Third Pie Ever**

Peter;

Beggar's Pizza is another Chicago chain that uses Egg Shade in their dough, as do a number of independents. You need to watch with the amount of "yellow coloring" used as they are not all alike. If a dough formula calls for X amount of Egg Shade (a commercial product) a different coloring material might require a different amount to achieve the same color impact upon the dough. You can Google "Egg Shade coloring" to get more information on it.

Tom Lehmann/The Dough Doctor

6601

### **New York Style / Re: First attempt - Good except too soft, not enough chew**

For a New York style pizza you're going to want to use a very high protein content flour. Look for something in the 13 to 14% protein range. For N.Y style pizzas I normally use a dough factor of 0.10619 which is to say that I use 0.10619-ounces of dough per square inch of surface area. This translates out to 16.35-ounces for a 14-inch pizza ( $154 \times 0.10619 = 16.35$ -ounces) so you might want to consider increasing the dough weight by a couple ounces. The additional dough may help you achieve the porosity you want while the high protein content of the flour should provide the chewiness. Be careful when mixing the dough, all you want is to have the dough mixed until it comes smooth, mixing beyond this will only contribute more of a bread like crumb structure to the finished crust. My rule when mixing pizza dough is to always err on the side of under mixing the dough.

Tom Lehmann/The Dough Doctor

6600

### **Dough Ingredients / Re: Question about Fresh Yeast**

Ronchonou;

For a shop operation I would suggest the following dough formulation:

Flour: 12 to 13% protein content (General Mills Harvest Kin or Superlative) 100%

Salt: 1.75%

Compressed Yeast: 1%

Oil: 1%

Water: (65F) 60%

Procedure: Put water in mixing bowl, add salt, then flour and yeast. Mix 2-minutes at low speed, add the oil and mix 1 more minute at low speed. Finish mixing at medium speed for about 8-minutes, or first speed for 12-minutes. Target finished dough temperature is 80 to 85F. Take dough directly to the bench for scaling and balling. Place dough balls into plastic dough boxes and wipe the top of the dough balls with salad oil. Cross stack in the cooler for 2-hours, then down stack and nest the dough boxes. The dough will be ready to begin using after about 18-hours in the cooler. The unused dough can be held in the cooler for up to 3-days, but is at its best on the second day. To use the dough, remove a quantity from the cooler and allow to temper AT room temperature for 2 to 2.5-hours, then begin opening the dough balls into skins for immediate use. The dough will remain good to use for 3-hours after you begin open the balls into skins. Any unused dough balls can be opened and placed onto screens and placed on a wire tree rack in the cooler (uncovered for 30-minutes) then cover with a rack cover or plastic bag. Use these pre-opened dough skins as soon as possible. To use the pre-opened skins, bring the rack out of the cooler and allow to temper AT room temperature for 30-minutes, remove the skin from the screen and resize, place onto peel with a little peel dust

and dress to the order, then bake as normal Using this method you should never need to toss out any dough balls, and you will have a consistent product over the life of the dough balls.

The amount of compressed yeast to use for 25Kg. of flour is 1% in this application, that calculates out to 250-grams.

Tom Lehmann/The Dough Doctor  
6599

**New York Style / Re: Need help with Tom Lehman's NY style pizza**

Osipov;

At the temperature you're baking at the specific brand of cheese that you are using in browning excessively, so when you bake the pizza right on the stone you are getting the bottom done faster than you would if using a screen. This means that the top and bottom of the pizza are being baked more closely together. With the screen, the baking time will be longer, but the cheese can't be subjected to a longer bake or it will burn. Increasing the baking temperature will only result in the cheese burning faster, so the solution is, when baking on a screen you must actually reduce the baking temperature to something in the 500F/260C range and bake the pizza for a longer time. If you find that the cheese still gets too dark, you might need to change to a different cheese manufacturer.

Tom Lehmann/The Dough Doctor  
6598

**New York Style / Re: How long out of refrigerator before cooking?**

When tempering refrigerated dough it is only necessary to bring the dough up to 50F. This is only about a 15F increase in temperature before the dough is ready to be opened into a pizza skin. Our labs typically run between 68 and 70F and this takes about 2 to 2.5-hours for dough balls weighing in at 12-ounces or less, and about 3.5-hours for those weighing in at 13 to 22-ounces. A quick check with the thermometer inserted into one of the dough balls will confirm the actual temperature of the dough ball. In addition to being warmed from an external heat source, the dough is also being warmed through heat of metabolism by the yeast at the rate of about 1F per hour.

Tom Lehmann/The Dough Doctor  
6597

**New York Style / Re: the progress of the regular Lehmann dough for market**

Norma;

We did a study on the use of semolina flour in pizza dough a number of years ago. We found that for all practical purposes, 25% substitution was the maximum we could go before the finished crust became excessively tough and chewy. We thought 15% was a good working level. Because the semolina flour has a much larger particle size it is slower to hydrate than regular flour, so care must be taken to ensure the dough is properly hydrated. At first the dough will appear to be wet and sticky, but just like with a whole-grain dough, it will improve as the semolina hydrates. We did not detect an appreciable change in flavor when the semolina flour was used. As to using semolina flour either in part, or in total as a peel dust, because of its slow hydration it works great. I use a blend of equal parts regular flour, semolina flour, and fine corn meal as my "go to" peel dust, and I've never had any problems with the dough skin sticking to the peel if I did my part.

Tom Lehmann/The Dough Doctor  
6596

## [Dessert Pizza / Re: Dessert Pizza Failure](#)

RC;

Been there, done that. What I now do is to use a regular pizza crust, if I am going to par-bake it I dock it well prior to baking. Melt some unsalted butter, then brush a light coating of the melted butter onto the dough skin, sprinkle on a coating of granulated sugar (experiment to see how sweet you want the base crust to be) followed by a sprinkling of fresh cinnamon, now you can either par-bake or add a mixture of 8-ounces of sour cream, 8-ounces of Ricotta cheese, 2-ounces of sugar, and 1-large whole egg. Blend until smooth and spread onto the unbaked dough skin about 1/8 to 3/16-inch thick, leaving a slight uncovered edge. Apply fresh fruit (apple slices, kiwi, orange, mango, strawberry, blue berry, grapes (sliced in half), or whatever strikes your fancy, and bake as you would your regular pizzas. When still warm, but not hot, apply a drizzle of powdered sugar icing (powdered sugar and water mixed to a thick, slightly creamy consistency), and serve. This dessert pizza can be served warm, cold, or ala mode. We make it at all of the pizza shows where we have a test kitchen to work from.

Tom Lehmann/The Dough Doctor  
6595

## [Dough Ingredients / Re: Flour bag says Don't Eat Raw Dough or Batter - Why not?](#)

Peter;

Spot on.

There is no reasonable way to eliminate possible pathogens from the flour without affecting the protein quality. When used in baby foods, and other sensitive foods, the flour is heat treated which affects the protein's gluten forming quality, but still allows the starch to function as a binder. Most flour is perfectly safe, but there is no kill step taken so it cannot be guaranteed to be safe. This is much like the way we should treat shell eggs. Like we always say, better to be safe than sorry, or dead. Somebody one said that if it wasn't for the oven bakers would have poisoned mankind thousands of years ago.

Tom Lehmann/The Dough Doctor  
6594

## [Dough Ingredients / Re: Flour bag says Don't Eat Raw Dough or Batter - Why not?](#)

Sourdough starters, like fermented sponges or fermented straight doughs are relatively safe due to their low pH (high acidity). The only cautionary word about starters, especially when developing a new one, is that you really don't know what you have growing in it. Typically, it will be some strain of lactobacillus, but there are no guarantees. While the acidity will protect a mature starter, it is entirely possible to develop aflatoxins from an unwanted fungus, or spore forming bacteria (clostridium) and this is where the potential for problems arises. While this would exist for any bread making process, not just a sourdough. In a sourdough, it is possible for clostridium to produce aflatoxins before the starter becomes sufficiently acidified to control it. Why would you want to taste a raw sour? The proof of the sour is in the flavor it imparts to the baked product.

Tom Lehmann/The Dough Doctor  
6593

## [Dough Ingredients / Re: Flour bag says Don't Eat Raw Dough or Batter - Why not?](#)

To measure the pH (acidity) of a sour all you need is some Litmus Paper available

from your local drug store and a bottle of distilled water. I use a small plastic glass (6-ounce capacity) and put a couple tablespoons of sour into the glass, then I put an equal amount of distilled water into the cup and stir well, let it stand for a minute, then carefully decant (pour) off some of the liquid below into a shot glass, dip the Litmus Paper into the liquid and compare the color to that on the chart provided with the roll of paper to determine the pH. You will want to get paper that will read in the 3.4 to 4.8 pH range.

Tom Lehmann/The Dough Doctor  
6592

### **New York Style / Re: the progress of the regular Lehmann dough for market**

Norma;

Both durum and semolina flours are typically, but not always milled from durum wheat. Their main application is in the production of pasta. Durum flour is indeed of a finer consistency than semolina flour which is milled differently than durum flour and has a coarser texture (larger particle size). The gluten from durum wheat is somewhat different from the gluten of regular hard red spring and winter wheat varieties in that it is much more elastic/tight. If you buy pasta made using a durum wheat flour and one made from a hard wheat flour you will readily see the difference as the pasta made from the hard wheat flour has a softer, slightly gummy texture, while that made from the durum wheat has a firm texture. By the way, you can readily tell the two apart at the supermarket without even needing to read the label, the durum wheat pasta will be a light creamy, almost yellow color, while that made from a hard red wheat flour will have a dark, almost dirty/dingy color. It typically sells for a lower price too.

It looks like you have access to General Mills Flours. Here are some typical protein numbers that might be of interest to you for the GM flours.

Rex Royal: 12.4%; Washburn's: 12.6%; Full Strength: 12.6%; Superlative: 12.6%; Hi Power: 13%; Remarkable: 13.6%; All Trumps: 14.2%; WINTER WHEAT FLOURS: King Wheat: 11.1%; Doughbuilder: 11.1%; GM-44: 11.1%; Pollyanna (Untreated) 10.5%; Harvest King: 12%; Ben Hur (Unbleached) 12%; Semolina #1 (Enriched): 12.2%; Extra Fancy Durum: 12.2%

Tom Lehmann/The Dough Doctor  
6591

### **Prep Equipment / Re: Pizza Peels**

Dan;

What you have is what we call a composit peel. These are better than a metal peel, but not as good as a real wood peel when it comes to dough release properties.

American Metalcraft [www.amnow.com](http://www.amnow.com)> has some very good wood peels at a reasonable price. They show a 12 X 13" blade X 22" long @ \$22.60 each (Item # 2212). Take a look at this and then check out a local restaurant supply house or kitchen store to see if you can pick one up locally. The peel dust that I use is made from equal parts of regular flour, fine grind corn meal, and semolina flour.

Combined with the wood peel, it works like a champ.

Tom Lehmann/The Dough Doctor  
6590

### **Dough Clinic / Re: New Pizza Shop**

BY;

If you're having a problem getting the dough to cool down due to the use of a reach in cooler, or an under performing cooler (insufficient capacity), adjust the

temperature of the water that you add to the dough to give you a finished (mixed) dough temperature in the 75 to 80F range, probably favoring the 75F side. You might need to lower the water temperature by as much as 10F to accomplish this. Just make sure your cooler is operating at 38F or lower, but not lower than 34F to stay on the good side of your local health department.

Tom Lehmann/The Dough Doctor  
6589

### [\*\*Dough Clinic / Re: deflated dough?\*\*](#)

All of the above, plus, remember that allowing the dough to rise for even an hour before putting it in the cooler dramatically reduces the ability of the fridge to cool the dough (dough is less dense, making it a better insulator and more difficult to effectively cool), plus if you put the dough in a covered bowl in the fridge, you were again insulating the dough from the cold of the fridge and again reducing the ability of the fridge to cool the dough. Try leaving the lid off of the bowl for about 90-minutes after you put the dough into the fridge, then cover it and kiss it good night. To use the dough on the following day, remove the dough from the fridge, leaving it in the covered bowl, allow to temper AT room temperature for about 2-hours, then turn out onto a floured surface and begin opening the dough into a pizza skin.

Tom Lehmann/The Dough Doctor  
6588

### [\*\*Neapolitan Style / Re: 10 hour dough\*\*](#)

Lookin' good!!!!  
Tom Lehmann/The Dough Doctor  
6587

### [\*\*New York Style / Re: Need help with Tom Lehman's NY style pizza\*\*](#)

Tim;  
Try "decking" the pizza. This is where the pizza is removed from the screen during the last minute or so of baking and finished right on the deck. It helps immensely to improve the bottom bake.  
Tom Lehmann/The Dough Doctor  
6586

### [\*\*Shop Talk / Re: Best way to warm dough balls quickly\*\*](#)

Don;  
I agree with Peter, I also think the dough temperature is too high. Look for a finished, mixed, dough temperature of 75 to 80F, and be sure to take the dough directly from mixer to the counter top for portioning, and then directly to the fridge. If you drop the yeast level too far you run the risk of the dough not rising sufficiently during baking, especially under the center portion of the pizza, the result can be a gum line just below the sauce.  
Tom Lehmann/The Dough Doctor  
6585

### [\*\*New York Style / Re: the progress of the regular Lehmann dough for market\*\*](#)

Peter;  
Due to the significantly larger particle size for the semolina flour, its rate of hydration is a lot slower than that of the more finely milled durum flour. Semolina flour acts a lot more like whole-wheat flour in that it requires a longer time to fully hydrate. Failure to fully hydrate the dough will result in a very tight, elastic dough

that can be difficult to work with.  
Tom Lehmann/The Dough Doctor  
6584

### [\*\*New York Style / Re: the progress of the regular Lehmann dough for market\*\*](#)

Norma;  
All Trumps is my "go to" flour for New York style pizza.  
Tom Lehmann/The Dough Doctor  
6583

### [\*\*Shop Talk / Re: Best way to warm dough balls quickly\*\*](#)

Don;  
That rest period for the dough to begin fermenting before putting it in the fridge might also be hurting you.  
Tom Lehmann/The Dough Doctor  
6582

### [\*\*Neapolitan Style / Re: Goat Milk Yogurt "Sauce"\*\*](#)

Perry;  
That sounds very interesting. I'm going to try it on a dessert pizza skin. First brush a regular pizza skin with melted butter, then sprinkle with sugar and cinnamon for flavor, apply the goat milk yogurt, and pieces of fresh fruit. Bake as you would your regular pizzas. We're always looking for lighter options to the cream cheese/Ricotta base that we normally use on dessert pizzas.

Tom Lehmann/The Dough Doctor  
6581

### [\*\*Newbie Topics / Re: sauce blending\*\*](#)

One of the problems that you can encounter using a blender to mix the sauce is shearing of the tomato, this results in excessive weeping (watering out) of the tomato portion of the sauce and in general, this is not a good thing. For this reason, a more gentle blending action is desirable when making a sauce. Some may use a planetary mixer with a flat beater, some use just their hands, others use a hand whisk, and still others use nothing but a large spoon. Remember, the idea is to blend, not puree the sauce.

Tom Lehmann/The Dough Doctor  
6580

### [\*\*New Forum Members / Re: Loving pizza making... but ...\*\*](#)

You bet!  
Next time don't dress the pizza skin on the counter top/bench, instead, get yourself a short handle wood prep peel and place your opened dough skin onto the peel (pre dusted with a little peel dust or corn meal. My favorite peel dust is made from equal parts of regular white flour, corn meal and semolina flour. Everyone seems to have a favorite e for peel dust so don't be afraid to experiment with different materials or blends. Once you have the dough skin dressed on the peel, it is a relatively simple matter to just slide the dressed skin into the oven for baking. You could also try putting the dough skin onto a seasoned pizza screen and baking the pizza about 1/2 way through on the screen, then transferring the pizza off of the screen onto the baking stone to finish baking, this eliminates the mess in the oven of the peel dust.

Tom Lehmann/The Dough Doctor  
6579

## [\*\*Chicago Style / Re: First Deep Dish Attempt, Third Pie Ever\*\*](#)

Absolutely right, the yellow coloring makes the finished pizza look more appealing, and the yellow color infers richness, both desirable characteristics. Large wholesale manufacturers have stipulations governing the use of yellow coloring. For the most part, if the product contains eggs they cannot use the coloring, but if it does not contain eggs, they can use it. The reasoning? One egg in 2,000-pounds of dough and 1-gallon of egg shade coloring and it looks like the dough is made with buku whole egg. But if the formula doesn't contain any eggs, then eggs are not on the label, and they are free to use it. Truth of the matter is that it is all but impossible to get the color of egg shade in a dough through the use of whole eggs, whole eggs just don't contribute that much color to the dough.

Tom Lehmann/The Dough Doctor  
6578

## [\*\*Chitchat / Re: 6 Ingredients You May Not Want In Your Food\*\*](#)

I just bag it all up with things such as tripe, chitlins (chitterlings), black pudding and fig paste.

Tom Lehmann/The Dough Doctor  
6577

## [\*\*Newbie Topics / Re: How do I make better pizza with what I have?\*\*](#)

For a really low cost "stone hearth" for your home oven try using unglazed floor tile. They run between 1/4 and 1/2-inch thick and they work great for getting started. Be sure to allow about 20 to 30-minutes for the tile to come up to temperature before putting a dressed pizza skin on it.

Tom Lehmann/The Dough Doctor  
6576

## [\*\*Dough Clinic / Re: Suggested hydration rate for Mondako and Power Hi-G\*\*](#)

P.D.;

My reference shows the Power brand flour at 13.5% protein and Mondako at 12% protein content. It is hard to specifically say what the ideal dough absorption will be as this will be somewhat dependant upon the amount of fermentation the dough receives, but for starters, for a New York style crust I like to use the following:

Mondako Flour: 60 to 62% absorption

Power Flour: 64 to 65% absorption

This should at least get you in the ball park (Fenway?)

Tom Lehmann/The Dough Doctor  
6575

## [\*\*Commercial Ovens / Re: Highest Temp Electric Oven? \(USA\)\*\*](#)

JB;

The reason why you don't see electric ovens designed to operate at temperatures above 700F is because if they do they cannot be U.L. Listed. Gas ovens don't have that problem.

Tom Lehmann/The Dough Doctor  
6574

## [\*\*Prep Equipment / Re: Pizza dough boxes\*\*](#)

POO;

With those dough boxes;

1) for any dough weight over 15-ounces, go with a 4 X 5 placement pattern; 14-

ounce piece you can go with a 4 X 5 placement pattern and with a 5-ounce dough piece you can go with a 6 X 8 placement pattern.

2) Lightly oil the top of the dough balls after you place them into the box.

3) Immediately take the dough box to the cooler and cross stack them (90 degrees to each other) this allows for uniform cooling of the dough and prevents the condensation you are seeing. As the dough cool more efficiently, it also keeps the dough from growing together. Allow the dough boxes to remain cross stacked for 2.5-hours, then down stack and nest the boxes. And kiss them good night. The dough can be held in the cooler in this manner for up to three days.

4) To use the dough, remove a box of dough, leaving it covered, and allow it to temper AT room temperature for 2-hours, then begin opening the dough balls into pizza skins as needed. The dough will keep at room temperature for up to 3-hours. This is a pretty standard method of dough management in the retail pizza industry. Just about everyone used some variation of it.

Tom Lehmann/The Dough Doctor  
6573

### [\*\*Commercial Ovens / Re: Imperial Convection oven\*\*](#)

Crowbar:

Convection ovens are possibly the poorest type of oven for baking pizzas in. The main problem has to do with the bottom not getting done and the top getting over done. If you don't mind the extra work, you could tent the top of the pizzas with a piece of foil for a good portion of the baking time, until the bottom has a chance to bake, then uncover the top and finish baking. You will need to experiment to find out just how long to tent. Another option is to put some stones into the oven, but keep in mind that this disrupts the convection airflow so the baking of other items will most likely be affected. The stones would allow you to get a better/faster bottom bake. You could also make par-baked crusts, then dress and bake to the order. In a convection oven, by the time the top is finished baking, the bottom will be sufficiently reheated for serving. Experiment with this one to see if you like it first, not everyone does, but remember you options are few.

Can you install a small counter top air impingement or infrared oven? These are good if you won't have high volume pizza sales, and they don't take up much space at all (think Blodgette, Middleby Marshall, and possibly Lincoln for one of these).

Tom Lehmann/The Dough Doctor  
6572

### [\*\*Prep Equipment / Re: Pizza dough boxes\*\*](#)

Paperboy:

Those metal bench scrapers can be very hard on the plastic dough boxes, better to use the plastic scrapers. You can get rigid ones from WRH or you can get the cheap flexible ones from just about any flour distributor as they give them away with their name on them. Be kind to your dough boxes and they will last forever.

Tom Lehmann/The Dough Doctor  
6571

### [\*\*Prep Equipment / Re: Mixers\*\*](#)

Looks like a pretty neat mixer, but note the power requirements at 230V., also you should know the Hz cycle to make sure it is compatible with U.S. power. Another option is the Hobart A-200 series mixers (110 V.). They are expensive new, but they are easily found at sales and auctions.

Tom Lehmann/The Dough Doctor  
6570

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: we need s sticky for stones!\*\*](#)

One trick that we use to "season" the stones in a new oven is to apply a light coating of corn meal to the deck/stone surface and then allow this to "bake" until the corn meal begins to brown, then broom the corn meal out of the oven and you're set to go. This is even recommended by some of the commercial deck oven manufacturers. You do NOT want to apply oil to the stone like you would if seasoning a pan.

Tom Lehmann/The Dough Doctor  
6569

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Wife put cookies on pizza stone to cool now stone is smoke bomb\*\*](#)

Go to your local home improvement store and pick up a bottle of granite cleaner. You put this stuff on to draw out grease and stains from granite, and it just might work on your stone too.

Alcohol can also be used to remove oil, but it will take quite some time to draw it all out.

Tom Lehmann/The Dough Doctor  
6568

## [\*\*Pizza Cheese / Re: Grande:Not Blown Away Just Yet\*\*](#)

While the Grande cheese is noted for its flavor, its biggest asset is the fact that it resists oiling out so well. This is well recognized in the industry, and because they have not patented their "secret" process for making their Mozzarella, it has not been well replicated by other manufacturers.

Tom Lehmann/The Dough Doctor  
6567

## [\*\*Prep Equipment / Re: Mixers\*\*](#)

On that fancy mixer in question, it looked like a spiral hook in one of their pictures. With a hook of this type the dough will not climb up the hook, instead, it will be constantly be pushed down toward the bottom of the bowl. As for mixing the dough, a pizza dough only needs to be mixed to a point where it has a smooth, satiny appearance. Mixing beyond this is not necessary or desirable unless you're looking for a crumb structure that more closely resembles bread than pizza.

Tom Lehmann/The Dough Doctor  
6566

## [\*\*Newbie Topics / Re: Understanding formulas\*\*](#)

Khen;

In a nut shell, here is how it works. First off, everything must be WEIGHED, it doesn't work with volumetric portions. Remember, flour is ALWAYS equal to 100%.

To find ingredient weights:

Using your calculator, enter the weight of flour you want to use. Remember that the weight of the ingredients will be shown in the same weight units as the flour weight is expressed in (pounds, ounces, grams, kilograms, etc.)

then press X and enter the percent given for the ingredient weight you want, now press the "%" key and read the answer in the display window.

Example: flour weight selected: 32-ounces. Ingredient percent: 1.75%

32 X 1.75 (press the "%" key) and read 0.56-ounce in the display window. Do this for each ingredient and you have the weights for each ingredient.

To convert an existing formula to bakers percent:

Divide the WEIGHT of each ingredient by the weight of the flour and multiply by 100. This will put each ingredient into bakers percent.

Note: A recipe is based on volumetric portions (cups, teaspoons, etc.) and a formula is based on weight measures.

To convert a recipe to a formula, portion out each ingredient three times and then weigh each of the portions, add them up and divide by 3, this will give you the average ingredient weight for each individual ingredient in your recipe, now just divide the weight of each individual ingredient by the weight of the flour and multiply by 100 to put the weights into bakers percent.

Welcome!

Have fun exploring the wonderful world of PIZZA!

Tom Lehmann/The Dough Doctor  
6565

### [\*\*Off-Topic Foods / Re: Apple Pie\*\*](#)

I make apple pies every year during the Holidays. Since apples are loaded with pectin, you really don't need to put any starch into the filling. My filling consists only of sliced apples, sugar, about an inch off of a stick of butter, cinnamon and a little nutmeg then a cap of Real Lemon poured over the top of the filling. Be sure to mound the filling well above the top of the rim as the apples will cook down, and if you really want flavor, don't peel the apples. I then top it off with a streusel topping and bake at 375F until golden brown, cool and serve. For a variation I make raisin apple pie too. I just put a good handful of raisins in a small bowl, rinse with cold water, then pour off all of the excess water, add two capfulls of vanilla flavor and stir in. Cover and let hydrate for several hours or over night, add to the apples as you are filling the pie shell.

Tom Lehmann/The Dough Doctor  
6564

### [\*\*Dough Clinic / Re: Metal proofing pans?\*\*](#)

Moose;

When I use dough pans like that I lightly oil the pan, then drop in the dough ball, and lightly oil the top of the dough ball. I place them in the fridge uncovered for about 90-minutes to allow the dough to cool uniformly. This prevents the formation of condensation inside of the pan. Then cover and kiss it good night. When you're ready to use the dough just remove it from the fridge, leaving it covered, and let it set at room temperature for about 90-minutes (some experimenting will be necessary to find out what works best for you), then turn the dough out of the pan into a bowl of flour and begin opening the dough ball into a pizza skin for dressing. Plain old plastic bread bags are a good alternative to the metal dough cans. The only down side to them is that they don't stack well.

Tom Lehmann/The Dough Doctor  
6563

### [\*\*Starters/Sponges / Re: Newb starter question - keeping starter warm\*\*](#)

Remember, every starter, depending upon the microflora present in the starter has a specific temperature that it wants to be started at for correct initial bacteria propagation. Always follow the manufacturer's recommendations for the best results.

Tom Lehmann/The Dough Doctor  
6562

### [\*\*Prep Equipment / Re: Need ideas for cheap commercial-scale mixer\*\*](#)

Or, how about just looking for a used "off brand" mixer like a Thunderbird? Thunderbird mixers are very good mixers, but because they are an "off" brand (everyone looks for Hobart) they can be had a lot cheaper. A couple of years ago I saw a brand new 80-quart Thunderbird mixer, still bolted to the delivery pallet, with hook, flat beater, and 80-quart bowl sell for \$2,200.00. There are some 120 volt 40-quart mixers out there too, and I would advise you to stay away from them unless all you plan on mixing is pizza sauce. These mixers will require either 208 or 220 volts. And don't forget about the Hobart VCM (vertical cutter mixer). This is also an excellent mixer that is well suited to mixing dough but is typically off the radar screen so prices can be pretty reasonable when you find one.

Tom Lehmann/The Dough Doctor  
6561

### **Pizza Cheese / Re: Grande:Not Blown Away Just Yet**

A lot of people like the shredded over diced because of the appearance of the melted cheese. The diced seems more often than not to just melt as a blob, whereas the shredded form has some appearance to it and covers the pie better, but for a true artisan appearance, you will probably want to go with torn or peeled cheese since the inconsistency of the pieces provide part of the artisan appearance.

Provalone is higher in butter fat than Mozzarella so it will have a richer flavor. Even the best Mozzarella is somewhat bland in flavor, this is why I personally like to add a little Parmesan and Romano to the Mozzarella.

The big differences in Mozzarella are in terms of melt, browning, and oiling out. The best ones don't brown very much, they exhibit good melt properties, and they resist oiling out during baking.

Tom Lehmann/The Dough Doctor  
6560

### **Dough Clinic / Re: GLUTEN NEVER DEVELOPS**

CLG;

Remember when your dough got so stiff that you couldn't do anything with it? That was due to gluten development. You might try just adding more water to the dough to soften it to the point where it can be kneaded more easily, or you can do as I do and let the microbes do all the work for you. Just put the dough into a suitably sized container, lightly cover it with a piece of plastic to prevent drying, and allow the dough to ferment for 5 or 6-hours, after which you should find the dough much more manageable. Or you can also put the dough up in smaller pieces, say 12-ounce pieces, lightly oil and place into individual plastic bags (do not seal tightly, but instead, twist the open end to form a pony tail and tuck the tail under the dough ball as you place it into the fridge), allow the dough to slowly ferment in the fridge (cold ferment) for 18 to 24-hours, then turn out onto a floured bench or counter top and begin shaping. This is called biochemical gluten development.

Tom Lehmann/The Dough Doctor  
6559

### **Dough Clinic / Re: GLUTEN NEVER DEVELOPS**

CLG;

The thin (incredibly thin) center section of your dough skin was the reason why it didn't bake properly or develop the char that you were looking for. It was so thin that the heat was passing right through the dough and being dissipated in the sauce and toppings on top of it. If you leave the center section a little thicker it will not allow the heat to pass on through, hence it will get sufficiently hot to bake properly and develop the char that you are looking for.

Tom Lehmann/The Dough Doctor  
6558

**[Dough Clinic / Re: Antimo Caputo Italian Superfine "00" Farina Flour](#)**  
DM;

To get the char on your dough think along the lines of increasing the dough absorption to higher levels, and also probably increasing your baking temperature to something at 600F or higher preferably.

Tom Lehmann/The Dough Doctor  
6557

**[Newbie Topics / Re: Making small dough batches - importance of dividing the dough](#)**

J;  
Actually, when you use IDY you are correct that the water temperature should be at 95F, and if using ADY the water temperature should be at 100F, but this is ONLY the temperature of the water in which the yeast is activated in, which is only a small portion of the total water used in the dough. The amount of water used to activate the yeast is typically around 5-times the weight of the yeast, the rest of the water should be tempered to give you the targeted finished dough temperature that you are looking for (typically around 80 to 85F).

Tom Lehmann/The Dough Doctor  
6556

**[Sauce Ingredients / Re: Gardening tomatoes, herbs, and some veggies for 2012](#)**

Hi Norma;  
As always, I'm gardening for pizza again this year. Last year I had a couple of planters along our south facing drive way and the tomato and pepper plants did just fantastic, so this year I put out much larger planters (calf feed containers) and again went with tomatoes and peppers. They are doing fantastic! The tomatoes have all set with ping pong ball size fruit, and we will be picking the first peppers this weekend. Basil went in from seed so it is just now beginning to come up, but added two more wash tub planters of it, so we should be in for another great crop.

Tom Lehmann/The Dough Doctor  
6555

**[Sauce Ingredients / Re: Uncooked tomato sauce life](#)**

We make it a habit of keeping our sauce no more than 5-days. Because the sauce is made in an environment where yeast is present, yeast contamination is going to be the most common issue and is evidenced by a slight bubbling of the sauce. The natural acidity of the sauce will help to keep things pretty well in check for up to 5-days, but after that you're on your own.

Tom Lehmann/The Dough Doctor  
6554

**[New Forum Members / Re: How to get a cracker-crust!!](#)**

Heman;  
We need to know a couple of things:

- 1) Are you using a cracker type dough?
- 2) How are you opening the dough into pizza skins?
- 3) How is your oven setup? (top finger profile, bottom finger profile, temperature, bake time)

Tom Lehmann/The Dough Doctor  
6553

**[New Forum Members / Re: How to get a cracker-crust!!](#)**

Heman;

Your best bet will be to contact the manufacturer and get their directions for removing both the top and bottom finger panels. The outer sleeve is the one that you can see when you look inside of the oven and the actual finger profile is established by the sleeve that fits inside of that panel. You're going to have to pull them off periodically anyways to clean them, so you might just as well begin on that leg of the journey now. DO NOT get the position of the panels or insert sleeves mixed up. They must go back into the same position that they were removed from. A good idea is to lay the panels and sleeves out on the floor or bench top and photograph them with a sign to identify as top or bottom. This way if they should ever get mixed up you can refer back to the photograph for correct installation.

Tom Lehmann/The Dough Doctor  
6552

**[Neapolitan Style / Re: Humidity](#)**

Tony;

The fermentation process doesn't stop when you ball the dough, it will continue to ferment for quite some time. You will get different end product flavors depending upon the temperature at which the dough is fermented, and the time it is allowed to ferment, so if you ferment the dough at room temperature (warm) you will get one flavor, and if you allow the dough to ferment in the fridge you will get a different flavor. The longer you allow the dough to ferment, the more intense/stronger the fermentation flavor will be. Excessive fermentation can result in an acidic or sour taste, but remember, some people like this flavor, so it isn't wrong, it's just different. Experiment to see which you personally like. My preference is to not ferment the dough prior to cold fermenting as the decreased density of the dough can make it more difficult to manage in the fridge as it is more difficult to cool down uniformly, so if I am cold fermenting, I just go directly from the mixer to the dough ball and then straight to the fridge, but this is just me, again, experiment to see what works best for you and what you like. Remember, you can eat your mistakes, so in this case, the trip can be as much fun as the destination. Experiment and learn, but most of all, remember to have fun doing it!

Tom Lehmann/The Dough Doctor  
6551

**[Dough Clinic / Re: hydration rates and cracker doughs](#)**

Muaath;

If you are using my cracker dough formula, it calls for adding the yeast to the water in the mixing bowl. While this is usually not a recommended practice, in this application it is absolutely necessary due to the VERY SHORT mixing time. Also, in this application I suggest adding the yeast and salt, then stirring just enough to suspend the yeast in the water IMMEDIATELY followed by adding the flour and beginning the very short mixing phase. This is the only way to get a decent dispersion of the yeast and salt in view of the short mixing time.

Tom Lehmann/The Dough Doctor  
6550

**[General Pizza Making / Re: Major Problems.....](#)**

Keep in mind that working with small batches of dough are a whole different story

than working with large batches. Smaller doughs will cool down nicely, and they can be controlled with good efficiency, but larger batches have a mind of their own, or so it sometimes seems. The one thing that is commonly overlooked is the heat of metabolism. Yes, as the dough ferments due to yeast metabolism of nutrients it generates heat to the amount of about 1F per hour. In smaller doughs this heat can be controlled, but with larger doughs it cannot be controlled. This is why pizzerias subdivide their 70 and 80-pound doughs into smaller, 12 to 24-ounce pieces before placing it into the cooler for storage.

Tom Lehmann/The Dough Doctor  
6549

### [\*\*General Pizza Making / Re: Major Problems.....\*\*](#)

K;  
Yes, the dough does increase in temperature to the extent of approximately 1F per hour due to heat of metabolism, BUT as the heat moves to the outer portion of the dough it is dissipated to a great extent. That's how the cooler works. Your IR thermometer is only measuring the outside temperature of the dough, if you measure the inside core of the dough you will find a higher temperature, how high will depend upon a number of factors, such as efficiency of the cooler, and dough weight/shape. Keep in mind that your dough will continue to ferment until the actual core dough temperature drops to about 43F, actually, it even continues to ferment, but very slowly at that temperature, but it is considered to be relatively stable for holding purposes. You can see the effect of heat of metabolism by making two doughs, one with yeast, and the other without yeast. Mix them both to the same finished temperature, and scale to the same weight, form into equal size dough balls and place into the cooler next to each other. Measure the internal temperature after 24 or more hours. The dough without the yeast will not be subjected to heating due to yeast metabolism and hence should show a colder temperature than the dough made with yeast. The larger the dough piece, the poorer the heat transfer properties from core to outer edge, hence it loses less heat and continues to ferment at a more rapid pace.

Tom Lehmann/The Dough Doctor  
6548

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: The Spikey Roller thingamajigger?\*\*](#)

Diza;  
The dough docker is used to help control bubbling and blistering of the crust during baking. A correct dough docker should have blunt pins (looking something like a cowboy's spurs). The way it works is to pinch the dough together, not perforate it. If you look at a saltine cracker, or club cracker you can easily see the results of using a dough docker (note that the holes are closed by a thin membrane of dough on one side).

Tom Lehmann/The Dough Doctor  
6547

### [\*\*New Forum Members / Re: jets pizza\*\*](#)

GU;  
I don't have it as a recipe but I do have it as a formula given in bakers percent.  
Flour: Very strong/high gluten 100%  
Salt: 2%  
Sugar: 4%  
Instant dry yeast: 1%

Oil/shortening: 5%  
Water: (70F) 56%

Mix the dough just until it takes on a smooth appearance, then divide into desired weight pieces (about 16-ounces for a 12-inch pizza), form into a ball, wipe with oil and place into a bread bag, twist the open end into a pony tail to close and tuck the pony tail under the dough ball as you place it into the fridge. Allow the dough to remain in the fridge for 24-hours, then remove and allow the dough to rest at room temperature for 2.5-hours, carefully open the dough ball using your hands or a rolling pin to just fit the pan. Put about 1-ounce of salad or peanut oil in a dark colored, deep-dish pizza pan, then place the dough into the pan. Set aside and allow to rest at room temperature (covered) for about an hour, using your fingers in the pan, reform the dough to fit the pan bottom diameter, set aside again to rise a second time and form again. The dough should stay at the full pan diameter after you stretch it this time. Allow the dough to rest for 30-minutes and take it to the fridge for storage for at least 4-hours or overnight. Dress the dough with sauce and desired toppings, and bake at 450F. I normally start the pizza out in a lower rack in the oven for the first 10-minutes of baking, then move it to middle or higher rack position to finish baking. The total baking time will be around 20-minutes. The resulting crust is very light, has a very open crumb structure and is as tender eating as cotton candy.

Tom Lehmann/The Dough Doctor  
6546

### [\*\*Dough Clinic / Re: caputo 00 flour resulted in more of a 'bready' crust\*\*](#)

I'm guessing that your dough may not have had a sufficiently high absorption. The use of high dough absorption promotes good oven spring and a very light/open crumb structure. If you used a mixer to mix your dough, you might have also over mixed the dough. For best results you should only mix the dough until it takes on a smooth appearance. Save the full gluten development for the bread doughs.

Tom Lehmann/The Dough Doctor  
6545

### [\*\*Newbie Topics / Re: Looking for dough advice\*\*](#)

For homemade crust the yeast level is quite high. I use 1-packet of IDY to 3.5-cups of flour. Excessive yeast can result in the dough burning out (over fermenting), the result is a dough that fails to rise properly, is overly tender (tears easily) and doesn't color up well during baking due to the excessive acids formed during fermentation and sugar consumed by the yeast in making those acids. Watch your dough temperature too, you will probably want it to be in the high 70's to low 80's for the way you are handling the dough.

Tom Lehmann/The Dough Doctor  
6544

### [\*\*Newbie Topics / Re: My First Pizza - in progress - LOTS of Newbie Questions...\*\*](#)

Mike;

To season your pan(s) turn upside down on a cookie sheet or piece of foil in the oven to catch any drips. Lightly coat the OUTSIDE of the pan with plain salad oil, and place in a preheated oven at 425F for about 30-minutes. DO NOT season your pans at temperatures above 435F as this is about the flash point of most oils, and you increase the risk of an oven fire (really exciting when you open the oven door and the whole thing goes "POOF" in a bright orange ball). You might repeat the

process a couple times and as you continue to use the pans they will continue to darken, this is a good thing. No need to season the inside of the pan, but you will need to apply some oil or shortening to the pan to facilitate release of the baked crust. Lastly, treat your seasoned pan just like a seasoned cast iron skillet.....DO NOT wash it, instead, just wipe it out after each use. If you ever soak it in water you can expect the seasoning to begin peeling off like a bad sun burn, then you will need to strip all the seasoning off of the pan and start all over again. Almost forgot, season your pans when you can open a window if at all possible as the process can get a bit smoky.

Tom Lehmann/The Dough Doctor  
6543

**[Dough Clinic / Re: caputo 00 flour resulted in more of a 'bready' crust](#)**

Tory;  
When the dough just grabs onto the hook and goes for a free ride around the bowl this is an indication of poor hook design (what we call a "J" hook). The newer hook designs are what are referred to as a reverse spiral design. This hook design pushes the dough off of the hook and into the bottom of the bowl for much better mixing action. In some cases you can improve the mixing action of a "J" hook by increasing the dough size, or increasing the mixing speed. Just be careful so as not to over load your mixer. With the hook issue I doubt that you are over mixing the dough, so I would look at increasing the total dough absorption to achieve a softer dough which, should open up better during baking to achieve the open crumb structure you're looking for.

Tom Lehmann/The Dough Doctor  
6542

**[Dough Clinic / Re: caputo 00 flour resulted in more of a 'bready' crust](#)**

Tory;  
You might check with Hobart to see if they have a replacement reverse spiral design dough hook for your mixer. We have the Hobart N-50 (5-quart) mixers which are essentially an industrial version of your mixer and they have the reverse spiral dough hook option available for that mixer, but I don't know if the agitator shaft is the same diameter of not. Something to look into if you're interested.

Tom Lehmann/The Dough Doctor  
6541

**[Pizza Ovens / Re: Help with older oven](#)**

C4;  
I did a quick Google search and came up with Harvic Mfg. Corp. 760 St. Anns Ave. New York 56, N.Y. (if did not provide a postal zip code). It looks like they also sell their ovens under a ETCO Brand name.

Tom Lehmann/The Dough Doctor  
6540

**[Newbie Topics / Re: bottom not fully browning, crust not at all](#)**

Maybe its time to begin looking at the dough itself? The way the dough is made can/will have an influence on the way it bakes and more specifically, browns. Remember, acid (low pH) inhibits the browning reaction. Fermentation produces acids as a byproduct, so as the dough ferments, it becomes more acid. Have you ever noticed how white a sourdough bread or roll is? Acidity. Is there a possibility that you have over fermented your dough? A good way to find out is to look at your dough management procedure (everything that happens to the dough between

mixing and baking) but will also include the use of a sponge, poolish, starter or sour). High dough temperature will also greatly increase the rate of fermentation (80F is a good starting point for dough temperature). If you want to measure the pH of your dough as it is ready for the oven, go to the drug store and buy some litmus paper for use in the 4 to 5 pH range. Then take a couple ounces of your dough and put it into a blender with a cup, or s, of distilled water. Puree well, pour off into a clean glass and allow to stand for 3 to 5-minutes, decant off some of the cloudy water from beneath the sludge floating on top into a shot glass, dip the litmus paper into the liquid in the shot glass and compare the color to the color guide provided with the litmus paper and this will provide you with the pH of your dough. You should be looking for something not any lower than 4.2. If the pH is lower than 4.2 you are in the realm of a sourdough and will need much higher temperatures to bake the dough to the color you want. A good pH to shoot for is around 4.5 to 5.0 for your application.

Tom Lehmann/The Dough Doctor  
6539

### [\*\*Newbie Topics / Re: bottom not fully browning, crust not at all\*\*](#)

G;  
If you get your water from a municipal water supply it might be a little on the alkali side which would both slow fermentation (yeast is an acid loving organism) and induce crust color development (technically speaking), so I would doubt that your water is the issue. If you get your water from your own well, all bets are off, but even then, most issues revolve around alkalinity, so again, I would not be overly suspect of the water. There is a possibility that you are stretching the dough skin too thin. This would allow the heat from the stone to pass right on through the dough to be dissipated by the moisture in the toppings. Have you ever tried to solder a copper pipe with even a trace of water in it? Can't be done with a propane torch. The same thing can happen with your dough if you stretch it too thin. Try leaving the dough a little thicker. For a test, try to leave the dough about 3/16-inch thick, then cover it and let it rest for 15-minutes before you proceed with dressing the dough and baking it. The thicker dough and the rest time will make for a more porous crumb structure in the dough which will create a better heat break, allowing the dough to get hot enough to brown during baking if this is the problem.

Tom Lehmann/The Dough Doctor  
6538

### [\*\*Pizza Toppings / Re: fresh veggies and wet pizza\*\*](#)

You might have been using too much. We also see this problem with commercial pizza ovens (deck types). During baking the veggies release water and you end up with a "swamp pizza". The air impingement ovens commonly used in many pizzerias direct a large volume of air onto the top of the pizza and in doing so exhibit excellent moisture management characteristics (sort of like passing a hair dryer over the pizza during baking). When you don't have much airflow over the top of the pizza it is difficult to manage this moisture. you might try finishing the pizza in a higher rack position so the pizza is exposed to more top heat to better evaporate the excess moisture. Blanching the veggies also helps, but destroys a lot of the texture at the same time. You might also look at how you are slicing the veggies too. Larger pieces are not as prone to moisture loss during baking as smaller pieces are.

Tom Lehmann/The Dough Doctor  
6537

## [\*\*Dough Clinic / Re: Hydration with AP Flour vs KABF\*\*](#)

Benji;

All things being equal, in the U.S. it is the protein content of the flour that will have the greatest influence on the absorption properties of the flour. The higher the protein content, the higher the dough absorption (in most cases). When it comes to an International flour, of flour in other countries, damaged starch content is typically higher than it is here in the U.S., so in that case, the damaged starch content will have, by far, the greatest impact upon the flour/dough absorption properties.

Tom Lehmann/The Dough Doctor  
6536

## [\*\*Dough Clinic / Re: Dense crust... I don't want dense crust...\*\*](#)

I'm with Norma on this one. The temptation is to use low absorption since the dough handles so well with lower absorption, it is the higher dough absorption that softens the dough allowing it to more easily, and fully expand (oven spring) during those first few seconds in the oven.

Tom Lehmann/The Dough Doctor  
6535

## [\*\*Prep Equipment / Re: Pizza Peels\*\*](#)

We use wood prep peels all the time, and never really experience any problems with the dough sticking. The secret is in using a good peel dust. My own personal favorite is equal parts of flour, fine cornmeal, and semolina flour. I don't like straight flour because if it gets damp it will cause the dough skin to stick like glue. Both the corn meal and semolina flour act like little ball bearings under the dough skin to help it slide off of the peel. If you're into it, try using wheat bran as a peel dust too. It works great since it doesn't absorb moisture well at all and is just the ticket if you're going to be letting the dressed pizza sit around for any length of time on the prep peel.

Tom Lehmann/The Dough Doctor  
6534

## [\*\*Pizza Cheese / Re: I know this is heresy, but I'm looking for the best part-skim mozz\*\*](#)

Barry;

Galaxy Nutritional Foods, Orlando, Florida has a cholesterol free cheese product (tofu based) that is engineered to replace Mozzarella cheese. It works pretty well by itself, but where it really shines is in making a 50% reduced cholesterol cheese topping. We blend it 50/50 with a part skim Mozzarella cheese and most people don't even realize what they are eating. The Galaxy cheese products are sold at many supermarkets, or you might contact them directly to find out where it is sold in your area. I don't know if they sell direct to the public or not, but if you can find a store selling their products, you might be able to get them to special order some for you, freeze it and use as needed.

Tom Lehmann/The Dough Doctor  
6533

## [\*\*Dough Clinic / Re: Local Pizza\*\*](#)

Bill;

I'm going to guess that what you are seeing is a short or no-time dough. This is a dough made with little fermentation, thus it has little, or no/poor flavor. I'm betting that the "dead yeast" he is talking about is the dead yeast additive (actually

glutathione) available from many yeast suppliers, that is used in the same manner as L-cysteine is, that is to impart the soft, extensible handling properties that fermentation imparts to the dough when the fermentation time is short or nonexistent. We typically use this in what are referred to as "emergency doughs". These are doughs that are designed to be ready for use in a very SHORT period of time after mixing, typically, in under an hour. They are used in pizzerias only under extenuating circumstances, such as when they run out of dough, or they come into the store in the morning only to find that the cooler has been down during the night and all of their dough has been lost, so they make emergency doughs during the day to limp by on until they can get back into using their regular dough again. Like you said, it ain't the greatest pizza in town.

Tom Lehmann/The Dough Doctor  
6532

[\*\*Newbie Topics / Re: bottom not fully browning, crust not at all\*\*](#)

G;  
Your finished pH of the crust is about right. Have you tried making the dough skin a little thicker? In going back and looking at your photos, it appears that you might be using a rolling pin to shape the dough as indicated by the knife edge on the round pizza (this happens when the pin is allowed to roll off of the dough, thus creating a tapered edge that is overly thin). The combination of a rolling pin or sheeter and a light dough weight, creating a very thin dough skin can result in a dressed dough that can be difficult to get the bottom to brown properly. Another option to look at is to form the dough skin, and allow it to proof/rise for about 20-minutes before you dress and bake it. By doing this you will allow the dough to gas up a little, becoming less dense, and creating a better heat break, so the bottom heat is not as easily conducted through the dough/crust where it is absorbed and dissipated as steam by the liquids on top of the pizza, with an effective heat break the bottom of the dough can reach a sufficiently high surface temperature to begin the browning reaction.

Tom Lehmann/The Dough Doctor  
6531

[\*\*Newbie Topics / Re: bottom not fully browning, crust not at all\*\*](#)

G;  
Top not browning at all, but the bottom is, and the cheese burns before the top of the pizza browns.

- \*) Bake if a higher rack position in the oven
- \*) Increase the sugar content of the dough to 2% and bake on an elevated platform such as a screen
- \*) Is the flour malted? If not, you might add 0.25% diastatic malt, or see "sugar" above.
- \*) Brush the entire top of the pizza skin with oil (olive oil) before dressing
- \*) Make sure the cheese is cold, right out of the fridge when you use it
- \*) Try different brands of Mozzarella cheese
- \*) In most cases where there are issues in getting the top of the pizza to color up the cause is low oven/baking temperature.

Tom Lehmann/The Dough Doctor  
6530

[\*\*General Pizza Making / Re: Oven fire due to alcohol from yeast fermentation\*\*](#)

I thought it was nearly impossible to see an alcohol flame. I remember this from

watching dragsters running on alcohol.

I've never heard of this either, when you get a bubble to form on the dough it will contain some alcohol, but it will also contain a good portion of vaporized water too. I've seen this happen when someone didn't set their oven to a temperature below the flash point of oil (about 435F) when seasoning pans, what happens then is the oven fills with smoke, lots of it, and when the door is opened, POOF! Your share of excitement for the week all in just a second or two. Before the days of fail safe pilot light gas valves, I once had an oven go out on me, I opened the door to vent the gas and hit the ignition switch, The oven was not fully ventilated, the spark ignited the gas, and the following explosion, resulting in a large yellow fire ball, blew the door off of the oven and removed my eyebrows as well as ignited the paper cap I was wearing. Shortly after that the oven was fitted with the latest gas safety devices.

Tom Lehmann/The Dough Doctor

6529

### **Dough Clinic / Re: Oven Temp**

Most commercial deck ovens, such as the Y-600 are set to bake at 500 to 550F. We typically set our deck ovens to bake pizza at 525F, unless the dough formulation or some other unique feature of the pizza dictates a different temperature.

Tom Lehmann/The Dough Doctor

6528

### **General Pizza Making / Re: What to use for Pizza Sauce with no crushed tomatoes on hand?**

We make some "killer" pizzas using nothing but ripe, garden fresh sliced tomatoes. We put down a few fresh basil leaves and sliced or diced garlic, then add the tomato slices followed by the cheese. Clean, simple, great flavor, texture, and appearance. As a plus, it doesn't look anything like a box store pizza, instead, it has much more of a "gourmet" presentation.

Tom Lehmann/The Dough Doctor

6527

### **Dough Clinic / Re: Oven Temp**

Scott;

Nope, that's not just the case here in Manhattan, Kansas, but rather an across the board average baking temperature for deck ovens. There are places that bake as low as 400 to 450F on the low side to as high as 600F to 650F on the high side (they would go higher if the ovens would permit). so I still stand by my guns at 500 to 550F (525F) as an average temperature range. If the request had asked for a temperature to bake a specific type of pizza, let's say a New York thin crust, or a Chicago deep-dish, that would have been a different story.

Tom Lehmann/The Dough Doctor

6526

### **Shop Talk / Re: How do I decide how big of an oven to get?**

One oven company that comes to mind when we think of wood burning is Woodstone <[www.woodstone-corp.com](http://www.woodstone-corp.com)> They have everything from gas, to wood, to coal and combinations of both gas and wood or coal. I'm partial to the combination with gas, that way you can close the shop down for a day or two without the need to "feed" the oven.

Tom Lehmann/The Dough Doctor

6525

## [\*\*General Pizza Making / Re: Oven fire due to alcohol from yeast fermentation\*\*](#)

Aeb;

I've never identified a strong alcohol aroma when opening the oven door during baking. I've detected a strong fermentation aroma (a mix of alcohol, carbon dioxide, and acids) but never specifically alcohol. Weird!

That's what makes life so interesting...new things happening all the time.

Tom Lehmann/The Dough Doctor

6524

## [\*\*Dough Clinic / Re: New Pizza Shop\*\*](#)

By;

Also, keep in mind that as you ferment the dough at different temperatures you will get different finished flavor profiles. IE: The flavor profile of a cold fermented dough is not the same as that of a warm fermented dough. If it were me in that pickle, I'd mix a dough with a targeted finished temperature of about 85F, scale, ball, oil, refrigerate maybe every 4-hours during the day, or as I deemed necessary to maintain my dough supply. Do you have a reach-in cooler? If so, try this, Make your dough at night, scale, oil and place into individual plastic bags, refrigerate, early the next morning, place the bags of dough into a box (reduces storage space) and make another batch the same way. The first batch will be ready to go when you are, and the second batch should be ready to go later in the afternoon, mix a third batch after the noon hour trade for the dinner/evening time, this one should be ready to go around 6:00 p.m., do this as necessary to maintain a constant dough supply without over running your ability to inventory dough. The key here is to use individual bags for your dough. Once cooled (about 3-hours) they can be grouped more tightly together for better utilization of limited cooler space. Any major ingredient or restaurant supply should be able to provide you with low cost plastic bread bags. You might need to dock the dough pretty good to control bubbling, but this should allow you to limp through until you can add more cooler space.

Tom Lehmann/The Dough Doctor  
6523

## [\*\*General Pizza Making / Re: Solid Fat\*\*](#)

Charbo;

The inclusion of fat into a dough formulation (up to a point) improves volume response through better gas retention and lubrication of the dough structure. You can read about this in S. Matz book or E.J. Pyler's Baking Science and Technology. When the fat content goes much above 6% of the flour weight it actually begins to reduce bread volume. More current research has shown that just adding oil or melted shortening to the dough can, under certain circumstances, lead to inconsistencies in the dough (we think this is where the impressing that the outside weather influences dough absorption properties), this is why we developed the delayed oil addition method of dough mixing. By this method the oil is not added until the flour has had an opportunity to hydrate, the oil is then added and the dough mixed in the normal manner. The reason for this is due to the fact that oil will soak into the flour thus reducing the amount of gluten that can be formed, resulting in variations in dough consistency. Since solid fats do not soak into the flour they can be added right up front with the other ingredients. In a nutshell, that's the story of oil and solid fat in a dough system.

Tom Lehmann/The Dough Doctor  
6522

### **Cracker Style / Re: Pizza Shoppe-style?**

My oldest son lives just a short distance from the Pizza Shoppe on Hwy-7 (Olathe), I am familiar with their pizza as my son usually picks one up when I'm at his house, but the next time I'm there I'll make it a point to go to the store to observe how they make their pizzas. I do know they they bake their pizzas in a cutter pan as is indicated by the 40-degree shoulder on the crust edge, and they do use deck ovens, and it is a thin cracker type crust. I'll try to get more details on it the next time I'm there.

Tom Lehmann/The Dough Doctor  
6521

### **Chitchat / Re: Shipping frozen dough in the mail**

A number of years ago I worked with a fellow making several different kinds of gourmet cakes that were shipped around the country. He used a special shipping service provided by the delivery carrier (It might have been UPS, I don't remember anymore) but they provided special custom packaging, and with I believe 4-ounces of dry ice, it could be shipped anywhere in the U.S. for one money. If I remember correctly, the cost of the packaging and shipping came to around \$15.00 at that time. Kinda expensive, but it seems people were more than willing to pay up to \$50.00 for a gourmet carrot cake, chocolate decadence cake, or cheese cake. It might be a little hard to get people to pay \$15.00, or more, shipping charges for a piece of pizza dough. Point is, those Styrofoam containers with a little dry ice really do the trick when it comes to keeping something frozen/cold.

Tom Lehmann/The Dough Doctor  
6520

### **Chitchat / Re: Hot and Ready VS Take and Bake**

Take and bake style pizza was developed in response to what many consumers said they wanted in pizza to be consumed at home. Fresh tasting, hot and crispy (jury is still out on the crispy part). Then along came the DiGiorno pizzas and the move to baking pizzas at home was in full motion. DiGiorno pizzas were positioned to compete with DELCO (delivery/carry out) pizzas and they did it very well. As the old adage goes, you "fight fire with fire" so a lot of the independent operators started offering T&B pizza in addition to their regular pizzas. Most consumers surveys indicate that consumers have a preference for T&B over DELCO in many parts of the country. It is hard to argue with the success of Figaro's and Papa Murphy's. To see some typical commercial T&B dough formulas please go to the RECIPE Bank at <[www.pmq.com](http://www.pmq.com)>

Tom Lehmann/The Dough Doctor  
6519

### **Sauce Ingredients / Re: Honey in Sauce**

DM;

Just be very careful when adding honey, or any kind of sugar to your sauce as you will increase the potential for it to scorch around the edge of the pizza during baking, thus ruining the flavor of the pizza. One way we have found to address the acidity issue is to add powdered Parmesan and Romano cheese to the sauce to mellow the flavor out.

Tom Lehmann/The Dough Doctor  
6518

### **General Pizza Making / Re: Solid Fat**

That bacon fat pizza sounds mighty good. Crispy bacon pieces are one of my favorite toppings.

Tom Lehmann/The Dough Doctor  
6517

### [\*\*Cracker Style / Re: Pizza Shoppe-style?\*\*](#)

Try this once;

Flour 100%

Salt 1.75%

Sugar 2%

Olive oil 2%

Water 58%

50/50 blend of garlic and onion powder 0.5%

Note: All percentages are baker's percent (based on the total flour weight).

Add water (100F) to the mixing bowl, add the flour and dry ingredients, mix for 2-minutes, then add the oil and mix as usual for your mixer. No, there is no yeast in this formula.

Scale and form the dough into balls, and set aside to rest for 20-minutes (cover to prevent drying).

Roll the dough balls out to make a thin crust, place on baking stone and lightly par-bake. Immediately dress as desired and place back into the oven to finish baking (about 5-minutes). This usually produces a very thin, crispy, crackery crust. Note: It must be par-baked.

Tom Lehmann/The Dough Doctor  
6516

### [\*\*Newbie Topics / Re: working dough & peel related questions\*\*](#)

I.N.;

If you are using only corn meal for your dusting flour you might want to add some semolina flour to it to help dry the dough surface. Everybody has their own favorite blend for a dusting/peel flour. Mine is equal parts of corn meal, semolina flour and my regular pizza flour. Drop your dough ball into a bowl of your dusting flour, then place on the counter top with more of the dusting flour and proceed to open the dough ball into a pizza skin, then transfer the opened skin to your peel which has been lightly dusted with either corn meal or your blended dusting flour (works well as a peel dust too), then be sure to shake to make sure it is not sticking to the peel, as you dress the dough skin give it an occasional shake. With time and experience you will soon learn how often YOUR dough needs to be shaken on the peel.

Tom Lehmann/The Dough Doctor  
6515

### [\*\*Neapolitan Style / Re: Ratio for top and bottom oven temperatures\*\*](#)

Jamie;

I think I know what your problem is. Your flour is milled to a very high level of starch damage. You will note that the ingredients shown on the flour bag indicate that the flour is enriched, but has no other treatment, including malting, which if present, would be indicated by the presence of malted barley flour. Also, when flour is milled to a high level of starch damage it exhibits a very high absorption, as you have indicated. The reason why malt is added to the flour is to convert starch to sugars for yeast to feed upon, and to provide some residual sugar for crust color development. With your long fermentation time your yeast is probably struggling due to lack of nutrients to feed upon. If you were to add malt or any form of

amylase enzyme to the dough it would literally turn into a liquid after a few hours of fermentation as all of the damaged starch would be hydrolyzed to sugar. My recommendation is to add some sugar to the dough, this will provide both nutrient for the yeast and residual sugar for crust color development. You will need to experiment to find the right amount of sugar to add, but I would begin with an addition of 3% based on the total flour weight.

Tom Lehmann/The Dough Doctor  
6514

### [\*\*Dough Clinic / Re: Bulk rise vs balling\*\*](#)

Gianni;

When you bulk ferment, especially with large quantities of dough, you get much more fermentation taking place than when you divide and ball the dough prior to fermentation. Even though the dough is in the cooler, that large piece of dough doesn't cool down, infact, it actually increases in temperature (about 1F per hour at room temperature and about half of that in the cooler). This is due to heat of metabolism (fermentation). With that large piece of dough, as it ferments, it becomes less dense and better insulates the center/core portion from cooling, so it just keeps on happily fermenting away, this is why you are getting that sour taste (over fermentation). With the much smaller dough balls, they are more efficiently cooled, and fermentation is much better controlled as a result. The fact that the dough balls are not being over fermented is the reason why they handle better and produce a crust with a flavor more to your liking.

Tom Lehmann/The Dough Doctor  
6513

### [\*\*Dough Clinic / Re: What happens if you don't have time to let the dough warm to room temp?\*\*](#)

Actually, we're not letting it warm to room temperature, but rather temper AT room temperature for about 2-hours. The actual dough temperature after tempering at room temperature for 3 to 3-hours is in the 50 to 60F range. Unless your yeast levels are very low, when you take the dough directly from fridge to oven the dough typically exhibits a propensity to bubble/blister much more than it does if it is allowed to temper first. In many cases where this is a practice, we have found that there is a tendency for the dough to develop a gum line upon baking when the yeast level is reduced too low. This is due to the inability of the dough to support the weight of the toppings with an excessively low yeast level. In short, it becomes a bit of a balancing act between yeast level, and gum line if the dough is not allowed time to temper at room temperature for a period of time after being removed from the fridge. It's not a big deal for the home pizza maker, but at the pizzeria level it can be a real problem, especially when the pizzas are being baked in an air impingement oven. In this case, when the pizza tries to transition into a pita, all of the cheese and toppings are forced into the top fingers of the oven making for a super neat mess that might also take out the next two or more pizzas following it (not a good situation).

One other thing, the tempered dough will typically be somewhat easier to form into a pizza skin than cold dough straight out of the fridge.

Tom Lehmann/The Dough Doctor  
6512

### [\*\*Dough Clinic / Re: New Pizza Shop\*\*](#)

The dough formula looks to be in reasonable balance, IDY is a little high at 0.395% (we normally recommend 0.375%) but this should not pose a problem. The sugar is

only 1% so that is not a problem either. The oil calculates out to 4%, which is again a little high but not unusually so. Your cooler at 4C/40F is operating at about the highest we like to see it at, and with traffic in and out it during the day, it might actually be operating at a higher temperature but that remains to be seen. From your comment about the dough balls not rising when you take them directly to the cooler after mixing/balling, I would be suspecting that your finished dough temperature might be too low/cold. We normally like to see the finished dough temperature in the 80 to 85F/26 to 29C range. If you can provide us with your complete dough management procedure it would help us to determine where the issue is at, and suggest corrective action.

Tom Lehmann/The Dough Doctor  
6511

### **Dough Clinic / Re: New Pizza Shop**

Remember, this dough should rise very slowly in the cooler. It typically takes 18 to 24-hours in the cooler for the dough to rise sufficiently (receive enough fermentation) to open easily and produce a finished crust that doesn't exhibit excessive bubbling during baking, and has a very good fermentation flavor. How many hours do you leave the dough in the cooler before you are using it? Do you bring the dough out of the cooler and allow it to temper AT room temperature for 2 to 3-hours prior to opening the dough balls into pizza skins?

If you will send me a private message I will be glad to send you a copy of my Dough Management Procedure that you can use for developing a dough management procedure for your specific shop conditions.

Tom Lehmann/The Dough Doctor  
6510

### **Neapolitan Style / Re: Ratio for top and bottom oven temperatures**

Jamie;

The use of just a small amount of sugar will help to "jump start" the browning reaction. You are correct in that too much sugar will result in the development of an unwanted uniformly brown colored crust, but with just a small amount of sugar, about 1 to 1.5%, you should be able to get the browning reaction started without excessive color development.

Tom Lehmann/The Dough Doctor  
6509

### **Dough Clinic / Re: New Pizza Shop**

Peter;

That's it.

Thank you,

Tom  
6508

### **Pizza Toppings / Re: Pepperoni Frustration**

The air impingement ovens used by many of the big box pizza stores deliver a lot of intense heat to the top of the pizza and really create an almost toasted pepperoni characteristic which goes a long ways toward intensifying the flavor. We have made pizzas for customers where the pepperoni was so toasted that it was getting crispy , like a piece of bacon (admittedly, a little more than I personally like) and the flavor was sharper than with a lesser baked pepperoni.

Tom Lehmann/The Dough Doctor  
6507

## [\*\*Dough Clinic / Re: Cold Ferment?\*\*](#)

We have not had good success with pre-fermenting the dough prior to scaling, balling and taking it to the cooler/refrigerator when we are holding it for more than about 24-hours. This is due mostly to the dough over fermenting while in the refrigerator, if you simply begin reducing the yeast to a point where it won't over ferment (blow) you probably won't have enough leavening when the dough goes into the oven to support the weight of the toppings, so you can end up with a nice edge, but a flat center portion that in all too many instances is characterized with a gum line just beneath the sauce layer. We find it much better to take the dough directly from the mixer (80 to 85F) cut and round it, oil the dough ball(s) and drop into a plastic bread bag, twist the end closed and tuck it under the dough ball as you place it into the fridge. This is important as it allows for some expansion of the dough ball. The dough will be ready to begin using after about 24-hours, but is at its best after 32-hours, and it will hold in the fridge for a total of about 48-hours, or a little more. To use the dough, remove from the fridge about 2-hours before you anticipate opening the dough ball into a pizza skin, then turn the dough out of the bag, dropping it into a bowl of dusting flour, place the dough onto the counter top and open into a pizza skin in your normal manner. We do this all the time and it works really well for us.

Tom Lehmann/The Dough Doctor  
6506

## [\*\*Dough Clinic / Re: New Pizza Shop\*\*](#)

You have two options to making a less chewy/tough pizza upon standing. 1: Change to a lower protein content flour if you can. For example, if your present flour has 13% protein content, going to a 12% protein content flour will help to reduce some of the toughness. 2: Continue using your existing flour and increase the fat content. Right off the bat, I'd take it up to at least 5% of the total flour weight and benchmark from there. Maximum tenderness is achieved at around 8% total fat content. You can go higher, but you begin to compromise other characteristics. If you really want to see how the fat level influences toughness, just buy two packages of tortillas (not too terribly different from pizza skins), make one a "feature" package, while the other should be a "normal", full fat tortilla, you don't need to fill and roll, just heat and eat and you'll immediately see the difference.

Tom Lehmann/The Dough Doctor  
6505

## [\*\*Sauce Ingredients / Re: Gardening tomatoes, herbs, and some veggies for 2012\*\*](#)

Norma;

You're lucky to have such a bountiful garden this year. With the ongoing drought we have lost one garden (beans, carrots, turnips, etc.) due to lack of subsoil moisture. You just can't water enough to compensate for lack of rain, a VERY dry winter last year, and then add to that over a month of 100F+ temperatures! Our other garden with squash and watermelon is a raised bed garden and is doing just OK, but the excessive heat is taking its toll. I hedged my bets this spring and did another "potted" garden, using salvaged calf feed containers (about the size of a bushel basket) and literally lined our drive way with them. They are easy to really pour the water to, and retain the water much better than our raised beds. Aside from the heat slowing down the setting of the tomatoes and peppers in these pots they have done quite well for us. One variety of tomato that I used in these pots is called Healthy Girl. It looks something like a Roma, but is more egg shaped,

it also has a tough skin like a Roma but is more dense and solid than any Roma I've seen. It is a fantastic tomato to use as either a topping or my favorite is to use it in place of sauce, in my humble opinion, nothing is more natural tasting than real, fresh tomato on a pizza. Lets hope this silly drought comes to an end soon!  
Tom Lehmann/The Dough Doctor  
6504

### **Dough Clinic / Re: Over fermented dough**

A slightly over fermented dough may exhibit bucky characteristics during forming. In this case bucky means that the dough will be overly elastic and resist stretching. Severely over fermented dough will stretch easily, even to the point of tearing easily. It will feel "dead" like pushing out a wet towel, and it won't exhibit good rise characteristics during baking, often seen as a pizza with a very low (thin) center section with poor bake out properties. Due to consumption of most of the sugar and acidification of the dough, it will not exhibit good baking or browning characteristics in the oven. As a finished crust, the presence of a gum line just under the sauce is common, especially with a thin/low center section, a light or mottled appearance is common, and the flavor might be a little on the sharp side of desirable due to the excessive acid formation.

Tom Lehmann/The Dough Doctor  
6503

### **Chicago Style / Re: flaky pie crust techniques applicable to deep dish?**

This sounds a lot like the old blitz method of making pastry (Danish) dough. You cut the cold fat into small, walnut size pieces and mix them with the flour until they are about the size of Lima beans, then add the water and other dry ingredients and mix just enough to incorporate. Immediately scale and ball the dough and place it in the cooler for about 24-hours, then sheet (roll) to about 1/4-inch thickness, and fold several times (left to center, right to center, top to center, and bottom to center) place back into the cooler to rest (about 8-hours) and then roll to form your pizza skin. The amount of fat to use will be between 20 and 25% of the total flour weight. A number of years ago Schwan's (Tony's) made a type of pizza on a crust that they called Italian Pastry Crust. This was made in a similar manner except that they used commercial hard fat flakes instead of cutting the fat themselves. The resulting crust was tender eating, and had a decided pastry looking appearance.

Tom Lehmann/The Dough Doctor  
6502

### **Dough Clinic / Re: Help please,I am having dough issues!!**

It would also help us if you could provide us with your dough management procedure. This is everything you do with/to the dough from the mixer to the time it is used. Be sure to include temperatures too as it can have an impact upon fermentation, which can impact crispiness. What we typically look for is something like this: Mix the dough just until it takes on a smooth, satiny appearance; finished dough temperature is usually in the 80 to 85F range; take the dough directly to the bench for scaling and balling; wipe dough balls with salad oil and place into dough boxes; take dough boxes directly to the cooler and cross stack; allow dough boxes to remain cross stacked for 2.5-hours, then down stack and nest or lid the boxes; on the following day, remove a 2 to 3-hour supply of dough from the cooler, leaving it in the closed boxes; allow the dough to temper AT room temperature for about 3-hours, or until the dough temperature reaches 50 to 55F; take the dough to the bench for shaping into pizza skins as needed (Note: use of a sheeter/roller is not conducive to making the crispiest crust unless you allow the dough to set for 20 to

30-minutes after forming). One trick that I have used is to use the sheeter to open the dough only to about 2/3 of the finished diameter, then finish opening it by hand to the finished diameter. This provides for a very crisp crust characteristic without the need to allow the dough to rise after forming. If you bake the pizza on a screen in a deck oven you can improve the crispiness if you "deck" the pizza for about 60-seconds before you remove it from the oven. This is where you remove the pizza from the screen and allow it to bake right on the hearth for the final 60-seconds. As for your conveyor oven, assuming it is an air impingement oven, do you know what the top and bottom finger profile is?

Tom Lehmann/The Dough Doctor  
6501

### [\*\*New York Style / Re: Flat Dough Balls\*\*](#)

TWILD:

Your dough temperature might be a little on the high side too for your home fridge. When using plastic containers like the one shown, be sure to leave the lid off for at least the first 2-hours in the fridge. If you don't do this you will trap in the heat of the dough ball thus allowing fermentation to continue at a faster rate than desired, this is especially true when shooting for a 3 to 4-day hold time in the fridge.

Tom Lehmann/The Dough Doctor  
6500

### [\*\*General Pizza Making / Re: Pizza Sauce\*\*](#)

I'm a pretty basic guy too. My personal favorite is nothing more than brushing the pizza skin very lightly with olive oil, then adding diced garlic, fresh basil leaves, topped with slices of ripe tomato or Stanislaus 74/40 Tomato Filets (well drained). Then comes the cheese and desired toppings. Simple, but with a great flavor and texture, best of all, it doesn't mimic what everyone else is doing. Dare to be different and creative.

Tom Lehmann/The Dough Doctor  
6499

### [\*\*Newbie Topics / Re: Looking for a chewy base recipe \(Pizza Hut stuffed crust style\)\*\*](#)

H;

You might give this one a shot to see if it comes close to what you are looking for.  
Flour:(high gluten/protein) Think General Mills All Trumps. 100% (500-grams)

Salt: 2% (10-grams)

Sugar: 2% (10-grams)

Olive oil: 1% (5-grams)

Yeast (active dry yeast): 0.5% (2.5-grams)

Water: 56% (280-grams)

Note: Take about 50-grams/ml of the water and warm it to 100F, put the ADY into the warm water to hydrate it (about 10-minutes) then add this to the remainder of the water (70F) and pour into the mixing bowl, add the flour, then the salt and sugar and begin stirring with a wood spoon, when the dough gets too stiff to continue stirring, remove the spoon, add the olive oil and continue mixing by hand for about 2-minutes. Place the dough into a lightly oiled bowl, cover to prevent drying and set aside to ferment for 2-hours. Turn the dough out of the bowl onto a lightly floured counter top and knead just a few times until the dough feels elastic. Place back into the oiled bowl and allow to ferment for another hour. Turn the dough out of the bowl and cut into two pieces. Lightly form each piece into a ball and set aside to proof until the dough balls can be easily opened into pizza skins

(about an hour), or lightly oil the dough balls and place into individual plastic bags, twist the open end to close, forming a pony tail, tuck the pony tail under the dough ball as you place it into the fridge. The dough will be ready to use on the following day. To use, just remove the dough from the fridge, and allow it to temper AT room temperature for about an hour, then turn it out of the bag into a bowl of dusting flour, and begin opening the dough into pizza skins.

Note: If you cannot get a suitably high protein content flour, like All Trumps (14%), use the best flour you can get, and add wheat gluten to it (available at most supermarkets). The amount of gluten to add will be 5% of the flour weight. Just be sure to dry blend the gluten into the flour before adding it.

Tom Lehmann/The Dough Doctor  
6498

**[New York Style / Re: What water temp do you think gives ny pizza dough a better flavor?](#)**

I'm with Craig too, except I typically use 60 to 65F water temperature for my method of dough management.

Tom Lehmann/The Dough Doctor  
6497

**[New York Style / Re: cold water technique--worked](#)**

When we mix dough in a large planetary Hobart mixer (80-quart) using 50-pounds of flour, we typically need to use water at 60 to 65F to achieve a targeted finished dough temperature of 80 to 85F after about 10-minutes of mixing. The cold water is needed to compensate for the temperature gain of the dough during mixing as a result of friction between the dough and the bowl. This is pretty common in pizzerias across the country, but when making pizza at home, with much smaller mixers, the temperature gain is not all that great, plus our expectations of the dough are different between store made and home made dough, as a result, we normally see warmer water being used in a home made dough than we would in a store made dough. The thing to remember is finished dough temperature is what we are striving for. This is what sets the stage for fermentation and ultimately flavor development and handling properties.

Tom Lehmann/The Dough Doctor  
6496

**[New York Style / Re: Bakers from Montreal \(and Canada\): help me gather the best ingredients](#)**

New York pizzas are commonly made with All Trumps flour (14% protein content), but any other high protein content (13 to 14%) should work well in this application. If you cannot get a higher protein content flour, buy some vital wheat gluten (available at most supermarkets in the baking ingredients aisle) and use that to bump up the protein content. Starting with a 12% protein flour, you will need to add between 3 and 4% (based on the weight of the flour) vital wheat gluten (VWG) to bring it up to 14%. Be sure to dry blend the VWG into your regular flour, and remember to increase the dough absorption by 1.5% (based on the total flour weight) for each percent VWG that you add. This will help to impart that chewy characteristic common to N.Y. style pizzas.

Tom Lehmann/The Dough Doctor  
6495

**[Sauce Ingredients / Re: Stanislaus 74/40 Tomato Filets](#)**

We use the Stanislaus 74/40 Tomato Filets all the time, but not directly from the

can, we first drain them very well and then add them directly to the pizza skin in place of a prepared sauce. The order of addition is as follows: brush the pizza skin with garlic infused olive oil, add sliced or diced garlic, then add several basil leaves, over that apply the 74/40 Tomato Filets, and then the cheese and other desired toppings, finish with a sprinkling of shredded Parmesan cheese. The tomato filets provide a great flavor and texture, and more importantly, my pizzas don't look commercial.

Tom Lehmann/The Dough Doctor  
6494

### [\*\*Newbie Topics / Re: Change of Taste or Has Commercial Pizza Gone Bad?\*\*](#)

Craig;

I'm right in there with you! Until you have had a really great pizza (for your specific likes) all pizzas are OK to good, but after that taste of pure delight, all others are lacking. The best part of making your own pizza is that with time, you will end up making pizzas that meet YOUR specific taste, if it doesn't, you know who to blame! The problem with the big box chains is that they have to make a pizza that appeals to a much broader spectrum of individual tastes, there is nothing wrong with that, it's just the nature of the beast that they have to contend with.

Tom Lehmann/The Dough Doctor  
6493

### [\*\*Sauce Ingredients / Re: Stanislaus 74/40 Tomato Filets\*\*](#)

Mostly N.Y. style, but I also use them on extensively on my Margarita pizzas as they really stand out when using pieces of torn Mozzarella and garnished with fresh basil leaves.

Tom Lehmann/The Dough Doctor  
6492

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: What depth pans do I need?\*\*](#)

Pan food for thought:

Deep-Dish: Black (dark colored) either 1.5 or 2-inches deep.

All other thin crust types of pizza: Coupe style pans or tapered cutting pans (40 degree shoulder 1/2-inch deep) again in a dark anodized finish.

Tom Lehmann/The Dough Doctor  
6491

### [\*\*Off-Topic Foods / Re: Bison!\*\*](#)

Craig;

Great looking bison!!

There are a few companies now offering alternatives to regular pizza toppings. At Pizza Expo I had a chance to sample bison pepperoni, turkey pepperoni, as well as a turkey sausage. All were great tasting with a claim to be lower in fat than the "real" stuff. We tried the bison pepperoni and found it to perform very well on pizza. It didn't oil out or cup like regular pepperoni does (that can be either a good thing or a bad thing depending upon your perspective).

Tom Lehmann/The Dough Doctor  
6490

### [\*\*Newbie Topics / Re: Order of ingredients, dry first or water+idy ?\*\*](#)

Lenny;

Testing that we have done over the years has shown that adding the water to the mixing bowl first will significantly shorten the total dough mixing time while

making life a lot easier for your mixer at the same time. Also, you mention adding IDY to the water. This is probably not the best idea for optimum yeast performance as IDY is actually designed to be added dry, with the flour, or an alternative method for adding IDY is to first mix the ingredients until they come together and start forming a dough, then add the IDY to the dough mass and continue mixing for at least 5-minutes.

More recently we have looked at the claims that the outside weather influences the absorption properties of the dough. What we found was that when the oil was added to the water in the mixing bowl, it would float on top of the water, then when the flour was added, the flour would absorb some of the oil as opposed to water. Since flour does not contain any gluten, but only proteins, which when agitated in the presence of water forms "gluten", when these same proteins are agitated in the presence of oil, gluten is not formed (think of making a rue to thicken gravy). When we separated the oil from the water, by adding the oil immediately after the dough had started to form, we got better hydration of the flour, complete gluten formation and much improved uniformity in dough performance when several doughs were made. Based on this, we now recommend that the oil be added to the dough after about 2-minutes of mixing, or as soon as you don't see any dry flour in the mixing bowl. If you use a plastic fat, such as butter or shortening, you can add it right along with the flour as this only applies to the use of oil in the dough.

Tom Lehmann/The Dough Doctor  
6489

### [\*\*New York Style / Re: Disappointing pies tonight\*\*](#)

A couple of things come to mind. What was your finished (mixed) dough temperature? We normally like to see something in the 80 to 85F range. Did you cover the container when you put the dough into the fridge? If you did, that might have contributed to the problem as this does not allow the dough to cool very efficiently, you might try wiping the top of the dough ball lightly with oil after you put it into the plastic bowl, then leave the lid off for about 2-hours (allowing the dough to cool more efficiently) before lidding the bowl.

Tom Lehmann/The Dough Doctor  
6488

### [\*\*Newbie Topics / Re: Order of ingredients, dry first or water+idy ?\*\*](#)

Atom;

Mixing the oil into the dough immediately after it comes together is not a problem when using a mixer, but is nearly impossible if mixing by hand. It normally takes about 4 to 5-minutes of machine mixing to achieve uniform distribution of ingredients throughout the dough. When making pastry, such as sweet dough, where the fat level is really up there, at 18% to 25% of the total flour weight you just can't develop the dough with that much fat if you were to mix it in right from the beginning, so it is normally added during the last 5-minutes, or so, of the mixing time with excellent results. If you want to see how your dough mixes in your mixer, just add a little yellow food coloring to the dough at various stages of mixing and see how long it actually takes to get a uniform dispersion of the coloring as indicated by the color of the dough. Unless your dough is just going for a free ride on the dough hook, you will be surprised at how well the mixer incorporates the ingredients.

Tom Lehmann/The Dough Doctor  
6487

### [\*\*Dough Clinic / Re: Cold Ferment?\*\*](#)

JB;

Your present dough formula is at 64.9% absorption (water weight divided by flour weight times 100). To find your absorption at 60% just use your calculator and enter the flour weight (567) X 60 (press the "%" key) and read the answer in the display window. 567 X 60 (%) 340.2 g./ml of water should be added to provide 60% dough absorption.

Tom Lehmann/The Dough Doctor  
6486

### **Pizza Toppings / Re: Best order to put on toppings??? Help?!**

To add even more confusion, the common sense approach says to add any uncooked meats to the pizza last, so they have greatest exposure to the oven heat and are assured of being thoroughly cooked on the pizza, with that said, when making a Chicago style deep-dish pizza, the raw sausage goes on the bottom of the pizza, but it is thoroughly cooked due to the extraordinarily long baking time of these pizzas (about 50-minutes). The Chicago thin crust pizzas are also dressed differently with the cheese being put on last. Like Peter said, this results in a very soggy finished pizza as the melting cheese traps all that moisture under it, but again, this pizza is given a long baking time too, normally around 30-minutes. Most, if not all of the big box chains follow food safety practices of using nothing but pre-cooked meat toppings (due to the possibility of cross contamination, and the fact that they just need to be heated to above 160F to be safely served), and they like to keep the meat close to the top of the pizza to ensure thorough reheating/cooking.

Tom Lehmann/The Dough Doctor  
6485

### **Shop Talk / Re: Charring and the Marketplace**

I well remember when wood burning pizza ovens made their first debut in Chicago. We were not accustomed to seeing a pizza with char, so it was a common place thing to hear people complaining that their pizza was burned, over done, etc. With time and education people were educated to a different type of pizza, and today Chicagoans are much more accepting of char on their pizza. There is also a group of people who won't consume pizza, or any other food with char as this results in the development of carcinogenic (cancer causing) compounds. Pick your poison, I'll have mine with extra cheese!

Tom Lehmann/The Dough Doctor  
6484

### **Pizza Toppings / Re: Has anyone tried exotic meats??**

If you really want to go out on a limb, go to the web site for Exotic Meats USA, they have a wide assortment of just about anything that moves, or moved, and might be considered edible (and it's all legally farmed). Caution: Just two weeks ago a restaurant in Wichita, Kansas was planning to offer lion meat on the menu for a special dinner treat, but the idea was shot down by a bunch of animal lovers. I love animals to.....medium well please!

Tom Lehmann/The Dough Doctor  
6483

### **Shop Talk / Re: Charring and the Marketplace**

I don't see it so much as N.Y. style pizza v/s whatever, but what is both regionally accepted and customer accepted. You can have a blond colored N.Y. style pizza, that is a given fact, no, you cannot have an authentic N.Y. style pizza without the

char. In this case we're catering to customer demands/preferences, not what's authentic or not. This is what separated home pizza bakers from retail establishments, especially the box stores. At home we can make whatever we want, however we want it....if you don't like it, tough! But at the store you can't do business that way, so like it or not, we've got to prepare and serve the pizza the way the customer wants it, it may not be to our liking, but then again, we're not paying for it either, we're just paid to make it their way. This is frequently a serious road block to "newbies" just getting into the pizzeria business. One of the things that I always tell someone interested in opening a store (pizzeria) is that you must be like an honest politician (whatever that is), you don't have a vote in the matter, but instead your job is to represent the desires of your constituents (by giving them the pizza that they want).

Tom Lehmann/The Dough Doctor  
6482

### [\*\*Shop Talk / Re: Charring and the Marketplace\*\*](#)

Peter;

Most of the char that I see on N.Y. style pizzas is on the raised edge as a result of blister/bubble formation. Like wise, there might be a few on the bottom, but not a fully or even heavily charred bottom. At AJ's here in Manhattan (Kansas) they serve a N.Y. style slice (its' a slice operation) that has a very good, solid bake with good browning, but no real char across the entire bottom and outer edge. The result is a large slice that can be picked up and eaten using only two fingers, and has a decided crunch when eaten. I might add that AJ's was voted best pizza in Manhattan two years ago. I should also add that it was open competition, meaning that anyone/everyone could get in on the action, chains, independents, and home pizza bakers. How good is it you ask? Adam Peyton, the owner, has been in business now going on his fifth year, and he is presently opening his third location. That is success in anybody's book.

BTW: I do not consider N.Y. style pizza to be crispy by any stretch of the imagination. We developed Adam's pizza to be extraordinarily crispy because that is what his customers want and expect with their pizzas.

Tom Lehmann/The Dough Doctor  
6481

### [\*\*New York Style / Re: Disappointing pies tonight\*\*](#)

Weemis;

To clear up any confusion, Peter is absolutely correct. "WE" is Tom Lehmann and Jeff Zeak, here at The American Institute of Baking/AIB International. Jeff has been my right hand man, and associate in most of the pizza work that has been done here at AIB since he came on board about 25-years ago. Prior to that, I did all of the work by myself. My research on pizza dates back to around 1967 and continues to this day with the full support of AIB, a multi-million dollar research and education facility, located in Manhattan, Kansas dedicated to serving the food industry world wide. When Jeff and I discover or develop something new or of interest to the pizza industry, WE work together to disseminate that information to the industry through seminar participation at Pizza Expo and the NAPICS (North American Pizza and Ice Cream Show), authoring pizza related articles for trade publications, as well as providing educational and technical, hands on assistance to all aspects of the pizza industry (pizzerias, box chains, as well as the largest frozen pizza manufacturers. We also provide technical support to the allied pizza industries (oven manufacturers, pan and utensil manufacturers, and ingredient suppliers). Whew! That was a mouthfull! Hopefully I've answered your question as

to who "WE" is.

BTW: I am seriously considering retirement sometime within the next 2 or 3-years, but I will continue to assist the pizza and baking industries after retirement, so Jeff will be left to fend on his own until he can find someone to work with him and become a "WE" as I have.

Tom Lehmann/The Dough Doctor  
6480

### [\*\*New York Style / Re: Disappointing pies tonight\*\*](#)

Weemis;

Not a problem, you deserve to know who you're communicating with. One of our mission statements is to communicate information to the industry, you and everyone else here and at the other forums are part of that industry.

Tom Lehmann/The Dough Doctor  
6479

### [\*\*Off-Topic Foods / Re: Hamburger buns and old school burgers\*\*](#)

Craig;

They look fabulous!

The only thing missing was my dinner invitation.

I must have been distracted when it came. LOL

Tom Lehmann/The Dough Doctor  
6478

### [\*\*Pizza Toppings / Re: Partially-dried tomatoes\*\*](#)

Bill;

We are faced with the same dilemma at home too with more tomatoes coming in than we can use, so we are doing the exact same thing that you are doing, except that after partial dehydration we put them into vacuum bags, pull a vacuum and seal, then store in the freezer. They appear to hold up quite well this way, so when the snow flies (if we get snow this winter) we can still enjoy the fruits (literally) of our garden. We have also been putting up sweet and jalapeno peppers this way too.

Tom Lehmann/The Dough Doctor  
6477

### [\*\*Pizza Toppings / Re: Partially-dried tomatoes\*\*](#)

Bill;

Our basil and oregano have been going great guns too this summer so we puree the excess in a blender with just enough of a 50/50 blend of canola and olive oil to make a puree (looks like a green milkshake), we then pour this into margarine tubs and freeze. Later we use as you would fresh basil or oregano, or we add Parmesan cheese and pine nuts, or walnuts to make a great winter pesto. We tried putting the nuts in right up front, but we ran into problems with rancidity developing before we used all of the pesto. The "pesto base" that we now make holds up extremely well for the better part of a year in the freezer.

Tom Lehmann/The Dough Doctor  
6476

### [\*\*Shop Talk / Re: Charring and the Marketplace\*\*](#)

PDP;

I was AJ's last night and picked up a pizza to take home for dinner (I live about 12-miles from the store), when I got home with the pizza we dived right into it. It is interesting to note that even after all that time in the box you could still eat the

pizza with one hand, N.Y. style by slightly folding the crust (and I do mean only slightly). You have to keep in mind that this pizza is made using a very different process from what everyone thinks of when baking pizzas. To begin, we make a par-baked crust (hand tossed) with only a portion of the sauce on it. These are inventoried until needed. To make a slice, the crust is divided into equal size slices using an Equalizer from Lloyd pans, and a slice is removed, then dressed to the customer's order (this includes more sauce, any toppings desired, and cheese), the cheese is put on last to hold the slice together, this is baked on a non-stick Hex Disk (Lloyd Pans), but this is where it gets interesting, the pizza is now baked from the top down using a special top and bottom bake profile in an air impingement oven. This gives us a total bake time of just over 3-minutes for either a slice or whole pizza. I developed this procedure for them in response to the soft, soggy pizza slices that I was getting in New York a few years ago. It has everything everyone here in Manhattan wants, a New York presentation, and a crispy crust. You can read more about AJ's at <[www.ajsnypizza.com](http://www.ajsnypizza.com)>. That's the good news, the bad news is that we haven't yet been able to replicate this type of pizza using anything but a commercial air impingement oven. For a super crispy crust characteristic you might experiment using a par baked crust.

Tom Lehmann/The Dough Doctor  
6475

### **Chitchat / Re: Coal fired ovens vs wood fired ovens**

Chaz;  
Yes, the coal fired ovens can/do get hotter, additionally, wood can, at times be difficult to get or expensive to get, especially when you lock yourself into one specific type of wood. Anywhere along the entire east coast coal/anthracite should not be difficult in getting, but from a commercial stand point, be sure to check the laws governing these types of ovens, and if the oven is located indoors, be sure to check with your insurance agent at the same time.

Tom Lehmann/The Dough Doctor  
6474

### **Newbie Topics / Re: What to put on the bottom of pan to prevent sticking**

Dig;  
To answer your question as to what to put on the bottom of the pan to prevent the crust from sticking, you should season any bright aluminum pan before using it. This is done by setting your oven temperature at 425F, then brushing the pan, inside and out, with salad oil, place the pan in the oven to bake for about 20-minutes. Be sure to place a piece of foil below the pan to catch any oil that might drip off, and be prepared to handle the smoke created by the seasoning process. I like to do this at least twice, the pan should now have a light gold tint to it which will continue to darken to almost black with continued use. DO NOT allow a seasoned pan to soak in water, to do so will make the seasoning peel off like a bad sunburn, you will then need to strip all of the seasoning off of the pan and start all over again. Remember the admonishment about the cast iron skillet? Never wash it! Just wipe it out. This should also apply to a seasoned pizza pan. The darker it gets, the better it bakes. One other thing, you will always need to put just a very thin coating of oil in the pan to allow the baked crust to release properly.

I'm betting the cracker like crust you made was baked in the bright pan. The bright surface reflected heat away from the pizza so you had to bake it longer to get color on the crust, this resulted in extreme drying of the crust, hence the cracker like characteristics.

Tom Lehmann/The Dough Doctor

6473

### [\*\*Prep Equipment / Re: Pizza Peels\*\*](#)

Just about any slow absorbing material can be used as a decent peel dust. Bran also works very well. Flour is the least desirable since it hydrates quite fast, and once it begins to hydrate the dough will stick to the peel.

I am least fond of blowing under the pizza skin to free it from the peel. Why you ask? Well, I am trying to drink my coffee, but it is too hot, would you mind coming over here and blowing on it to cool it off so I can drink it? See my point? I really don't have an issue with it since the next stop is the oven and a "kill step", but it still just doesn't come across to your customers, or guests very well.

Tom Lehmann/The Dough Doctor

6472

### [\*\*General Pizza Making / Re: Brush Oil on the Crust?\*\*](#)

Garvey hit the nail on the head.

While many of us here, at this web site don't let the pizza skin set around for any length of time between dressing and baking, that isn't always the case in a commercial pizzeria establishment. In order to cope with getting "slammed" at say, 7:00 p.m. of Friday nights (for example) it is a common practice to pre-sauce the pizza skins and hold them in the cooler until needed. When they get slammed, all they need to do is to pull a pre-sauced skin and add the toppings. This helps to keep the delivery time between an order being placed, and the pizza being delivered to the customer's table more reasonable. Oiling the pizza skin prior to sauce application helps by creating a moisture barrier, thus preventing/reducing moisture migration into the dough prior to baking. When using fresh tomato slices instead of a sauce, the oil application again reduces the moisture migration into the dough as the fresh tomato slices begin to release their moisture during the baking process. If blended with garlic or other herbs, it will also add another dimension of flavor to the finished pizza. Just don't get carried away with the oil, if you can see a reflection (shine) on the dough from the oil, you have added all that is necessary, if you add too much, you can create a situation where the toppings just slide off of the slice with the first bite. Take and bake pizzas also benefit from the oil addition too as it may be hours, or even days between dressing the pizza skin and baking it. If you want to see what we are working against here, just put a spoon full of your sauce on a china plate, and cover it to prevent evaporation, then come back to it in 30-minutes, or so and you will typically see a ring of water around the sauce, this is the water that can soak into the dough resulting in the dreaded gum line just beneath the sauce layer.

Tom Lehmann/The Dough Doctor

6471

### [\*\*Off-Topic Foods / Re: Boiled Cabbage\*\*](#)

We like to quarter a head of cabbage and boil it until tender, then serve it with a sprinkling of vinegar. We also boil the large outer leaves and roll it up with a savory meat filling (usually ground pork), then place these side by side in a rectangular glass baking dish, add some pizza sauce to the top and place in a 350F oven for about 45-minutes, or until the meat filling is completely cooked. Served hot, they are great. (Think "pigs in a blanket").

Tom Lehmann/The Dough Doctor

6470

### [\*\*Dough Clinic / Re: Una Pizza Napoletana Dough\*\*](#)

From the looks of the dough, it appears that the absorption is around 65%, maybe just a little less.

Tom Lehmann/The Dough Doctor  
6469

### **Off-Topic Foods / Re: Garden Harvest - Process and Preservation Ideas**

In addition to freezing, we also like to dry some of our tomatoes, especially the cherry tomatoes. We just cut them in half and run them through a food dehydrator until soft and slightly leathery, vacuum package and freeze, then use later as you would any sun dried tomato. We also have an abundant basil crop each year so we process the leaves through a food processor with just enough olive oil to make a puree, then place in plastic tubs and freeze. This can be used as is after thawing for a great pasta sauce base, or on pizzas, but our favorite is to add ground walnuts and Parmesan cheese to make Pesto, then we use the pesto on everything from steaks and chops to chicken and pasta. We tried making the pesto right up front and freezing it but the nuts turned rancid over time and ruined the flavor. We will also occasionally make a dried tomato pesto too, just rehydrate the dried tomatoes in olive oil, then begin making your pesto with either pine nuts or walnuts. In addition to our garden, we also have an abundant supply of apples from our trees. In addition to frozen apple slices (be sure to use Fruit Fresh or lemon juice to prevent browning) we make a lot of dried apple slices. Our kids and grandkids just love them, especially when we add a little cinnamon to the apple slices just before we put them in the dehydrator. Any apple slices left over from the previous year ends up being used as a deer attractant on my deer stand which allows me to convert them to some great tasting, corn fed wild venison which, by the way, goes great with either of the home made pestos.

Tom Lehmann/The Dough Doctor  
6468

### **New Forum Members / Re: Frozen Dough Balls**

I will also need to know what kind of shelf life you are looking for with your frozen dough balls. The main questions are:

- 1) How many dough balls do you want to make per 8-hour production day.
- 2) How many dough balls do you project yourself as needing in 3 to 5-years (this should be in your 5-year plan).
- 3) What kind of shelf life (days, weeks, months) do you want to have?

Keep in mind that there can be a big difference in equipment cost between 10 to 12-days and 3-months.

Tom Lehmann/The Dough Doctor  
6467

### **Off-Topic Foods / Re: Garden Harvest - Process and Preservation Ideas**

Pete;

As mentioned, we use them in making our own tomato pesto (substitute dried tomato for basil), then we also toss them into just about anything that will go into the crock pot. Soups and stews are really great with them. I also soak them in olive oil for a few hours and use them as a pizza topping too. That's about the extent of our use of dried tomatoes at home.

Last night we started drying apples. A five gallon bucket is enough to fill all ten trays of our dehydrator. We wash, core, and slice then arrange on the trays for drying. We will keep at this every night that we can until we can't stand it anymore.

Tom Lehmann/The Dough Doctor  
6466

### [\*\*American Style / Re: My PJ clone...\*\*](#)

You will also be able to bake it until it's done, not "fast baked" like the original.  
Tom Lehmann/The Dough Doctor  
6465

### [\*\*Off-Topic Foods / Re: Beef Heart\*\*](#)

We like to thin slice it and grill it with some onions and serve it with warmed tortillas and a few sides for the tortillas. We also prepare deer heart the same way. When we are hunting from a tent camp we also like to fry it up in a mix of olive oil and beer along with sliced onions and a few peppers.

Tom Lehmann/The Dough Doctor  
6464

### [\*\*Chitchat / Re: What is your real name?\*\*](#)

Tom Lehmann "The Dough Doctor"

I got that title hung on me back in the 1970's when I was working in Mexico (traveling for U.S. Wheat Associates) visiting bakeries fixing their problems and showing them different types of products that can be made using flour made from U.S. wheat. When I started writing for Pizza Today Magazine, Jerry Durnell (editor) asked me for a title for my column, after some discussion, I told him that I was known as "The Dough Doctor" in Mexico, and much of Latin America. It took him about two nano seconds to agree to the name of the column as "The Dough Doctor". Actually, I wanted to it to be named "In Lehmann's Terms", a play off of my last name. A few years later when Steve Green started Pizza Marketing Quarterly Magazine (PMQ) he asked me to write a column for him too, this time I got my wish, so the name of my column for PMQ is "In Lehmann's Terms" both by "The Dough Doctor", so now I am known as The Dough Doctor, or Dough Doc, or just Doc. It is more than just a name to me, it is an honor given to me by the pizza industry.

6463

### [\*\*New York Style / Re: What water temp do you think gives ny pizza dough a better flavor?\*\*](#)

The greatest impact that variations in finished dough temperature will have is on the rate of fermentation, with warmer dough temperatures promoting faster fermentation. This can lead to problems if you are holding the dough for several days in the refrigerator as many of us do. I've seen doughs fail to rise properly after two to three days in the fridge when the yeast level was high (relative) and the dough temperature was also high (for the yeast level used). For greatest consistency in dough performance, along with predictable flavor and crust color characteristics it is adviseable to control the finished dough temperature as closely as possible. Here is a simple method for doing this. It is from Red Star/Lesaffre Yeast Corporation.

Subtract the flour temperature from 145 to find the correct water temperature to give you a finished dough temperature of approximately 80F. Note: Since there are so many different dough mixing methods employed by visitors to this web site, I suggest that you experiment a little with that 145 number. For example, if your flour is 65F it will suggest a water temperature of 80F to give you a finished dough temperature of 80F. If the actual dough temperature is higher use a number LOWER than 145 or if the actual dough temperature is lower than 80F, use a

higher number. This would also hold true if you want a finished dough temperature higher or lower than 80F. Once you find your number you should be able to lock it in and get consistent finished dough temps.

Tom Lehmann/The Dough Doctor  
6462

### **Chitchat / Re: What is your real name?**

Actually, the lab coat came to the scene by accident. I used to travel with an apron or two in my baggage, but then an employee here at AIB left. I was his size so I had the opportunity to inherit his lab coats (Gary was a chemist), so I started packing the coats rather than the aprons just to use them. With time they became part of The Dough Doctor persona, so when it was time to get new aprons, I ditched the aprons and ordered new lab coats, but this time the inscription "The Dough Doctor" and the transformation was complete.

Tom Lehmann/TDD  
6461

### **Chitchat / Re: What is your real name?**

That's only on my likeness on the back of my business card, thanks to the graphic artist at Lloyd Pans.

Tom Lehmann/TDD  
6460

### **Pizza Toppings / Re: Partially-dried tomatoes**

Some very good points have been brought up about dried tomatoes and apples. Allow me to share a short story about how good tasting those dried apples are (with the skin).

Several years ago I brought several large zip-lok plastic bags of dried apples with me on a deer hunt. I gave each of the other hunters a quart size bag of them to snack on. At the end of the day, when we were all back in camp, "Camp Momma", that's me, asked the guys what sounded good for dinner that night. Amongst the moans and groans I heard that not much sounded good to them. Why? I asked. Well, it seems that they had all consumed their entire bag of dried apples during the afternoon hunt. Did I mention that there were nearly a dozen apples in each of those bags? Well....the apples were now expanding, but the best part of the story came later that night (try eating a dozen large apples and you will see what I mean). End of story.

But they are oooohhh soooo gooood! Almost addictive.  
Tom Lehmann/The Dough Doctor  
6459

### **General Pizza Making / Re: Brush Oil on the Crust?**

Just a word of caution here. If you make your own garlic infused olive oil (I'm sure most of us do), remember that it is not a good idea to save it from one day to the next due to the possibility of growing clostridium in the anaerobic environment created by the oil. Clostridium is soil borne, so the garlic can be potentially contaminated with it. Clostridium can result in botulism poisoning. Botulism is too deadly, and olive oil is too cheap to take any chances. Our advice is to play it safe and dispose of any unused home made garlic infused oil at the end of each day. Commercially produced garlic infused oil is perfectly safe to hold from one day to the next.

Tom Lehmann/The Dough Doctor  
6458

## [New Forum Members / Re: Introducing....the New Guy!](#)

Anthony;

Welcome to the forum. New perspectives are always a welcome addition here. This is definitely the place to learn and share.

Tom Lehmann/The Dough Doctor

6457

## [New Forum Members / Re: new member](#)

F.C.

Welcome to the forum. Built your own wood fired oven...Wow!

We'd be disappointed if you didn't share with us. I know that a lot of other people here have an interest in building their own wood fired ovens. Please tell us something about your wood fired oven project. Do you have any pictures to share?

Tom Lehmann/The Dough Doctor

6456

## [Dough Clinic / Re: Bakers Percentage](#)

The significance of the total percentage comes in with more advanced use of bakers percent/bakers math. For example, lets say your formula has a total percentage of 171%, if you have calculated that you need 10-pounds of dough to make something all you need to do is to divide the dough weight by the total percent. Move the decimal point two places to the left and divide: 10-pounds divided by 1.72 = 5.84-pounds of flour will be needed to make 10-pounds of dough by your dough formula. Another way to use it is to calculate how much dough you can make from a known quantity of flour. Again, our total formula percent is 171%. We have 6-pounds of flour, how much dough can I make?  $1.71 \times 6\text{-pounds} = 10.26$ -pounds of dough can be made from my 6-pounds of flour by my formula.

Here is another one, if I know your formula in bakers percent, and I add the percentages and get 162%, and I know that you made 7-pounds of dough, I can calculate how much flour you used, then I can make the very same size dough. 7-pounds divided by 1.62 = 4.32-pounds of flour were used in making the dough. Now I can calculate the amounts of each of the other ingredients to make the dough (this is just like the first example above).

Tom Lehmann/The Dough Doctor

6455

## [New Forum Members / Re: new member](#)

F.C.

Let me say that again...Wow! That is quite an oven! Have you fired it up yet? How much stone is in the hearth? How long does it take to heat before you can bake in it?

Tom Lehmann/TDD

6454

## [General Pizza Making / Re: Using beer in your pizza dough](#)

Cosgro;

Your approach to pizza reminds me of what we always tell our students...."Don't be afraid to experiment and try different things, your failures will taste almost as good as your successes".

Tom Lehmann/TDD

6453

## [\*\*Pizza Cheese / Re: How will a grande mozzarella loaf last me in the fridge?\*\*](#)

PY;

If the loaf is unopened, DO NOT FREEZE it as the quality will be decreased. Instead, store it at refrigerated temperature (38 to 45F). The cheese should last for about 40-days. Once opened, it is suggested that you use it within a week. OK, if you freeze it the cheese won't melt down into a toxic puddle, but it will be impacted in terms of flavor, texture, and melt when you use it on a pizza, thus negating the fine quality characteristics of Grande Mozzarella cheese. I've frozen it, and if you're not overly fussy, it will work OK for you, it won't win you any competitions, but it will satisfy your taste for a pizza now and then over the next 3-months.

Tom Lehmann/The Dough Doctor  
6452

## [\*\*Pizza Cheese / Re: How will a grande mozzarella loaf last me in the fridge?\*\*](#)

P.N.

Great idea! I'm going to have to try that the next time I have to freeze my Mozzarella cheese.

Thanks for the tip!

Tom Lehmann/The Dough Doctor  
6451

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: quarry tile versus cordierite versus Fibrament...\*\*](#)

Chicago is home to great tasting pizza that is unique in its own special limp crust. When I was a kid, growing up on the south side we used to get pizza from Ed and Joe's (yes, they are still there) and when we went to the store to pick it up it had some attribute that might be construed as crispy, but by the time it got to our home (3-blocks away) with exception to the four edges/corners of the party cut pizza crispiness was just a memory, but it still tasted Ooooooh soooo gooood!

Tom Lehmann  
The Dough Doctor  
6450

## [\*\*Newbie Topics / Re: Cold Ferment / Overnight Fridge Rise HELP !!!\*\*](#)

A couple of things to keep in mind;

When hand kneading the IDY should always be prehydrated in a small amount of 95F water for about 10-minutes, then add it to the dough water, and follow by then adding the remainder of the dough ingredients.

Also, the dough will not rise as much in the fridge as it will at room temperature, and this is just what we are looking for as it allows the yeast to do its job and develop a wonderful flavor in the dough while also contributing to further gluten development. Personally, I like to lightly oil the dough ball, place it into a bread bag, twist the open end into a pony tail and tuck it under the dough ball as I place it in the fridge. For best performance I like to hold the dough in the fridge for at least 2-days. As for the size of the dough balls, I normally look for about 25% expansion after 24-hours and something closer to 50% after 48-hours in the fridge, assuming a finished/mixed dough temperature in the 75 to 80F range and normal yeast levels (IDY: 0.375%) your IDY level is higher so you might experience a bit more expansion in the size of the dough balls. To use the dough after refrigeration, remove it from the fridge, keeping it in the bag, and allow it to temper AT room temperature for 60 to 90-minutes, then turn the dough ball out of the bag into a bowl of dusting flour and proceed to open the dough ball up into a pizza skin. I like to LIGHTLY brush the opened pizza skin with olive oil prior to dressing as this both

improves flavor and helps to prevent migration of moisture from the sauce and toppings into the dough where it can end up creating an undesirable gum line under the sauce.

Tom Lehmann/The Dough Doctor  
6449

### [\*\*Pizza Toppings / Re: pizza with sea food?\*\*](#)

We make seafood pizzas all the time, every chance we get. In fact, I just got back from working with a pizzeria in Detroit where I demonstrated the making of seafood pizzas....they were great!!

Use your regular pizza dough and open into a dough skin for a thin crust. Lightly brush with olive oil and add just a hint of garlic (I like to use diced garlic), then spread on just enough Alfredo sauce to cover the surface of the dough, leaving a slight exposed rim. Give this a good sprinkling of dried dill weed, then add pieces of shrimp (baby shrimp works well), cod cut into 1/4 to 1/2-inch cubes, and pieces of crab meat, squid, clams, etc., finish by adding some sliced red onion and fresh tomato pieces, for cheese, add only 3 to 4-ounces of Mozzarella cheese for a 12-inch pizza, and about an ounce of shredded Parmesan cheese. Please don't go heavy on the cheese as it will detract from both the appearance and flavor of the pizza. Bake the pizza as you would any regular thin crust pizza.

Enjoy!

Tom Lehmann/The Dough Doctor  
6448

### [\*\*Chitchat / Re: Arkady. trying to figure out what this is.\*\*](#)

You're on the right track.

The old bakers used the word Arkady in reference to the mineral yeast food that they commonly added to their doughs. Mineral yeast food (MYF) is a mixture of calcium salts, ammonium salts, and back then potassium bromate. It was typically added at a level of 0.25 to 0.5% of the total flour weight. Today, most bakers don't use MYF, instead, they use calcium sulfate instead.

Tom Lehmann/The Dough Doctor  
6447

### [\*\*Dough Clinic / Re: Need a variation on a 24hr room temp no knead fermentation with more strength\*\*](#)

Nick;

I'm thinking that your fermentation is too long for your conditions and flour at hand. You might try this:

Begin with less water, say 65% and make further adjustments as necessary. Suspend the yeast in the water, are you using Engadura yeast or a locally produced fresh yeast? In either case, do suspend it in the water. Then add the flour, salt and sugar if used. Stir the ingredients together until thoroughly whetted, add the oil of shortening and continue stirring for a few more minutes. Cover and set aside to rise for 2-hours, then punch the dough down in the bowl and turn it over. Allow to rise for 30-minutes more, then turn the dough out onto a bench for cutting/scaling and forming into dough balls. Set the dough balls aside, sprinkle with flour and cover with a sheet of plastic to prevent drying. Allow the dough balls to rest/ferment for 30 to 60-minutes, or until they can be easily opened into pizza skins, then dress the skins and bake in your normal manner. I've used this procedure in a number of developing countries and remote areas with very good success.

Tom Lehmann/The Dough Doctor

6446

**[Dough Ingredients / Re: Question about adjusting yeast % to compensate for hydration.](#)**

Brendan;

No changes to the yeast level are needed when adjusting the dough absorption up or down within reason. Even though the total dough weight will change, the amount of water present, or the change in water content will have minimal impact upon the yeast fermentation properties. This does not mean that you will not see a difference between doughs with differing absorption, it just means that the difference you see will be the result of a softer, more hydrated dough, which will probably expand more easily, or exhibit more/different flow than a lower absorption dough, rather than the effects of fermentation. Keeping this in mind, when we make a very soft dough with a high absorption, it is common to reduce the yeast level to some extent, not because of the difference in fermentation rate, but because the softer dough ball as well as shaped dough may exhibit excessive flow properties and flatten out too much with a higher yeast level.

Tom Lehmann/The Dough Doctor

6445

**[General Pizza Making / Re: Solid Fat](#)**

Please note that all of that work was done on bread doughs, using pan bread, not pizza dough using pizzas as the end product. There is a huge difference in how a dough responds when being pushed to a height of 4 to 5-inches as opposed to a maximum height of maybe 1.5 or 2-inches as is the case with a pizza crust. When making pan pizzas we have seen a slight improvement in proofing time when a solid fat is used over oil, but I sure wouldn't think that in a home setting 5-minutes in proof time would make a big difference, especially when we typically see greater differences than that due to differences in finished dough temperature, gluten development, and scaling accuracy of the ingredients. What I'm saying is I wouldn't sweat it. If you want to add a solid fat/plastic fat, just heat it slightly to soften it, then work it in right behind the water. I make dough by hand all the time at home and I find it pretty easy to work it in as I stir and knead the dough.

Tom Lehmann/The Dough Doctor

6444

**[Dough Clinic / Re: Dough type for NY style in gas oven](#)**

Are you talking home or pizzeria? Unmodded gas oven would suggest home use, but just checking.

Tom Lehmann/The Dough Doctor

6443

**[Newbie Topics / Re: "Good pizzas are 90% oven" "conveyor ovens are not great" Oven primer for newb](#)**

Nick;

You have to define what constitutes a great pizza oven first. For some it is an oven that operates at a very high temperature, and gives up a pizza every 2 to 3-minutes, but it requires a lot of valuable floor space, needs to be manually operated (in/out/rotating), requires free space in front of the oven for the oven operator to work (again a valuable commodity), is relatively expensive when sized for the volume needed, will not be allowed in some locations, may be expensive to operate, lacks portability, gee... the list just goes on and on. Now, lets look at an air impingement oven (conveyor oven). It has a relatively low purchase cost,

economical to operate, has high volume capacity, requires a minimum of floor space, minimum to no operator expertise needed, can bake just about any type of pizza along with a plethora of side dishes, can bake both thin and thick crust pizzas side by side, the airflow helps to provide a consistently dry pizza, again the list goes on and on. It just so happens that from a commercial point of view there are a lot of advantages to the air impingement ovens that other oven types just don't have. Deck ovens as well as wood fired ovens are great for small stores (independents) and even small chains, but when you start looking at 25 or more stores, not to even mention thousands of stores for some of the larger chains, you want things to be as simple as possible and as economical as possible from both a purchase price v/s pizzas per hour, as well as space allocation in the store (space is a very costly commodity). So, what is a great pizza oven? It's the one that works best in your specific application. Air impingement ovens can also be set up to replicate most types of pizzas too. The word versatile comes to mind.

Tom Lehmann/The Dough Doctor  
6442

**Newbie Topics / Re: "Good pizzas are 90% oven" "conveyor ovens are not great" Oven primer for newb**

Scott 123;  
You have not been to any of the PMQ Pizza Shows. A few years back Dave Smith took first place with a pizza baked in an air impingement oven. I'm not going to get into any type of contest here but I will add that "world class pizza", whatever that might mean, may not be the pizza that everyone wants or needs. I personally like a pizza baked in a wood fired oven at high temperatures, but then again, that is not everyones cup of tea. So, once again, the oven that works best for YOU is YOUR best oven. We should remember that quality, like beauty is really nothing more than a perception.

Tom Lehmann/The Dough Doctor  
6441

**Dough Clinic / Re: New Pizza Shop**

Also, keep in mind that all deck ovens are not the same. Some have substantially thicker decks and a different burner configuration below the deck, typically deck ovens with these attributes are not as prone to having hot spots (pies don't need to be rotated or moved during the baking process) while others have a thinner deck, or a deck made from a different material, and usually have a different burner configuration beneath the deck all of which can result in the need to turn and move pizzas during the baking process to achieve a uniform bake to each pizza in the oven. Have you baked any of your pizzas using a screen under the pan for a portion of the baking process?

Tom Lehman/The Dough Doctor  
6440

**Dough Clinic / Re: Pizza Dough Recipe**

L.M.;

You struck a note when you said "flavorless". Salt has a significant role in the flavor of the finished pizza crust, and many other foods for that matter. Maybe your dough formula is lacking in salt as compared to your target dough/crust. Maybe as a first step I would suggest that you make a couple doughs with increasing salt levels from where you're presently at. While we normally recommend salt levels in the neighborhood of 1.75% of the total flour weight, I've seen it as high as 3% too. If you go much beyond 3% the finished crust will begin to take on a bit of a salty

taste.

Tom Lehmann/The Dough Doctor  
6439

### **Newbie Topics / Re: Walmarts Dough ball \$1.19 each!!!!**

I frequently get asked where and when I've had my best pizza. To answer this question honestly, I have to reply that it was the last time I made it at home. The reason being not that the pizza was by far the crispiest or most flavorful pizza ever created, but it met all of MY expectations for a truly great pizza, and if it didn't I knew who to blame. This came after more than 40-years of practice making pizza at every scale imaginable, and teaching it to literally hundreds of students, if not more. Like everyone else, I had my successes as well as my failures, and for the most part the failures tasted almost as good as the successes, but once I got the pizza that I liked nailed, I make it a habit of preparing it for family get togethers every opportunity I get, or put another way, the family has come to expect it from me. Is it their most favorite pizza? Probably not, but they eat it like a hungry wolf anyways. The up side is being able to enjoy eating MY very best pizza.

Tom Lehmann/The Dough Doctor  
6438

### **Dough Clinic / Re: Looking for Guidance - NY Style**

Ryan;

Your observations are the same as ours here at AIB. When it comes to making pizza, less mixing is almost always better than more mixing. Actually, if you open the dough up and "window pane" it after two days in the cooler you will be able to see first hand what biochemical gluten development is all about. Our annual pizza seminar begins today and that is one of the things that we show our students. Under mixing the dough promotes a more open crumb structure, less snap back, and is a lot easier on your mixer, or arms to boot.

Tom Lehmann/The Dough Doctor  
6437

### **Dough Clinic / Re: Cross Stacking**

Cindy;

For overall dough consistency, we don't recommend allowing the dough to ferment at room temperature before putting it into the fridge. The change in dough density makes the dough too difficult to cool uniformly. Instead, immediately after mixing, take the dough to the bench (counter top) cut and form the dough into balls, wipe them lightly with oil and place into individual plastic bags (bread bags work well), DO SEAL, but instead, twist the open end into a pony tail, and tuck the pony tail under the dough ball as you place it into the fridge. By doing this you don't need to use a dough box, and there is no fear of the dough balls drying out. To use the dough, remove from the fridge and allow to temper AT room temperature for 1.5 to 2-hours, then turn the dough out of the bag into a bowl of dusting flour, then open into pizza skins using your preferred method. The purpose of cross stacking the dough boxes (applicable to pizzerias) is to allow for uniform cooling of the dough without the development of unwanted sweating due to condensation forming on the dough during the cooling process. The use of the plastic bags makes the need for dough boxes unnecessary, and it is more compatible with a home refrigerator with its space limitations.

Tom Lehmann/The Dough Doctor  
6436

## [\*\*Dough Ingredients / Re: freekehlicious flour for testing\*\*](#)

Norma;

Being "roasted", my concerns would be with gluten quality. Wheat flour/protein is easily denatured with heat, hence my concern about the gluten quality.

Tom Lehmann/The Dough Doctor

6435

## [\*\*Dough Ingredients / Re: freekehlicious flour for testing\*\*](#)

Norma;

It was off of my radar.

Tom Lehmann/TDD

6434

## [\*\*Dough Clinic / Re: Pizza Dough Recipe\*\*](#)

Ryan;

My favorite N.Y. Pizzeria is Patsy's (Brooklyn) or is it now Grimaldi's? Whatever, if it was good enough for Frank Sinatra it is plenty good for me. Truthfully, it's my favorite pizza place in New York.

Tom Lehmann

6433

## [\*\*Dough Clinic / Re: You've probably had this question before about hydration\*\*](#)

Roberto;

You can't do bakers percent using a mix of weight and volumetric measures.

Everything must be in the same weight units such as grams, kilograms, pounds or ounces. While we could use approximate weights for the volumetric portions (bread flour: unsifted 4.75-ounces or 4.25-ounces sifted once) it is always best to portion it and then weigh the portion to get an accurate weight of the portion since there can be differences depending upon the technique of the person doing the portioning. Once you have the weight of the flour you can then divide the weight of the water by the weight of the flour and multiply by 100 to get the percent flour absorption used.

Tom Lehmann/The Dough Doctor

6432

## [\*\*Dough Clinic / Re: You've probably had this question before about hydration\*\*](#)

Roberto;

What we do is to get an exact weight for each of the ingredients used, then divide the weight of each ingredient by the weight of the flour and multiply by 100. This will give the the bakers percent for each ingredient (flour is always 100%. Once you have your dough recipe in bakers percent you can now manipulate the formula into any size you wish and it will always be in balance. To do this, first decide how much flour you wish to use. Enter this weight into your calculator then enter the ingredient percent you want the weight for, now press the "%" key and read the ingredient weight in the display window. When you have done this with each ingredient you will have your new batch sized and ready to go.

Tom Lehmann/The Dough Doctor

6431

## [\*\*Chicago Style / Re: dough\*\*](#)

Bisquick is a chemically leavened mix for making biscuits. The leavening system

typically used is made from a blend of sodium aluminum phosphate and baking soda, and this is where that flavor you mention comes from. If you want to replicate this flavor try adding a baking powder based on these two ingredients. I stand to be corrected, but if I remember correctly, Calumet brand baking powder is based on SALP and soda, check the labels when you're at the supermarket and you should find it. The amount to use will be about 3% of the total flour weight, and be sure to thoroughly blend it into a little Crisco to encapsulate it before adding it to the dough. Remember, biscuit doughs are just barely stirred together, they are not mixed like a typical pizza dough, and for making pizza, they are best portioned, placed into a plastic bag and refrigerated overnight, then allowed to temper AT room temperature for a couple hours before rolling/sheeting into a pizza skin.

Tom Lehmann/The Dough Doctor  
6430

### **Dough Clinic / Re: Frustration with Dough Tearing**

BD;  
Your problem is not unique, infact it is really quite common. A good method to use in opening the dough, so it opens without the excessively thick and thin areas across the center is to first pre-flatten the dough ball, in your case using a rolling pin. Open the dough ball to about 2/3 of the desired finished diameter using only just a couple passes with the rolling pin as too many passes will only serve to tighten the dough making further opening more difficult. Once you have the dough pre-flattened, set the dough piece aside to rest for a couple minutes, then begin opening the dough by hand in your normal manner. We just finished with our annual pizza seminar last week and I showed this procedure to a good number of our first time students, without exception, all were opening the dough really well within just a few minutes. This is also the way I open my dough when I make pizza at home.

Tom Lehmann/The Dough Doctor  
6429

### **Dough Clinic / Re: Frustration with Dough Tearing**

If you can get it, General Mills All Trumps flour at 14+% protein content is the pack leader, but the Pillsbury Bread Flour available at many supermarkets comes in at about 12.2% protein content, plenty strong to hand toss. Check the bag labels for different flours at the supermarket, you want to look for a label indicating 12 to 13, or more grams of protein for 100-grams of flour weight.

Tom Lehmann/The Dough Doctor  
6428

### **Shop Talk / Re: How important is an open kitchen.**

What is your business concept?  
Tom Lehmann/The Dough Doctor  
6427

### **Newbie Topics / Re: silicone square cake pan cooked pizza is wet in the middle section?**

You say you're using a square silicone cake pan, is this one of the newer flexible ones, or are you referring to a square cake pan that has been silicone coated aka glazed? What is the color of the pan? What is your baking temperature?

Tom Lehmann/The Dough Doctor  
6426

## [Newbie Topics / Re: silicone square cake pan cooked pizza is wet in the middle section?](#)

I agree totally with Don, what you are using is not designed, or intended to bake anything close to pizza. They do a good job of baking cakes, but that's about as close as it gets. If you want to do square deep-dish pizzas on the cheap, look for some used square cake pans (normally in 7-inch format). The best ones are made of steel and have a dark green coloring to them. You can also buy square pizza pans from American Metalcraft <[www.amnow.com](http://www.amnow.com)>. These will be made of aluminum, and can be had in a dark anodized finish.

If you get a pan(s) with a bright finish, they should be well seasoned for best baking properties.

Tom Lehmann/The Dough Doctor  
6425

## [American Style / Re: My PJ clone...](#)

Chicago Bob;

PJ's uses air impingement ovens to bake their pizzas. I agree, I think their pizzas are underbaked too, but that is not my call. Would their pizza quality be improved with a longer bake time? For my tastes I would have to say yes, but they are in the delivery business and evidently they are making money at what they are doing so who am I to criticize them, except to say "it ain't my piece of pie", and to each his/her own.

Tom Lehmann/The Dough Doctor  
6424

## [Newbie Topics / Re: aluminum pie pan for pizza making?](#)

Stud;

What was the color of the pan? Bright silver inside and out? Bright silver outside and dark on the inside, or dark both inside and out?

Also, can you share how the pizza was baked? This additional information will be helpful in determining why your pizza wasn't properly baked.

Tom Lehmann/The Dough Doctor  
6423

## [Dough Clinic / Re: Order of ingredients in Dough?](#)

Weemis;

When mixing dough by hand, some of the things which we have found to be beneficial are as follows:

Always suspend compressed yeast in the dough water. If using either ADY or IDY pre-hydrate it in a small portion of the water warmed to between 95 and 100F, then add it to the dough water.

Put all or the greatest portion of the dough water in the mixing bowl first

Add the suspended/hydrated yeast to the water in the mixing bowl

Add salt, and or sugar to the yeast water in the mixing bowl, then give it a quick stir and add the flour.

As you mix the dough during the first couple minutes, add the oil or shortening. If shortening is used (Crisco, margarine, butter, etc.) heat it to just melting temperature before adding it to the dough. This will help to disperse the fat throughout the dough mass.

Tom Lehmann/The Dough Doctor  
6422

## [Chicago Style / Re: dough](#)

Norma;

Pizza on a biscuit dough.....this reminds me of the old (dating myself here) Chef Boyardee (SP) pizza mix. As a kid I thought it was great, just add water to the dough portion of the mix and stir, then turn out onto a floured surface and form to about the size of your pan, place the dough into your greased pan and finish by pushing the dough into the corners and sides of the pan, then pull the dough slightly up the sides of the pan. Open the sauce pouch and apply to the dough surface, then apply the supplied cheese. Anybody else remember those days? Probably not the best pizza in town, but it worked in the moment at the time.

Tom Lehmann/The Dough Doctor  
6421

### **Dough Ingredients / Re: Retail Bromated Flour**

Flour millers typically offer their stronger flours as bromated or non-bromated, such as General Mills Full Strength (12.6% protein) and Remarkable (13.6% protein) as I am sure other flour millers do. If you live in California, it may be difficult to find a bromated flour because, as a potential carcinogen, all products containing KBRO<sub>3</sub> and sold in California must have a warning label similar to that which is found on a pack of cigarettes or a bottle of wine. In Canada it is not approved for use in food, but anyplace else you should be able to find it. If you can't locate it at a local store, or buy it directly from a distributor, you might be able to talk to a local retail baker to see if he will sell you a partial or full bag, or maybe you can place an order for a 50# bag of bromated flour with his next flour order. FYI: Full Strength W/bromate (#53391 or #53381); Remarkable W/bromate (#57140 or #57122).

Tom Lehmann/The Dough Doctor  
6420

### **General Pizza Making / Re: Gotta give it up to Mr. Lehmann**

Wow!

I'm honored!

Here at the American Institute of Baking/AIB International we are very research oriented, but even more importantly we are educators in that we disseminate the findings of our research to the general public (unless it's gained through private contracted research) through publications, our seminars/classes, and participation in other programs such as the NAPICS Show, PMQ Pizza Show, and Pizza Expo. I have also traveled quite extensively on the International circuit teaching and demonstrating all aspects of making pizza (science, technology, function and interaction of ingredients, processes, etc.) all to spread the good word. The things that I cannot do as you have correctly stated is make people listen, follow known successful practices, and to take our advice. This is even in light of the fact that there are some amazingly large companies out there making and selling pizza on a scale that most of us can only dream of, that don't have a technical staff knowledgeable in the science and technologies of pizza formulation or processing. It is a lot like complimenting the pilot of a Boeing 747 on a great, smooth landing under adverse conditions, and having the pilot respond back to you "thank you, after I get my pilot's license I should be able to do even better".

As for the quality of commercial pizzas, well, lets just chalk it up to pride (we have made and sold the same pizza for X-years), fear of rocking the boat (it took us 20-years to get to where we're at and we ain't going to change anything), and economics (we provide a product that a certain segment of the population finds to be acceptable (mind you I said acceptable, not great) at a price point that they are willing to, or can afford to buy it at). There are a bunch of other reasons, but I see

these as the major ones, with my job being to help them achieve their goals, whatever they might be.

Tom Lehmann/The Dough Doctor  
6419

### [\*\*Chicago Style / Re: dough\*\*](#)

Hi Norma;

There aren't many of us that either go back that far, or can remember back that far, much less partook in such a gourmet delight!

You probably remember TV Time Popcorn too.

Tom Lehmann/TDD  
6418

### [\*\*New Forum Members / Re: Newbie - Imabadman\*\*](#)

John;

Pretty soon those friends will be dragging in friends of theirs and you might find yourself working in front of an oven in your pizzeria! More than one pizzeria got started that very way.

Welcome!

Tom Lehmann/The Dough Doctor  
6417

### [\*\*Dough Clinic / Re: Batches of dough, sized and rolled straight onto pan?\*\*](#)

Beck;

Yes you can do as you propose.

Increase the temperature of the finished dough to around 90F by using warm water to make the dough with. All other ingredients should remain as they presently are for right now. Immediately after mixing, form the dough into dough balls of desired weight, lightly oil and set aside (covered with a piece of plastic) to rise for at least 30-minutes (45 to 60 is better). Prepare the pan by greasing with shortening (Crisco) or margarine, place the dough ball into the pan and using your fingers, press the dough out to fit the pan. If you have difficulty, cover the pan and set it aside to rest for about 20-minutes, then finish pressing the dough into the pan. Once the dough is pressed into the pan, cover it and allow the panned dough to rise for 20 to 30-minutes, uncover the pan and place it into the fridge. After about 90-minutes in the fridge, cover the pan with a piece of foil crimped over the top rim of the pan. Allow the dough to remain in the fridge until the following day, then remove from the fridge about 60-minutes before you plan to dress it. From that point on dress and bake the dough as you would any other deep-dish pizza. Be aware though that you won't get the same flavor profile as you would from a dough that was given 24 to 48-hours of cold fermentation prior to panning the dough.

Tom Lehmann/The Dough Doctor  
6416

### [\*\*General Pizza Making / Re: New Dough-Barqs Rootbeer\*\*](#)

I have heard a lot about using soda (root beer, 7-Up, and gingerale) are mentioned quite frequently, but I have not done a lot of work along those lines. It would be interesting to see the differences between regular (sweetened with real sugar) and diet versions of the same sodas. Sweetness might change as the artificial sweeteners used in the diet versions are typically not heat stable, but the flavor should remain. Hummm, an interesting project.

Tom Lehmann/The Dough Doctor

6415

**[General Pizza Making / Re: New Dough-Barqs Rootbeer](#)**

I'll do some experimenting along these lines on my next foray out into the pizza lab. I'm also wanting to look into using unflavored Greek yogurt as a possible sauce replacement for a white pizza. When I get some news I'll report back on our findings.

In the mean time, if anyone else has done any of this, or wants to do their own research, please feel free to post your findings/results.

Tom Lehmann/The Dough Doctor  
6414

**[Hearth Ovens / Re: Wrong place to ask about tropical woods](#)**

While on the topic of woods, check around for neighbors with apple, cherry or pear trees, they need to trimmed periodically resulting in a lot of useful smoker wood. Also, after a storm, such as a wind storm or especially an ice storm (fruit trees are typically the most commonly damaged trees) look for damaged trees or tree limbs. As a result of an ice storm here in Kansas a few years ago we had two large pear trees, a cherry tree, a peach tree, and several large limbs from an apple tree available to anyone who wanted them. What was left ended up as firewood in our furnace. It really gave a great aroma in the house!

BTW: Check out the local dumping ground for tree limbs. At ours the city encourages us to help ourselves to all the free wood we want. We can easily get an abundant supply of oak, ash, and fruit tree woods from there too, and if you're into cottonwood, elm and cedar there is a lot of that too, but it's best reserved for the chipper unless you're completely out of firewood.

Tom Lehmann/The Dough Doctor  
6413

**[General Pizza Making / Re: New Dough-Barqs Rootbeer](#)**

Dr. Pepper, interesting....since it is based on plum juice it might add a pleasant fruity flavor note to the dough.

Tom Lehmann/The Dough Doctor  
6412

**[Neapolitan Style / Re: Super long fermentation](#)**

My own personal comments:

From the look of the picture (white colored crust with highly contrasting char, actually beyond char. My gut feel is that the dough may well have been over fermented to the point where the acidity formed as a result of fermentation is inhibiting the browning reaction, hence the only place where the crust can actually develop any color is at the site of the bubbles/blisters, where the surface of the crust gets exceptionally hot, while the remainder of the crust doesn't actually get hot enough within the allowed bake time to develop color (remember the acidity), hence the strong contrasting of colors. As for the bottom bake, I would guess that it might have been rather spotty and inconsistent.

Tom Lehmann/The Dough Doctor  
6411

**[Dough Clinic / Re: dough tastes like bread](#)**

I agree with Tom N. that lack of sufficient fermentation is probably responsible for the finished crust tasting too much like bread.

Also, look at the amount of fat and sugar used in the dough formula/recipe. If the

fat level is too high, (above 2%) the finished crust flavor can be compared to that of bread, be sure the fat you're using is olive oil to give the crust a different flavor, too much sugar can also be a cause. Try making the dough without any added sugar and cold ferment for 24 to 48-hours to see if that addresses the problem. Lastly, insufficient salt in the dough can have an impact upon flavor of the crust. We typically look for salt levels of around 1.75 to 2% of the total flour weight.

Tom Lehmann/The Dough Doctor  
6410

### **Prep Equipment / Re: Dough Trough size?**

That big wood mixing bowl looks a whole lot like one we have in our baking museum, the only difference is that ours is a lot older. It served the same function though. The neat thing about wood mixing bowls and wood dough troughs (commonly used here in the U.S. until the 50's especially in cracker production) was that they would hold bacteria (lactic acid forming bacteria/lacotbacillus) and inoculate the dough that was placed into them much like we would use a sourdough starter today. When the cracker industry moved away from the wood troughs they had to identify the specific bacteria, culture it, and add it to the dough to get the same finished flavor profile that they had with the wood troughs.

As for mixing the dough without power, there is a pizzeria in the Pittsburgh area where the owner has a long stainless steel trough, he measures out his water in a pail, adds it to the trough, adds flour, salt and sugar, then wets his hands and arms and spreads cake yeast over them as one might use soap, he then proceeds to hand mix the dough just until it comes together, after that he allows biochemical fermentation to do the rest of the work for him. It is quite a store, people come in just to watch him make his dough.

Tom Lehmann/The Dough Doctor  
6409

### **Dough Clinic / Re: volume vs weight %**

Mark;

Hydration percent should always be based on the actual weight measures.

Tom Lehmann/The Dough Doctor  
6408

### **Chicago Style / Re: dough**

Why Norma, you're just a youngster!

I've got ya beat by 3-years.

That don't make us "old" by any stretch of the imagination though, it just, on our resumes we can put "has vast experience".

It must be something about pizza that keeps us so young!

Tom Lehmann/The Dough Doctor  
6407

### **Resources / Re: Looking for a place to order Full Red pizza sauce**

Jim;

I think what you are looking for is Stanislaus Full-Red Extra Heavy Tomato Puree.

Tom Lehmann/The Dough Doctor  
6406

### **Dough Clinic / Re: Pizza Dough Recipe**

Letterpress Man;

Keep in mind that there is no standard for "Hi-Gluten" when it comes to flour. We

have tested some HG flours and found them at between 10 and 11% protein content, while others are at 12 to as high as 14%, especially for the commercial flours such as All Trumps, Remarkable, Big Spring, Power, Regal, Gigantic, Hi-Rise, and Dominator, to name just a few. I agree with Norma, and I'll go so far as to say that regardless of what it says on the bag, if the flour works for you, it's the right flour for you. By all means shop around and evaluate different flours, experimenting is half of the fun of making pizza, the other half is eating your creations, and as I've been known to say, "don't worry about making mistakes, they'll taste good too".

Tom Lehmann/The Dough Doctor  
6405

### **New Forum Members / Re: New member in the Chicago burbs**

Woody;  
Which burb?  
I'm a "South Sider" from Tinley Park.  
Tom Lehmann/The Dough Doctor  
6404

### **Neapolitan Style / Re: Ev's Neapolitan Camper**

Cool!  
Waaaaay Cool!!!  
Tom Lehmann/The Dough Doctor  
6403

### **Pizza News / Re: Retired engineer-- perfect way to slice a pizza**

Huuuuuh??  
Somebody please tell me this is just a spoof!  
In Chicago a party slice (squares) is the norm for thin crust pizza from the indies and regional chains. If he wants a wedge (pie) cut all he needs to do is to go to one of the box chains. There is a reason why they use the party cut in Chicago for the Chicago thin crust pizza, it is so soft that it would be almost impossible to pick up and eat in any other shape. Fact is, when eating a Chicago thin crust it is perfectly acceptable, and in good manners, to fold the square in half, kinda New York style as this allows one to pick up the pizza slice (square) without dumping the toppings.  
Tom Lehmann/The Dough Doctor  
6402

### **Dough Clinic / Re: help me dough dr.!!!**

GC;  
Your total dough absorption figures out something close to 66%, as you are trying to duplicate a commercial (pizzeria) type of pizza, I would add that very few pizzerias use an absorption much above 58 to 60%. They do this for ease of handling. Based on this, you might begin by reducing the amount of water you use to about 60%, or 10.5 to 11-ounces. This will give a less wet and sticky dough which should handle better and possibly come closer to giving the product you are looking for. Also look at your baking time and temperature as a longer bake at a lower temperature typically results in a crust that is both crispier and one that holds its crisp for a longer time after baking.

Keep us posted on your progress.  
Tom Lehmann/The Dough Doctor  
6401

## [Starters/Sponges / Re: help with a grape starter](#)

Also, you won't know what kind of flavor the starter will impart until you actually bake something with it. This is because it is anybody's guess what kind of microflora is being cultured. If you like the flavor imparted by the SD be sure to split it up into multiple containers in DIFFERENT locations and regularly feed each one on the same schedule. This way if you loose one batch of starter you can always use another as an inoculate to start another SD with the same microflora.  
Tom Lehmann/The Dough Doctor  
6400

## [Dough Clinic / Re: Pizza Dough Recipe](#)

LM;

Snap-back, or excessive dough memory is what you are experiencing. It can result from insufficient water, yeast, or dough temperature, just to name a few things. Your yeast level looks good, but ADY must be hydrated in warm (100 to 105F) water (just a small portion of the total water is all that's needed to do this), then add the yeast to the cold water in the mixing bowl, no need to stir. Add the flour, salt and sugar to the flour, and begin mixing just until the flour is hydrated (wet), then add the oil. This will provide optimum yeast performance. Check your finished dough temperature, it should be in the 85 to 90F range for most home made pizzas, unless you plan to hold the dough more than 2-days in the fridge, in that case go for a finished dough temperature closer to 80F. After at least 24-hours in the fridge, bring the dough out, keeping it covered, and allow it to temper AT room temperature for about 3-hours, then turn the dough out of its container into a bowl of dusting flour and you're ready to begin opening the dough up into a pizza skin.

Tom Lehmann/The Dough Doctor  
6399

## [Stones/tiles/steel, Pans & Accessories / Re: What depth pans do I need?](#)

Not so long as there is dough in it.

Most pizzas baked in a pan will be best baked at temperatures of 400 to 475F for the most part. Sure, you can put them into a 1000F oven but all you will get is a pizza that is possibly done on the top and raw on the bottom. Since the pan is a heat sink you must be able to heat the pan first, then the dough inside the pan all the while the top of the pizza is baking, hence the typically lower baking temperatures employed when pans are used.

Tom Lehmann/The Dough Doctor  
6398

## [Dough Clinic / Re: Flour question for The Dough Doctor...](#)

La Sera;

All purpose flour can run from a low of 9% protein to a high of about 10.5/11.0% protein content. While all purpose flour works well, research that we have done here at AIB International has shown that the higher the protein content, the crispier the fried coating becomes. Without knowing what your customers are looking for in regard to crispiness of the fried coating, I would suggest that you fry up several chicken pieces coated with each of your different flours and choose the one that you like most. Do keep in mind though that there is a limit to the crispiness that can be imparted by the flour. If you go too much above 12.5% protein content in the flour you might run into what we refer to as a "flinty" fried coating. This is where the fried coating becomes so hard that it must be chewed/ground on ones molars, akin to trying to eat a china plate.

Tom Lehmann/The Dough Doctor

6397

## [\*\*Dough Clinic / Re: Pizza Dough Recipe\*\*](#)

LM;

No difference in flavor is attributed to the brand of yeast. This is by design of the yeast manufacturers allowing bakeries to have multiple suppliers.

Tom Lehmann/The Dough Doctor

6396

## [\*\*Dough Clinic / Re: Springless Dough\*\*](#)

Tyler;

Tow things come to mind. 1) The Durham flour might be slow to hydrate, as such the dough will feel just fine, but then with time it will begin to hydrate and the dough will stiffen up, but since you didn't mention anything about that I'll assume that's not the problem here. 2) You did mention rolling the dough out. Is there a possibility that you are rolling/sheeting the dough too thin? How thin is too thin? 1/8-inch or less might be too thin for a rolled dough. To test this, try hand forming the dough ball into a pizza skin and let's see if the resulting crust looks better. A dough that is rolled too thin will readily allow heat to pass through it where the heat is dissipated as steam from the moisture in the sauce and vegetables (all of which are about 90% water). Sorta like trying to solder a water pipe which still has water in it. One other thing comes to mind too, 450F seems a might cool unless you're baking for an extended time. Can you bake at a higher temperature?

Tom Lehmann/The Dough Doctor

6395

## [\*\*Dough Clinic / Re: Springless Dough\*\*](#)

With the fermentation that you are giving the dough I don't believe your kneading is at fault. We have just barely incorporated ingredients into something that more closely resembled oatmeal than a pizza dough, but after 24-hours in the cooler it exhibited very good gluten development due to biochemical gluten development.

Tom Lehmann/The Dough Doctor

6394

## [\*\*Forum Info / Re: Protocol in replying to the Dough Doctor Forum?\*\*](#)

Hi Mark;

Remember, we're all just rendering our opinions. In many cases my opinions are based on over 47-years of experience in pizza, bread, and fermentation research, but in the end, it's still just an opinion just like everyone else's, and that is what makes these web sites so informative, you can get opinions, and guidance based on collectively over 100-combined years of experience on some postings. While it has taken some of us (speaking for myself) over 45-years to learn what I know, a simple question can get you diverse answers from many knowledgeable individuals with highly diverse backgrounds, to just about any question on pizza making you might have, allowing you to educate yourself while getting direction or an answers to your questions, and it's my opinion that everyone has something to add and something to learn here. When I stop learning is when my pulse drops to zero, and being able to contribute is the carrot in front of me to keep me learning, as it should be with everyone here. Knowledge is a terrible thing to waste, so jump right on in any time you are so inclined.

Tom Lehmann/The Dough Doctor

6393

## [Shop Talk / Re: Chilled dough balls](#)

P.A.

I have a Dough Management Procedure that I can send to you. This is a management procedure that is common to a good many pizzerias. You might be able to take a look at it and possibly modify it to meet your specific needs. To get a copy of it just send me a private message I'll be glad to send it to you.

Tom Lehmann/The Dough Doctor  
6392

## [Chicago Style / Re: Blackened DD pans](#)

Seasoned pans are nothing more than pans coated with oil and baked multiple times until the oil polymerizes, turning into a type of "varnish" and then turning dark/black with continued use. The thing to remember about seasoned pans is that they need to be washed in a special manner. Here's how we recommend washing a seasoned pan: Hold pan in one hand and soft plastic bristly scrub brush in the other hand, dip pan in soapy water and scrub gently, immediately followed by a rinse dip, immediately followed by a sanitizing dip, set the scrubbing brush aside and pick up a clean towel and thoroughly dry the pan (NOTE: The pan has NEVER left your hand up to this point) Now place the pan in an oven to force dry for a couple minutes. Failure to follow this procedure may result in the seasoning peeling off of the pan like a bad sunburn, allowing you the honor of stripping all the remaining finish from the pan and starting all over again...Ugh!

The dark colored anodized finish pans, on the other hand can be soaked in hot soapy water for a few minutes to help soften any debris adhering on the pan, but the truth id the matter is that this is seldom an issue as in most cases you can just wipe off and adhering matter. Why wash in the first place? 1) All pans should be washed to remove any residual oil before being put into extended storage. This is for sanitation purposes, and it will also prevent the pans from going rancid due to the residual oil in the pan. 2) Some place require that all pans used in a commercial food establishment be washed daily, in this case the non-stick, pre-seasoned pans are a no-brainer. 3) If you serve a pizza while in the pan, the pan MUST be washed and sanitized before it can be reused (restaurant application). Lastly, have you seen those commercials for non-stick cookware where the guy fries cheese in a frying pan, then just lifts it out? The commercial non-stick finish on some of the pizza pans is just that good.

Tom Lehmann/The Dough Doctor  
6391

## [General Pizza Making / Re: What type of cheese\(s\)? And how do my pies look?](#)

Benji:

Those pizzas look GREAT! Especially the last one.

Tom Lehmann/The Dough Doctor  
6390

## [Newbie Topics / Re: Donato's](#)

I can't sat too much about it but it is a ready made (pre-sheeted) frozen crust that is received from their commissary then slacked out at the store and used as a fresh dough would be.

Tom Lehmann/The Dough Doctor  
6389

## [Dough Clinic / Re: Hydration and yeast amounts](#)

From what we have seen, the answer to this question is yes and no. Yes, the hydration level can impact yeast performance, but once you reach a plateau on absorption, generally speaking about 56 to 58% the effect of additional water is minimal, but what you see is a softer, more fluid dough that responds to the byproducts of fermentation (alcohol, carbon dioxide, and acids) to a much greater magnitude than it would at a lower absorption. IE, the softer dough expands more readily, gets bigger faster and appears to show the effects of greater fermentation, but it's just the softer dough that you're seeing, not more or faster fermentation. It is really pretty complex and would take a small book to do it justice, so this is just a very general summation of what is happening.

Tom Lehmann/The Dough Doctor  
6388

### **Dough Clinic / Re: Cold Rise Expiration Dates?**

From a food safety stand point there should not be any issues with a yeast leavened dough in the cooler, but as the dough ages, even under refrigeration, it continues to develop the byproducts of fermentation (acids, alcohol, and carbon dioxide) and all of these will slowly take their toll on the dough, specifically the protein content. If you can mix the dough cold, and then get it into a cold refrigerator (34 to 36F) two to three weeks is not uncommon. It all depends upon how well you are able to manage the dough temperature as well as the temperature at which the dough is being held. Remember, even just plain yeast has a maximum refrigerated shelf life of 30-days, though significant deterioration will normally take place inside of two weeks refrigerated storage. Since a good deal of the flavor results from a denaturing of protein during the baking process, as a dough continues to age in the cooler, more of the proteins in the flour are damaged and denatured during baking to provide a "different" or changing flavor, which can be a good thing, or it can be a bad thing depending upon your perspective and your likes.

Tom Lehmann/The Dough Doctor  
6387

### **Dough Clinic / Re: Cutting into dough balls after kneading**

There is no problem in cutting the dough into balls immediately after kneading/mixing. This is how it is commercially done. Yes, the elasticity is affected by the length of time the dough is fermented. The longer the dough is allowed to ferment, to a degree, the softer and more extensible it becomes, then at a certain point, the dough becomes what is referred to as "bucky" or tight, lacking extensibility.

Tom Lehmann/The Dough Doctor  
6386

### **Dough Clinic / Re: deactivated yeast**

Deactivated or dead yeast is used both as a flavoring agent (no, it does NOT provide a yeasty flavor), and as a reducing agent, similar to L-cysteine (PZ-44) to both shorten the mixing time of the dough and provide greater extensibility in the dough for easier forming, especially under commercial (large scale) production/processing parameters.

Tom Lehmann/The Dough Doctor  
6385

### **Dough Clinic / Re: Cutting into dough balls after kneading**

It all depends upon the size of dough that you are making. In a commercial setting we are making upwards of 80-pounds of dough at a time. It is all but impossible to

uniformly cool this dough as a single piece, but when subdivided into individual dough balls, it can be uniformly cooled without much problem, what this means is that all of the dough balls will be the same with regard to dough performance and finished crust quality. In a home setting, some refrigerators can cool a 3 to 4-pound dough ball without much problem, while others will struggle, so in this case dividing the dough into individual balls prior to placing it into the refrigerator will result in more consistent cooling of the dough. What this means to you is that when you make the dough again and manage it in the same manner, it will perform very similarly to the way it did previously. It is done in the name of consistency. I have also found that when I make my dough balls right after mixing and place them into individual plastic bread bags, I can turn the dough ball out of the bag into a bowl of dusting flour and open it into a pizza skin more easily than I can an irregularly shaped piece of dough. Yes, I could form those irregularly shaped dough pieces into balls and set them aside to rise again, but that takes additional time which I don't always have.

Tom Lehmann/The Dough Doctor  
6384

#### **Dough Clinic / Re: cold rise acidic control**

What is your finished dough temperature? Too high of a finished dough temperature can result in excessive acid formation in the dough. Typically, we see temperatures of 65 to 70F used where long cold ferment periods are employed. That said, if you still want to reduce the acidity of the dough you might include a buffer in the dough as an ingredient. Calcium is an excellent buffer, so you might look at using calcium sulfate, or even something as basic as milk or yogurt which are good sources of calcium. The calcium will buffer the acid formation, making for a less acid dough in the long run. This is why antacids such as Tums contain calcium.

Tom Lehmann/The Dough Doctor  
6383

#### **Dough Clinic / Re: Can you make the dough and bake it without making a pizza**

We do it all the time when we are testing dough ingredients or different dough experimentals. We go through the entire process of making the dough and then when we are ready to dress the pizza skin we use only tomato sauce but we do use the cheese that we plan on using with the finished pizza. This way we can determine what the optimum bake time and temperature is (reasonably close).

Tom Lehmann/The Dough Doctor  
6382

#### **Chitchat / Re: Anyone attended the Pizza EXPO in Las Vegas???**

Pizza Expo is a great show to attend and also a great pizza experience. True, it is focused on the owner/operator rather than the home pizza baker, but the science behind both forms of pizza making are essentially the same. There is also a wealth of information on suppliers of both ingredients and equipment, and the reference materials that you will pick up on the show floor will be an asset to you for years to come.

I would highly encourage anyone to attend. Additionally, if you are located east of the Mississippi River, take a look at the NAPICS (North American Pizza and Ice Cream Show). It is held in Columbus, Ohio around the end of February. It is a very low cost show to attend, with a lot of suppliers to the pizza industry (bring some pocket change too as you can buy some equipment right off of the show floor at this

show). They also have seminars at a very low cost just like Pizza Expo. We used to do a Test Kitchen there but this year we will not be attending, but still a great show to keep on your radar. For information on this show contact the Ohio Restaurant Association at their website.

Tom Lehmann/The Dough Doctor  
6381

### **Dough Clinic / Re: Using a starter instead of ADY**

To get the full benefit from the starter you should use the starter to provide all of the leavening for your dough. If you use both starter and yeast, there is a high probability that the yeast will become the dominant microflora in the dough, resulting in more of a yeast leavened flavor in the finished product rather than the unique flavor provided from the starter which is developed through both yeast (wild yeast) and bacterial ferment (some form of lactic acid forming bacteria). You will need to experiment with the amount of your starter to determine how much will be needed to provide both flavor and leavening leavening to the dough. Some starters are quite active so only a relatively small amount is needed (5 to 15%) while others are less active so more (20 to 30%) is needed. These percentages are based on the total flour weight.

Tom Lehmann/The Dough Doctor  
6380

### **Dough Clinic / Re: Using a starter instead of ADY**

Chaz;

I think another way of looking at it might be as follows;

Levain as shown is made with 250-grams of total flour weight and 50-grams of mature active levain or 20% of the flour weight in the levain is mature active levain. Then on the dough side we have 900-grams of total flour weight and 180-grams of the levain or 180 divided by 900 X 100 = 20%, so in this case we are using levain at 20% of the total flour weight in at the dough side.

Tom Lehmann/The Dough Doctor  
6379

### **Shop Talk / Re: delivery bag question**

We have looked at delivery bags from time to time and while there is some difference between bags of different manufacturers, the biggest difference that we found was due to the number of pizzas in the bag. Using 140F as the cut-off temperature, we found that a single pizza in a bag sized to hold a single pizza was good for about 30-minutes at most, while two pizzas in a bag sized for two pizzas was good for about 45-minutes. When we did three pizzas we got something close to an hour. Keep in mind that this was for conventional bags. If you use one of the high-tech bags with the heated ceramic disk I'm betting that you can best these numbers. You will need to do the work to find out what those times are though as we have not done any studies using any of these bags.

Tom Lehmann/The Dough Doctor  
6378

### **Dough Ingredients / Re: Weighing preferment starter - technique?????**

If your scale has the tare capacity I like to put some of the flour in the scale pan, then weigh the starter directly onto the flour, then add directly to the mixing bowl...no loss of anything.

Tom Lehmann/The Dough Doctor  
6377

## [\*\*Dough Clinic / Re: help me dough dr.!!!\*\*](#)

Bruno;

When baking in my conventional home oven I use my pizza stone. Thin crust pizzas are baked at approximately 550F in a center rack position, while deep-dish pizzas are baked at 450F using an aluminum screen between the stone and the pan. If I try to bake the pizza entirely on the stone I always end up with too much color on the bottom crust. Typical baking time for my pan style pizzas run about 18 to 20-minutes.

Tom Lehmann/The Dough Doctor

6376

## [\*\*Chitchat / Re: Soon to be new Dad: Looking for wisdom\*\*](#)

JD;

We raised two boys, both are young men now and very successful. I always made it a point to make sure I would spend as much time with them as I possibly could when they were young. Fishing, boating, hiking, nature studies (walking nature trails), and then as they grew older more fishing and outdoor things and we attended every sporting, school and church activity they were involved in. I always made it a point to emphasize that there were winners and losers, and that there was nothing wrong with being either one (that's one of life's realities that we don't teach our kids anymore), along the same lines I always said that there were leaders and followers, the leaders get to take a lot of the credit, but they are also burdened by a lot of the blame when things don't work out just right, while followers are pretty well exempt from both, again there is nothing wrong with either, they just need to make the decision as to what they want out of life. My work requires a lot of travel, but until the boys were out of college, I never allowed my travel schedule to exceed 25%. Above all else, remember, you and your wife are going to set the examples they will grow up and live by. Have fun and enjoy every moment it.

Congrats!!

Tom Lehmann/The Dough Doctor

6375

## [\*\*Prep Equipment / Re: Dough Stretching Prep surface\*\*](#)

I've worked on wood, marble and stainless steel, and my preference is for stainless steel. It is a snap to clean, and the dough really handles well on it for my way of opening the dough into pizza skins. I like to push the dough out to size on the table top and finish with a toss or two. The dough slides well on the stainless steel top but exhibits too much cling to the wood top. The marble top is also great, but more expensive.

If you opt for a wood top, the preferred oil to treat the top with is white mineral oil. The oil is applied after the top is scraped and damp wiped, then apply the oil liberally and allow it to soak in (overnight) then wipe off any excess and you're good to go again.

Tom Lehmann/The Dough Doctor

6374

## [\*\*Dough Clinic / Re: Going organic and getting a bit more rise\*\*](#)

In addition to the lack of malt in the flour, there might also be a difference in flour/dough absorption properties between the two flours which could also contribute to the difference in oven spring properties as well as the bottom crisp. The best way to determine this would be to make doughs with 3% more and 3% less water/absorption and see if there is any apparent difference or improvement.

Tom Lehmann/The Dough Doctor  
6373

### [\*\*Dough Clinic / Re: No Kneading Pan Pizza Dough???\*\*](#)

Tom;

I've been using a very similar (almost identical) method for making pizza and bread doughs ever since I studied bread making practices in Romania almost 40-years ago. It works like a charm, and the 60 to 65% dough absorption is about right. We refer to the process as "biochemical gluten development". The only thing kneading or use of a mixer really accomplishes is faster gluten development, however faster gluten development goes bring some baggage in the form of a tighter, more springy dough that has to be addressed before the dough can be given its final shaping. I spent a good part of the Holidays this year at our son's home in Kansas City and during that time I made breakfast rolls, dinner breads, pizza and calzones all using this dough making process because it required so little of my time.

Tom Lehmann/The Dough Doctor  
6372

### [\*\*Dough Clinic / Re: Mixing durum&Tipo-00\*\*](#)

Morgan;

There is a distinct possibility that the "00" flour that you are using isn't treated with malted barley flour (malted), if you still have the original bag you bought it in check the label to see if it says anything about malting/malt. If not, you may want to add some sugar or diastatic (enzyme active) malt to the dough formula. Most diastatic malt preparations are rated at 20 degrees L. so in this case the proper amount to add would be between 0.25 and 0.35% of the total flour weight. Keep in mind that as you increase the durum flour content the finished crust may become more chewy, especially after 10 or 15-minutes out of the oven. We have found this to be somewhat of a problem in doughs containing over 25% durum flour, but otherwise, the durum flour will also contribute to added crispiness of the baked crust when fresh out of the oven.

There is a current thread here on organic flour that addresses this same potential issue.

Tom Lehmann/The Dough Doctor  
6371

### [\*\*General Pizza Making / Re: Looking for Better Pizza Dough Recipe\*\*](#)

Yep, I'm familiar with that pizza, affectionately known as "quick stop pizza". A good formula for making it is as follows:

Flour: Superlative or equivalent (12.5% protein content) 100%

Salt: 1.75%

Sugar: 2%

IDY: 0.4% or ADY: 0.5% or CY: 1%

Blended oil (20% olive oil + 80% canola oil) 3%

Water: (65F) 60%

Place water in mixing bowl, add salt, sugar then the flour, add yeast on top of the flour and mix for about 2-minutes at low speed or just until you don't see any dry flour in the bottom of the bowl, then add the oil and mix for 1 more minute at low speed. Finish by mixing for 8-minutes at medium speed, or if you can't mix the dough at medium speed, go for 12-minutes at low speed. Target finished dough temperature is 80F. Immediately take the dough to the bench and scale 13-ounces for a 12" crust (dough weight factor of 0.1150442) or 0.1150442-ounces of dough

per square inch of surface area). Form the cut dough into balls, place into plastic dough boxes, wipe each dough ball with salad oil, cross stack in the cooler for 2-hours, then nest/cover and allow to cold ferment for 24 to 72-hours. To use the dough, remove some from the cooler, keeping it covered, and allow to temper AT room temperature for 2.5-hours, then pass through a sheeter.dough roller to open the dough to 66 to 75% of the desired diameter, finish opening the dough up by hand to full diameter, or if you're good at it, you can open the dough up entirely by hand. Place the opened pizza skin onto a well seasoned wire screen, dress the skin as desired, and bake at 450 to 475F until golden brown, remove the pizza from the screen and "deck" it. This is where the pizza is removed from the screen and allowed to finish baking for the last minute right on the oven deck.

This should come pretty close to what you are looking for.

Tom Lehmann/The Dough Doctor  
6370

### [\*\*Cracker Style / Re: pizza hut thin crust???\*\*](#)

Peter;

You are correct in the order of dominance for the ingredients, with a single caveat, the 2% rule. This states that once an ingredients is at or below the 2% level it no longer need to be shown in the order of predominance. With a lot of baked items you can use salt as a marker, that is; salt is typically used at about the 2% level, so for any ingredients listed before the salt, it's a good bet that it will be used above the 2% level. In pizza though, salt is rarely used at that high of a level due to all of the other salt contributions, so my feeling is that oil might be a better indicator for the 2% level.

Tom Lehmann/The Dough Doctor  
6369

### [\*\*Newbie Topics / Re: Oven Adjustments\*\*](#)

My own personal experience has been that when I bake two pizzas at a time I usually end up with an atypically long baking time. I attribute this to the fact that I'm baking on two oven shelves (two different heights in the oven) so they end up baking differently, this necessitates the need to open the oven door more frequently, thus losing heat from the oven (especially top heat). I also find that I need to turn/rotate the pizzas more frequently with two pies in the oven. It just seems to be more of a balancing act when I bake two pizzas at a time than when baking only one pizza.

Tom Lehmann/The Dough Doctor  
6368

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Steel Pan Woes... Suggestions?\*\*](#)

When using steel pans we typically season them with canola oil, and after several bakes when the pans have turned to a darker color (both inside and out) we will always add a small amount of oil to the pan to help the dough/crust release, additionally, this also allows the pan to continue seasoning, developing an ever darker color (some of our pans are essentially black in color both inside and out). Our experience is that you will always get a better bake if you add at least some oil to the pan for each bake. This is because the oil improves the heat transfer between the pan and the dough. Additionally, a number of years ago we looked at shortening (like Crisco) v/s oil in the pan. We found that in all cases the oil provided for a firmer, crispier bottom crust than did the shortening. A lot of people have commented on the crispiness of the Pizza Hut deep-dish pizzas. This is accomplished through the addition of oil to the pan prior to baking, making the

finished crust closer to fried than baked  
Tom Lehmann/The Dough Doctor  
6367

**Stones/tiles/steel, Pans & Accessories / Re: Steel Pan Woes... Suggestions?**

Gene;  
I believe it is NY, MA, and CA where they are really keen on carbon in food. Seasoning on a pan = polymerized and carbonized oil. At one time MA did not allow the use of seasoned pans for that very reason. I don't know the current state regs at this time. This is why anodized pans became so popular. Some of the anodized pans are also non-stick, such as those supplied by Lloyd Pans <[www.lloydpan.com](http://www.lloydpan.com)> with these types of pans you can still use the oil in the pan to achieve the fried effect, but unlike seasoned pans, you can also soak them in hot soapy water to clean without destroying the pan finish. Unlike other non-stick coatings the anodized coatings do not wear off. We have a good number of them in our inventory that have been in use for over 15-years without and deterioration of the non-stick coating. BTW: Steel wool is not a good thing to use on any seasoned pan as it will scrub off the seasoning, resulting in the pizza sticking to those surfaces. That sticky feel that you mentioned is perfectly normal on a spun steel pan. As you continue to use the pan (just a couple bakes are needed) the seasoning will continue to harden into a brown/black finish that we see on so many of the old, well used bakery pans in use in many of the retail bakeries.

Tom Lehmann/The Dough Doctor  
6366

**New Forum Members / Re: Jim from KC**

Welcome Jim, I'm only 140-miles or so west of you in Manhattan.  
Tom Lehmann/The Dough Doctor  
6365

**Stones/tiles/steel, Pans & Accessories / Re: Steel Pan Woes... Suggestions?**

Gene;  
Yes on both counts, yes they are expensive, and yes they are worth it. You can safely soak them in hot soapy water, then scrub them out using a plastic bristle brush, rinse, and sanitize, then wipe dry and if you want, give them a quick pass through the oven to thoroughly dry and be ready to reuse the pans. You can't soak the seasoned pans as this will result in the seasoning peeling off like a bad sunburn (been there, done that, pictures available upon request). I would suggest getting one or two pans to experiment with, and let the pans sell themselves. Be sure to request the black anodized, non-stick finish. In our annual pizza seminar we do a simple test with these pans where we forcefully scrub the edge of a quarter across the pan (back and forth numerous times). The only damage that occurs is to the quarter where a flat spot has been created on the edge of the quarter. I can only account for these pans lasting close to 20-years as that is how old some of ours are, and they are still in great shape. As for baking quality, they bake as good as the best seasoned and blued steel pans, and better from the "get-go" since you don't need to wait for the seasoning to cure. With the Lloyd pans you just wash them when you get them, dry thoroughly, oil lightly with the first use, and then either don't use oil for a baked appearance/textture, or use oil in the pans for that fried texture and appearance.

Tom Lehmann/The Dough Doctor  
6364

## [\*\*Off-Topic Foods / Re: Naan in a Home Tandoor\*\*](#)

The last time I saw Naan being made it was when I was in Yemen. A lady would dip her arm into a tub of water, wipe her hands, and then lightly oil them, she would then pick up a dough ball (if you want to call it that) and press the dough against the inside wall of the oven, which by the way was heated by burning cardboard. To remove the baked bread she used two long sticks, like drum sticks, or fryer sticks and holding them much like chopsticks, she deftly removed them from the oven and placed the hot bread into a wicker basket. The reason for putting her arm into the water was to prevent getting burned as she was reaching elbow deep into the oven, but using cardboard to fire the oven wasn't exactly the best thing to do to my liking as all of the Naan had a rather distinctive cardboard like taste, but then her daughter was selling it as fast as her mother could fish it out of the oven. Your oven looks a whole lot more practical. Nice looking Naan!

Tom Lehmann/The Dough Doctor

6363

## [\*\*General Pizza Making / Re: Do toppings migrate towards the middle of the pie during baking?\*\*](#)

Mark;

You are absolutely correct in stating that "launching" the pizza can in effect, rearrange the toppings on a pizza. A good oven man will know how to both launch and shake a pizza skin off of the peel. Shaking is used when you either don't have the needed room to launch (one motion into the oven and a reverse motion pulling the peel out of the oven, hopefully leaving the dressed pizza skin behind in a recognizable shape or form) while shaking the dressed pizza skin off of the peel is just a rapid series of short, back and forth strokes that result in walking the dressed skin off of the peel. We use this method commercially when we are putting that last dressed skin into the oven. and the only space for it is surrounded by other pizzas being baked. I normally begin the peel motion outside of the oven and continue it until the dressed skin has safely left the peel. One thing to note is that successful launching should actually begin with the more gently shaking of the dressed skin on the peel outside of the oven, the only real difference in in the last stroke (launch) or strokes (shaking).

Tom Lehmann/The Dough Doctor

6362

## [\*\*General Pizza Making / Re: Dough Prep Question\*\*](#)

We have made the PH type of deep-dish pizzas many times and we have found that with our dough formulation, using a dough temperature of about 55F (our dough was cold fermented for 24-hours, then removed from the cooler and allowed to temper at room temperature for 2.5-hours before being rolled and panned) requires a final proof time of 70-minutes for optimum results. Our old PH pans even have a line stamped into the side of the pan indicating the height the dough should be allowed to proof to before dressing and baking. Keep in mind that proof times will vary with dough absorption, dough temperature, and yeast level so some experimenting will be needed to find the proof time that works best with your dough formulation and procedure.

Tom Lehmann/The Dough Doctor

6361

## [\*\*General Pizza Making / Re: Pizza in an hour\*\*](#)

I made a couple of pizzas a number of years ago using a similar formula. It went from concept (LET'S MAKE PIZZA) to a finished product (PIZZA) in well under an

hour; if I remember correctly we had those pizzas on the serving table in something like 38-minutes (included scaling, mixing, rest period, if you want to call it that, forming, dressing and baking). OK, it was pizza, but don't ask me about the flavor of the crust. Thank goodness the sauce, cheese and toppings had, and provided, some flavor.

Tom Lehmann/The Dough Doctor  
6360

### **Sauce Ingredients / Re: Onion Powder vs. real onions**

Just as an FYI, both onion and garlic contain a compound that will catalyze the pectin in the tomato causing it to gel/thicken to the point where it takes on the appearance of tomato jelly rather than pizza sauce. Yes, it does the same thing to pasta sauce too but because we typically cook a pasta sauce we add enough water to compensate for the thickening and evaporation so we don't usually recognize it as a problem. To correct the problem in pizza sauce, or any tomato based sauce all you need to do is to "nuke" the onion and/or garlic in a little water until it comes to a boil (you're actually looking for a temperature of about 180F) but 212F, or close to that won't hurt anything, assuming you're at or reasonably close to sea level.

Once the onion/garlic is heated to this point it can be added to the sauce without visions of it turning into tomato jelly.

I am also an advocate of using fresh onion and garlic, but if I must use a dried form, I really think the onion flakes provide a better overall flavor than the onion powder.

Tom Lehmann/The Dough Doctor  
6359

### **New York Style / Re: Fleischmann's Pizza Yeast**

I'm not familiar with "pizza Yeast" but I am very familiar with IDY. Most forms of IDY contain some ascorbic acid to counter the softening effect of the glutathione present in all forms of dried yeast (less in IDY than any of the other forms), but there is also one, I want to say it is SAF Green Label IDY that does not contain the ascorbic acid, so it will exhibit a slight softening effect upon the dough, possibly making it a little easier to open into a pizza skin.

Tom Lehmann/The Dough Doctor  
6358

### **Stones/tiles/steel, Pans & Accessories / Re: Steel Pan Woes... Suggestions?**

PB;

Yes, that would be the black Dura Coat finish. Doing the math, your 12 X 17 pan is 204-square inches (L X W) and the 13 X 18 is 234-square inches, a difference of 30-square inches (larger) so, dividing 30 by 204 we get a 14.7 (call it 15%) increase in pan size, so if you're making one dough for one pan, you will need to increase your dough size by 15%. If you have dough left over after filling the pan, then you will need to go with using the "dough factor" method for calculating the weight of dough needed for the new pan size. In this case you would divide the dough weight used with the 12 X 17-inch pan and divide that number by 204 (the surface area) to get your dough loading factor aka dough weight per square inch of pan surface area. Now all you need to do is to multiply the dough factor by the square inches in your new pan size (234) and you will get the dough weight needed for your new pan. Here's a neat trick, put your dough formula into bakers percent and add up all of the percentages (you'll probably get something around 164), move the decimal point two places to the left so now you would see 1.64 and divide the total dough weight by this

number, the result will be the flour weight needed to make your new dough size, once you have the flour weight the rest is easy to calculate the amounts of each ingredient. Or, you can just use the conversion tables.

Tom Lehmann/The Dough Doctor  
6357

**Dough Clinic / Re: Dough won't stay stretched.**

Dave;

I'm very familiar with the problem that you are having. Pressed pizza doughs require a VERY relaxed dough in order to press out without the dough snapping back excessively. Our normal approach is to add a reducing agent to the dough to weaken it, thus reducing the snap back. Reducing agents that are commonly used are L-cysteine at 20 to 60 parts per million (based on total flour weight), PZ-44 <[www.foremostfarmsusa.com](http://www.foremostfarmsusa.com)> which is a blend of dairy whey and L-cysteine, and because it is diluted into the whey the use level is typically given at 1 to 2% of the total flour weight, and then there is "dead yeast" this is a commercial product made up of dead yeast which contains the amino acid glutathione, a substance very similar to L-cysteine. Many yeast manufacturers offer this product. The normal use level is about 2% of the total flour weight. While sulfites and protease enzymes can also be used as reducing agents we don't normally recommend their use in this application. The sulfites also impact yeast activity by slowing it down and the enzyme approach can't be turned off, so the dough just keeps getting softer and softer until it is finally baked. Other options that could be explored are the use of milk to replace the water. Do not scald the milk prior to use. The unscalded milk contains specific proteins which can also impact the dough by making it softer and weaker, and that's what we're looking for. But be aware that the milk may cause the crust to bake out to a darker than desired color. Possibly the least offensive action that you can take would be to maximize the dough absorption (use as much water as you can while still being able to handle the dough, and then rounding the dough into balls , coating the dough balls with salad oil and placing into individual plastic bags, like bread bags. Twist the open end of the bag to close and tuck the pony tail under the dough ball as you place it into the cooler to cold ferment at least overnight. On the following day, remove the dough balls from the cooler and allow them to temper AT room temperature for about 2-hours, then turn the dough ball out onto the press platten and press the dough ball out into a pizza skin. As you pick up the pizza skin from the platten and transfer it to a screen, disk or peel you can adjust the final shape and size of the skin pretty easily. The key here is to make sure the dough has been well fermented and receives a minimum amount of handling after the fermentation period, this is why the bag method works better in this application than the dough box procedure since you run the risk of over handling and tightening the dough ball as you work it out of the plastic dough boxand transfer it to the press platten.

Tom Lehmann/The Dough Doctor  
6356

**Prep Equipment / Re: Poor Man's Proofing Boxes**

Gene;

These are OK to use for home use, but be aware that in a commercial setting, such as in a pizzeria, most, if not all health departments will require that they be made of a plastic that is approved for food contact. Also, it cannot be made of a hard plastic. A common health department violation is one where we go to Walmart and buy a roll of plastic trash bags for use in covering sheet pans of dough balls. Since the bags are not stated as being approved for food contact, it becomes an issue. It's

this way with a lot of the cleaning supplies too where you can't use it if you don't have a MSDS on it. Life is truly interesting at the store level, but a lot more fun and less stressful at home.

Tom Lehmann/The Dough Doctor  
6355

### [\*\*Prep Equipment / Re: Poor Man's Proofing Boxes\*\*](#)

Gene;

Most health departments take less than a positive view on wood and food coming into contact with each other. We have seen this in the bagel industry where wood bagel boards were used since the first bagel was made, but now they are relegated to relics that are hung on the wall. Bakers used to use wood troughs (the bacteria in the wood would inoculate the dough to retain specific flavors similar to using a starter) but alas, these are gone too. Now they are looking at wood table/bench tops and it looks like they are on their way out too. I realize that the wood dough boxes are great, and for the most part they are as safe as anything, but as you know, you can't argue, or reason with your local health department. Been there, done that, never won one yet!

Here is a classic: We're making creme filled bismarks, you see them all the time. Health inspector says we need to refrigerate them, I ask why? He says "Because they contain CREAM. I say "no, that's wrong, they are only called CREME filled, as in the fact that they use a CREME filling". He says "Doesn't matter, they are CREAM filled" I pull out the bucket of prepared CREME filling that plainly states "Does not require refrigeration after opening" and then I show him the label, it reads basically, water, emulsifier, stabilizers, food gums, citric acid, artificial color, artificial flavor. He points to the label and says "Right here it says Bavarian CREME Filling". Sometimes you just can't argue with intelligence at that level and expect to win. So be it with wood.

In the home, it is an entirely different matter, as at this time we can still pretty well do what we want to.

Tom Lehmann/The Dough Doctor  
6354

### [\*\*Newbie Topics / Re: Cooking underneath of pizza\*\*](#)

Is there a possibility that the stone might be too thin and not storing sufficient latent heat to bake the bottom of the pizza? Remember we're only looking at a baking temperature of roughly 465F. Once you suck the heat out of the stone it won't recover much during the baking time of a pizza.

Tom Lehmann/The Dough Doctor  
6353

### [\*\*Dough Clinic / Re: Soggy in the middle\*\*](#)

A couple of other things come to mind. Try eliminating the sugar entirely from the dough formula. This will force you to bake the pizza a little longer to get the bottom crust to color up resulting in a more robust bottom crust characteristic. Also, you might be stretching the dough skin a little too thin across the center section. This can give you a condition where the crust is initially crispy, but very quickly turns soft and soggy.

Tom Lehmann/The Dough Doctor  
6352

### [\*\*Dough Ingredients / Re: What do they use>?\*\*](#)

SG;

If you are asking what do most pizzerias use for fat, that will get you a mixed bag of answers. Some pizzerias use nothing but pure olive oil, for others that is too expensive, or doesn't provide the flavor profile their customers are looking for so they will use any of the following: canola oil, corn oil, and common "vegetable" oil. Others who want the flavor of oil but not the associated cost will use a blended oil typically consisting of about 20% olive oil and 80% canola oil. The blended oil is probably the one most commonly encountered. In a few places butter, margarine or lard are used, but these are by far the exceptions.

Tom Lehmann/The Dough Doctor  
6351

### **General Pizza Making / Re: Burning Cornmeal Help**

An excessive amount of cornmeal on the peel will create problems as described as will an excessive amount of any kind of dusting flour. It might have something to do with the way you are opening/handling the dough. I always use plenty of flour when opening the dough into a pizza skin, but then I pick it up and give it a toss or two, if you elect not to toss it, try brushing the excess flour off of one side then flip the dough piece over and brush off the other side, with that done, immediately place the pizza skin onto a lightly dusted peel (my personal favorite peel dust is made from equal parts of semolina flour, regular flour and fine cornmeal. Once you have the skin on the peel, give it a few shakes to ensure it is free from the peel, now dress the skin and take it directly to the oven, in some cases I've been known to give the peel a couple shakes while I'm dressing the skin just to make sure it is not adhering to the peel. I have both wood and metal peels and of all my peels, the wood ones work best as a prep peel. The solid aluminum peels are best relegated to use as an oven peel. A good wood prep peel is, in my opinion, worth its weight in gold. There have been a number of excellent discussions on the use and making of wood peel here.

Tom Lehmann/The Dough Doctor  
6350

### **Dough Ingredients / Re: What do they use>?**

Peter;

We continue to use pomace oil as our main "go to" olive oil in our annual pizza seminar. The question was also raised if the oil had any influence on the browning properties of the crust or the way the dough absorbs water. While there may be slight differences in color attributable to the source of oil, the color variance is well within the normal for color variation with normal baking properties, so for all practical purposes, the type of oil has no real impact upon crust color characteristics. However, we do know for sure that oil can/will impact the way the flour absorbs water. We have all heard stories of how the humidity affects the dough absorption, just an old wives tale. But, if you put the oil and water together in the bowl, and then add the flour, the oil floats to the top of the water where it contacts the flour and promptly proceeds to soak into it, rendering the proteins responsible for forming gluten ineffective in that important role. Remember how/why you make a rue when making gravy? Same thing happens here. When this happens, the doughs take on a different feel due to the difference in gluten development. To correct for this condition, I developed a mixing procedure (called the delayed oil addition method) where the oil is not added to the dough until the flour has had a chance to hydrate on the water, which is typically about 2-minutes into the mixing cycle for 60 and 80-quart size mixers, the oil is then added and incorporated into the dough without any problems due to interference with gluten

development.

Tom Lehmann/The Dough Doctor  
6349

### **Dough Ingredients / Re: What do they use?**

Absolutely right, all oils impact the dough, or should I say the "flour" in this manner. Shortening is a whole different matter as the crystalline nature of the shortening prevents it from being absorbed by the flour, unless it is melted, and in that case it now acts like an oil.

Tom Lehmann/The Dough Doctor  
6348

### **Dough Ingredients / Re: What do they use?**

Peter;

What you end up with is a bunch of gray colored oil that is oil soaked. Because gluten is formed when two of the wheat proteins, (glutenin and gliadin) are agitated in the presence of water, and the water, in this case will not displace the oil that has soaked into the flour, a good portion of the flour is incapable of providing to the gluten matrix, as a result the doughs are wet and somewhat sticky not to mention lumpy if mixing is not vigorous enough to break up those lumps of oil soaked flour. The shortening or solid fat, as it is called, works because it does not soak into the flour, instead, it only coats the outside of it which still allows for the flour to be hydrated to form gluten. Going one step above the Blitz method as I described, commercial producers use hard fat flakes (kinda look like those old soap flakes), and they mix these into the dough just about 4-minutes prior to the end of the mixing time. They can get away using the fat flakes in this manner because those flakes are so hard that they are almost impossible to work into the dough as can happen with shortening if it is mixed too much. Those hard fat flakes then melt during baking and the fat is absorbed into the surrounding dough. The holes remaining serve the same purpose as the chunks of shortening, to give a pastry like appearance and to some extent mouthfeel/eating characteristic.

Tom Lehmann/The Dough Doctor  
6347

### **Dough Ingredients / Re: What do they use?**

Peter;

I helped them to make the transition from store to wholesale, and I also helped them to set up their pressing parameters. The dough that they use is unique in some perspectives but pretty normal in others, here's what I mean. UNIQUE: They do mix the oil into the flour to achieve a weaker, more tender eating dough characteristic. They can get away with it to an extent due to the high speed mixing that they employ. PRETTY NORMAL: The dough is then divided and processed (pressed) without any human hands touching the dough. Any stickiness the dough might have is negated by the addition of oil.

If you look at the nutritional facts panel on commercially made frozen pizzas more often than not you will see high calorie counts from fat as well as high salt levels. This is pretty normal for this type of pizza, but to the credit of the industry, some manufacturers are beginning to address this by reducing fat and salt (sodium) levels in their pizzas as consumers demand healthier foods.

Tom Lehmann/The Dough Doctor  
6346

### **Dough Ingredients / Re: What do they use?**

Peter;

The way the oil is typically added is as follows: Dry ingredients are first added to the mixing bowl, then the water is added and the mixing cycle started, as the mixing cycle starts the oil is pumped into the mixing bowl and the dough is mixed in their usual manner. This prevents large clumps of oil soaked flour.

Tom Lehmann/The Dough Doctor

6345

### **Cracker Style / Re: Pizza Shoppe-style?**

Some time ago I had indicated that I would look into this formula and procedure, I haven't forgotten that promise, as I've been doing just that. My son lives within walking distance from the Olathe store so we were able to visit there several times over the Holidays. Here is my best effort to date:

Flour: 100%

Salt: 2.5%

Sugar: 1%

Olive oil: 1%

Yeast:(IDY) 0.2%

Water: 45% (variable)

### **Procedure:**

Put water (75F) in mixing bowl followed by the salt and sugar, then add the flour and the IDY. Mix until thoroughly whetted, add the oil and mix until the oil is just incorporated. (this dough is too stiff for my K5-A) cover the bowl and allow the dough to ferment for at least 4-hours, turn the dough out of the bowl and knead for about 2-minutes, lightly oil the bowl and put the dough back into the bowl to ferment for 1-hour, turn the dough out of the bowl and cut into desired size pieces (16-ounces) place into plastic bags and refrigerate for 24-hours, remove dough from the refrigerator and allow to warm at room temperature for 3-hours, turn the dough out of the bag and pin the dough out to approximately 1/8-inch thickness,dock the dough sheet and drape it over a lightly oiled cutter pan and roll over the top of the pan with a rolling pin to cut the dough into the pan, set aside for 20-minutes before dressing and baking. They bake in a deck oven at (as close as I can see) 500F. Their process closely follows one of the older dough making procedures used back in the 1950's except back then the dough was stored in a bulk contained and a piece of dough was grabbed and pulled off of the bulk piece, it was then taken to the sheeter where the dough was sheeted to thickness and then cut to size.

Tom Lehmann/The Dough Doctor

6344

### **Prep Equipment / Re: Pizza Peels**

Pete;

That's one fine looking 2 X 4!

Tom Lehmann/The Dough Doctor

6343

### **Cracker Style / Re: Pizza Shoppe-style?**

IE;

I know the feeling. I one had one but I sold it to a new upstart pizza shop that was struggling to get up and running on its very limited funds. A workable solution is to use a "pie pin" these are better than a rolling pin to roll out stiff doughs. With a rolling pin you will most likely ruin it by bending the handles (called dog earing it)

but with a pie pin you can put a lot more force onto the dough without damaging anything. A pie pin is nothing more than a wood rod about 18-inches long and a minimum of 2-inches in diameter. If you know anyone with a wood turning lathe you might be able to talk them into making you one in exchange for a pizza. Dirt simple: wood cylinder 16 to 18-inches long X 2 to 3-inches in diameter. After you make it, be sure to wipe it down periodically with a little white mineral oil. This will both seal the wood and keep it from splintering or warping.

Note: I've tried to use just the barrel from a small wood rolling pin (with the rod and handles removed) but it was too short for ease of handling in my case, but if you've got an extra one in the drawer you might give it a try to see if it works better for you.

Tom Lehmann/The Dough Doctor  
6342

**General Pizza Making / Re: Favorite "quick" dough? I need something with an 8 hour or less rise**

Heather;

I'm sending you a copy of my Home Made Pizza Dough Recipe. Not knowing anything about your flour, the best I can offer is to say to adjust the water as necessary to give you a moderately soft dough consistency after about 3 or 4-hours fermentation. Allow the dough to ferment in the bowl for about 3-hours, then turn it out and knead a few times, if the dough feels a bit stiff, add a little water to the dough and work in in, then place back into the bowl to continue fermenting for another 30-minutes, turn it out again and check the consistency of the dough. If it needs more water repeat the above, if it feels OK just place the dough back into the bowl to continue fermenting until about 90-minutes before you want to begin opening the dough into pizza skins. Turn the dough out of the bowl and divide into desired size/weight pieces (I suggest that you make a 3 X recipe and divide the dough into five or six pieces for 12-inch diameter pizzas) round each piece into a round ball (don't try to make it too tight, just a lose ball will work fine) set the dough balls aside on a floured area, lightly dust the top of the dough balls with a little flour and cover with a piece of plastic to prevent drying. Allow the dough balls to ferment until you are ready to begin making your pizzas (about 90-minutes). Open each dough ball into a 12-inch pizza skin, dress and bake. Note: This recipe works best using a higher protein content flour such as a bread type flour. I normally use Pillsbury Bread Flour available at most supermarkets.

If you will be baking your pizzas on a stone, try shaping the dough skins into heart shape for something a little special.

Tom Lehmann/The Dough Doctor  
6341

**Cracker Style / Re: Pizza Shoppe-style?**

Pete;

In the right hands the tapered rolling pins will work, but the tendency is to just attack the dough with the pin which results in getting an uneven thickness, whereas the straight pin (I like to round the ends over to help prevent snagging the dough) will automatically give you a flat dough surface with uniform thickness after very little practice.

Tom Lehmann/The Dough Doctor  
6340

**General Pizza Making / Re: Favorite "quick" dough? I need something with an 8 hour or less rise**

Peter;

Yes it is, actually I sent it to her under separate cover right after I wrote my response.

Tom Lehmann/TDD  
6339

### **Sauce Ingredients / Re: Cooked vs Uncooked pizza sauce....**

Here are a couple things that I learned about sauce.

1) You know how good the kitchen smells when you're cooking a sauce? Those aromatics are being driven off from your sauce, never to be smelled again. Moral of the story, don't cook the sauce since it will be cooked all it needs to be on the pie during the normal baking of the pizza, and it will actually provide a better flavor. From a commercial perspective cooking the sauce presents some problems too. There is the 4-hour food safety rule which basically states that a product cannot be allowed to be at a temperature that will support microbial growth (lower than 140F and greater than 40F) for an accumulated time not to exceed 4-hours. When cooking a sauce it MUST be heated to a temperature of 160F or more, then it must be cooled, and the time it spends in that critical temperature range (40F to 140F) erodes the 4-hour rule time period.

2) Oil of any kind in the sauce helps to entrap the flavors released during baking of the pizza, potentially resulting in a better flavor profile. Have you ever eaten a piece of cake taken home from a party where there were smokers? On the following day the cake and icing would have a very decided smoke flavor. This is why the butter container in the fridge always has a cover on it. If it isn't covered the butter will pick up and aroma in the fridge. No, sauce doesn't need the added oil, but if your sauce is too oily I'm betting that you have added too much oil. Many sauce formulas contain at least some oil for the reason cited above, but in my experience the amount of oil seldom exceeds 2 to 3% of the total sauce weight.

3) For use on pasta, always precook the sauce since it won't get cooked upon application to the pasta, unless you're making lasagna, then at least for me, I'm back to using uncooked sauce.

Tom Lehmann/The Dough Doctor  
6338

### **Sauce Ingredients / Re: Cooked vs Uncooked pizza sauce....**

Norma;

After 45+ years of eating, sleeping, breathing, researching, and consulting on pizza, a little has to eventually rub off.

My job has always been fairly easy since I've got all the tools and toys one could wish for at my disposal for making, developing, and researching pizza. You and all of the other folks here are the truly innovative and creative individuals as you are all researching the different aspects of pizza, developing different styles of pizza, reverse engineering pizzas, and just plain making great pizzas all without the big and expensive toys that we work with. Now, that's a challenge. It is also interesting to note that there is a strong interest displayed here to make what we like to call "artisan" pizzas, be it in a home oven, or a wood fired oven out in the back yard. For what it's worth, this closely mimics some of the direction that pizza industry is now going in as we are beginning to see more artisan type pizza offerings in the frozen food cases, and pizzerias, in general, are asking more questions about how to make them. So the knowledge that I'm gaining here helps to shorten my learning curve too.

Tom Lehmann/The Dough Doctor  
6337

## [\*\*Sauce Ingredients / Re: Is this truly a New York pizza sauce recipe?\*\*](#)

I can't comment on the authenticity, but further cooking of tomato paste? They got the tomato concentrated down into a paste by heating and removing a good deal of the water, so I would be hard pressed to see anything good happening flavor wise by again heating the sauce, prior to application, and then finally putting it on a pizza where it will again be cooked. Seems like a lot of cooking to me. Most N.Y. style sauce recipes/formulas that I've seen use either crushed tomato or San Marzano tomatoes that have been torn apart for use as part of the sauce, some with the other part sometimes consisting of a much lesser amount of tomato paste used for thickening the otherwise thin sauce. I don't precook mine either as it will get all the cooking it needs on the pizza, and I always like to include a small amount of olive oil to give added dimension to the flavor profile.

Tom Lehmann/The Dough Doctor  
6336

## [\*\*Prep Equipment / Re: Just switched to Bosch, dough doesn't seem to turn out right -advice?\*\*](#)

PB;

Our research has shown that pizza dough is best mixed to a point of under development. The best way to describe it is to say that the dough should be mixed just until it begins to take on a smooth, satiny appearance. Anymore mixing than this will over develop the gluten for the characteristics that we're looking for in a pizza crust, namely an open, porous crumb structure. Over mixing of the dough typically results in a more "bread like" sound familiar? finished crumb structure. I'm used to seeing mixing times in the 4 to 6-minute range, but it is difficult to say if that is correct for your flour and mixer load. In any case, you might want to look at a series of doughs with progressively less mixing time to see if that helps. Good luck with your new mixer, once you get it sorted out you'll love it.

Tom Lehmann/The Dough Doctor  
6335

## [\*\*Dough Clinic / Re: Whole Wheat Flour\*\*](#)

Wes;

It's pretty easy, but you do need to make a couple of changes. The whole wheat flour will carry more water than your regular white flour. You will need to experiment to find the exact amount of extra water to add, but for starters, I'd recommend adding 8 to 10% more water. Since the whole wheat flour is slower to hydrate than white flour I suggest using a "soaker". To do this, put the whole wheat flour in a suitably sized container, and add the full amount of water to the flour, stir until the consistency of wet oatmeal (it should look sloppy). Set aside and allow to hydrate for at least 1-hour. More time won't hurt it. I have even put it in the fridge to hydrate overnight for use on the following day. Transfer the soaker to your mixing bowl and add the remainder of ingredients and mix just until the dough comes smooth and springy to the touch. From that point on, you should be able to manage the dough in your normal manner. Keep in mind that whole wheat doughs do not hold up very well for more than about a day in the fridge after it has been mixed as a dough. Some ideas for consideration:

- 1) Use butter as your source of fat.
- 2) Use 3% NONDIASTATIC malt syrup to replace any sugar in the dough recipe/formula.
- 3) After opening the dough into a pizza skin, wet the edge of the dough with a little water and sprinkle the edge only with some sesame seeds. The flavor compliments

the whole wheat.

4) If you can find whole white wheat flour give it a try since the flavor is better than the flavor of whole wheat flour made from a dark red wheat variety.

Tom Lehmann/The Dough Doctor  
6334

### **[Prep Equipment / Re: Just bought a 100.00g scale from Amazon for \\$7.80](#)**

For the price, the 1000-gram capacity scale looks like an excellent companion scale for weighing the larger things like flour and water.

Tom Lehmann/The Dough Doctor :)  
6333

### **[Newbie Topics / Re: Sugar? Why?](#)**

Sugar in the dough can provide additional food for the yeast to feed upon, this is especially true if you are planning to give the dough a very long fermentation time. It also contributes to the crust color development in the oven. This can be a double edged dagger though. While the sugar can help the dough color up in the oven, it can also lead to excessive charring/burning of the crust, especially if you are baking at high temperatures. The shorter baking time brought about by the faster crust color development with sugar present, can reduce the crispiness of the finished pizza, and lastly, depending upon the type of sugar used, it may contribute to the finished flavor profile of the baked crust (think sweet, or malty as when nondiastatic malt syrup is used).

Tom Lehmann/The Dough Doctor  
6332

### **[Off-Topic Foods / Re: Malt Blender](#)**

I've seen a lot of the Hamelton Beach and Waring commercial duty mixers in service. You might check out E-Bay to see if you can find a deal there on one.

Tom Lehmann/The Dough Doctor  
6331

### **[Prep Equipment / Re: Just bought a 100.00g scale from Amazon for \\$7.80](#)**

C. Bob;

About the only thing it doesn't do is talk to you....probably a good thing.

That scale has great capacity (8000-grams), and weighs in both lbs/oz as well as metric.

I gotta get me one of those!

Thanks for sharing,

Tom Lehmann/The Dough Doctor  
6330

### **[Chicago Style / Re: First successful Deep Dish](#)**

John K.;

This past weekend I was at our local thrift store/bargain store, junk store, whatever you want to call it. I found three 1.5-inch deep, dark colored pans (7, 10 and 12-inch diameter) for just \$5.00. What a deal! If you have anything similar to one of these near you check it out. It sure beats paying retail, even at Walmart.

Ours is a pretty good size store with a lot of "stuff" so you never know what you're going to find, looking through it all is half of the fun. Over the years I've picked up an assortment of stainless steel mixing bowls, deep-dish pizza pan grippers, and several plastic containers for ingredient storage. If you or anyone ever attends the NAPICS show, in Columbus, Ohio, be sure to stop at the Restaurant Equippers

booth, they have a lot of really neat stuff there too, and their prices are great to boot!

Tom Lehmann/The Dough Doctor  
6329

**[Newbie Topics / Re: Sugar? Why?](#)**

If your flour is malted, and you manage the dough through the refrigerator for up to two days, you can normally get away without the need for any added sugar. If the flour is not malted, then you're going to need to either add some sugar, or create it through the addition of DIASTATIC malt.

Tom Lehmann/The Dough Doctor  
6328

**[Neapolitan Style / Re: How long will dough last](#)**

It is impossible to say just how long they will last without knowing more about the dough.

Formulation

Finished dough temperature

Your dough management procedure (what do you do with the dough from the time it comes off of the mixer until it is placed in the cooler for storage)

What kind of container do you use to store the dough in?

With all of these questions answered we should be able to give you a realistic expectation. Otherwise, I like to say that with the right formulation and dough management procedure you should be able to store the dough for a minimum of 2-days. With the correct formulation and dough management practices, you might be able to store it for 5-days or more. It all depends....

Tom Lehmann/The Dough Doctor  
6327

**[Dough Clinic / Re: Adjust finished dough temperature before cold fermentation?](#)**

Barry;

Yes, I would recommend increasing the water temperature slightly to give you a warmed finished dough. For use in a home setting where refrigeration is not so great, I would suggest a finished dough temperature of about 75F.

Tom Lehmann/The Dough Doctor  
6326

**[Sauce Ingredients / Re: Is this truly a New York pizza sauce recipe?](#)**

We have a saying here at AIB International: The only bad question is the question that goes unasked. I like to tell my students that while it took me 45+ years to gain my knowledge of pizza, by asking the right questions you can gain that knowledge in just a few minutes. I think I can speak for everyone here in saying that this also applies to everyone here too. Questions = the shortest route to knowledge and understanding.

Tom Lehmann/The Dough Doctor  
6325

**[New York Style / Re: NY Style Pizza-All Trumps High Gluten Flour-Guilty Pleasure](#)**

Boyd;

All Trumps is a General Mills brand of flour. The next time you get ready to place

an order for flour from Restaurant Depot give them a call to see if they carry, or can get the General Mills Organic High Gluten Flour. It comes in at about 12.5% protein content so it should work fine for all but the most die-hard New York pizza makers. We use it all the time so I can say that it would work very well in your application.

Tom Lehmann/The Dough Doctor  
6324

### **Dough Ingredients / Re: Baking Powder Crutch for Quick Dough**

J;  
No two ways about it, fermentation does develop flavor in the finished crust, but to some the flavor has been said to be "beer like" as I said, fermentation, but they find it not so desirable as others do, so what's the solution? Chemically leavened crust. When I was a kid, soon after moving into town from the farm, I discovered Chef Boyardee (don't know about the spelling) pizza in a box. The crust was a dry mix to which you only added some water and stirred the mass together. It came out much like a biscuit dough. I pressed it onto a baking sheet, topped it with the supplied sauce and added our toppings. As I remember, I wasn't too excited about it back then, but hey....it was still pizza. I have gone so far as to make a totally unleavened pizza crust. This is easy to do, just make a dough as you would any other dough, except delete the yeast. Allow the dough to hydrate about an hour, then roll it out to fit a baking sheet. Dock the crust well, and parbake it. As soon as you remove it from the oven, dress the parbaked crust as desired and place back into the oven to complete baking. Very cracker like. We have used baking powder, but we find that it imparts a biscuit like flavor to the finished crust. This is due to the acid component in the baking powder (sodium aluminum phosphate) but we also found that when this acid was changed to sodium aluminum phosphate) so did the flavor, now it tasted something like a cake donut. Different brands of baking powder have different compositions, so just be aware and be sure to read the label. We have had our best luck using this type of dough when we made it as an herb flavored crust.

Tom Lehmann/The Dough Doctor  
6323

### **Dough Ingredients / Re: Baking Powder Crutch for Quick Dough**

J;  
I neglected to add, if you want to make a truly chemical leavened crust the best solution is to use a fat encapsulated chemical leavening system. This is the type of leavening system that is used in conjunction with yeast in making the DiGiorno bake to rise pizzas sold at your local supermarket. To buy the fat encapsulated chemical leavening contact The Wright Group, Tony Oszlanyi at <tonyo@wenrich.com> They make the leavening material available in small quantities for use in single unit pizzerias or they will sell it to you by the truck load too.

Tom Lehmann/The Dough Doctor  
6322

### **Chitchat / Re: Dealing with Health Department for mobile business**

I one had a mobile unit that I used for visiting local fairs, sporting events, etc. Just be aware that you will be licensed for your county and state. You may need to get additional licensing to operate in a different county, and if you are located near a state line as I was, you will need to be licensed in that state too. Plus, depending upon your concept, your trailer may need to be licensed in the "other" state too. Just a whole lotta things to be aware of.

Tom Lehmann/The Dough Doctor  
6321

### **Dough Ingredients / Re: Baking Powder Crutch for Quick Dough**

JJ;  
The DiGiorno Pizza was developed using a combination leavened crust technology that I developed about 27-years ago. Made a small fortune showing all the other companies how to make it once it was commercialized with the DiGiorno pizza by Kraft.

If you want to see some good working formulas for making your own version, please go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> and go to the RECIPE BANK. I've got three different bake to rise dough formulas posted there.

Tom Lehmann/The Dough Doctor  
6320

### **Dough Clinic / Re: All Trumps**

Boyd;  
The "big" thing that All Trumps flour has going for it is that it is one of the highest protein flours commonly available. It's great for making any kind of pizza where a chewy crust texture is desired. It is not the only flour that will impart this characteristic, but since it is one of the highest protein flours, it is presumed to do this the best. In actuality, any flour with about 12% protein content, give or take 0.5%, will make great pizza.

Tom Lehmann/The Dough Doctor  
6319

### **Dough Clinic / Re: toasting flour**

Craig;  
You're right, the heating/toasting of the flour will most likely denature the protein, rendering it incapable of developing "gluten".

Tom Lehmann/The Dough Doctor  
6318

### **Dough Clinic / Re: Oven Temp**

Beau;  
I'm not quite sure that I fully understand your question, but I'll have a go at it. Commercial pizza ovens are calibrated in such a way so that the set temperature on the thermostat corresponds to the temperature of the deck, regardless of whether it's stone, composite or steel in the place where the thermostat heat sensor is located. They try to locate the sensor in a spot that provides a representative actual temperature of the oven deck. Depending upon the oven design, you can, and usually do have hot spots on the deck, hence the need to rotate and move the pizzas around in the oven during baking. Some oven companies have been pretty successful at designing their ovens to have a more uniform temperature across the entire deck surface, and infact, their literature and demonstrations promote the fact that the pizzas don't need to be rotated/moved during baking in their ovens. I have found these claims to be correct in principal, and work well when baking only a few pizzas at a time, but when you are trying to bake 6 or 8 pizzas at a time, and you are constantly opening and closing the oven door, those pizzas in the back of the oven get a different bake from those near the door opening, so it's back to rotating and moving the pizzas around again.

Tom Lehmann/The Dough Doctor  
6317

## [\*\*Dough Clinic / Re: Oven Temp\*\*](#)

Beau;

One other thing, I don't know if it applies in this case or not is the thickness of the deck material and burned BTU's. Commercial pizza ovens tend to have thicker decks, capable of holding more latent heat than the thinner deck of a home or noncommercial application oven. Additionally, the commercial ovens have massive burners putting out a lot more BTU's than any home oven can. Of course they are significantly more expensive to operate too. With the greater capacity burners the commercial ovens will have a faster recovery time than a home type oven, and here again, some of the newer deck ovens exhibit almost no variation due to heat loss from the deck when multiple pizzas are baked in the same spot on the deck for a period of time. This might explain why many home pizza makers use a higher baking temperature than many pizzerias do while still getting the same end results.

Tom Lehmann/The Dough Doctor  
6316

## [\*\*Pizza Ovens / Re: Seeking Blodgett Oven Advice.\*\*](#)

Todd;

Make sure you have a sufficient gas supply to operate those ovens (line diameter and pressure are critical). You may need to get an external gas pressure regulator for the ovens too. Be sure to contact Blodgett to obtain a set of installation instructions for the oven(s) too. Since those ovens put out a lot of heat you will need to consider some type of ventilation for your garage too, not just for the heat, but also for the combustion gasses and the fumes given off from the baking process. Be advised that this might need to be hooded ventilation (\$\$\$\$\$). You might also contact your utility/gas company with the burner specifications to get an idea of the operating cost of those ovens. Ours take nearly 90-minutes to come up to full operating temperature, then you might spend another hour baking pizzas so figure on at least 2.5 full hours of operating time to use the oven to bake your pizzas.

Tom Lehmann/The Dough Doctor  
6315

## [\*\*Newbie Topics / Re: Help with caputo 00 pizzeria flour\*\*](#)

C;

You bet! We use it regularly to make N.Y. style pizza. The absorption is a little lower than what we use for domestic flour, but on the other hand, the dough is a bit softer and handles (opens) nicely.

Tom Lehmann/The Dough Doctor  
6314

## [\*\*Pizza Ovens / Re: Seeking Blodgett Oven Advice.\*\*](#)

Todd;

I can't remember working with an 1100 series Blodgett oven, but I have worked with enough 1048 series ovens to say that they are, in my opinion, a great pizza oven.

Tom Lehmann/The Dough Doctor  
6313

## [\*\*Pizza Ovens / Re: Slice Reheating, steel vs. stone\*\*](#)

Gig;

Just like in baking pizzas from scratch, latent heat is the name of the game in

reheating pizza slices. If the steel plate is too thin, it won't hold much latent heat, so it will cool more rapidly than a thicker steel plate or thicker stone deck. You also need to make sure the deck has been thoroughly heated, which might take an hour or more before reheating the slices on it. If you are reheating your slices in a home oven, try using a low rack position in the oven rather than a high(er) rack position. This will bring the deck closer to the heat source thus improving the bottom heat while reducing the top heat to the slice to help prevent melting of the cheese.

Tom Lehmann/The Dough Doctor

6312

## [\*\*General Pizza Making / Re: Has anyone prepped a pie and then froze it to be baked at a later time?\*\*](#)

Chaze;

Pretty easy to do with some limitations. Think DiGiorno (supermarket) pizza. Here we have a pizza made on a raw dough that is leavened with both yeast and fat encapsulated chemical leavening (you can get the fat encapsulated leavening from the Wright Group <tonyo@wenrich.com> the product is called "Wrise". It is used at 2 to 3% along with about 1% IDY. Another option is to go the Freschetta (another supermarket pizza) route. In this case you pre-proof the pizza skin before you dress it. For a thin crust allow the pizza skin to proof (rise) for about 20-minutes, then apply a very light coating of oil to the dough, sauce and dress as desired. For a thick crust, like the Freschetta product, allow the dough to proof for about 45-minutes, then dress as described above. Here are the limitations: Figure on no more than 10 to 15-day frozen shelf life when frozen in anything but a commercial blast freezer at -30F. It is best to use either canned or lightly sauteed vegetables because fresh vegetable toppings will break down during the freezing process only to release scads of water onto the pizza when it is finish baked. The commercial pizzas get around this in two ways, one by using moisture controlled vegetable toppings, and by blast freezing which is not as injurious to the vegetable toppings.

Tom Lehmann/The Dough Doctor

6311

## [\*\*Resources / Re: Where to buy yeast?\*\*](#)

I do not recommend trying to mail fresh yeast. We are in Manhattan, Kansas and we have difficulties getting several cases of it to us each week from Kansas City. Instead, consider buying a supply of IDY instant dry yeast. Unopened it has a shelf life of a year or more and you should be able to get it from any restaurant supply. You might even be able to talk a local baker into putting in an order for a few extra pounds when they place their yeast order. If you want just small quantities, your local supermarket probably carries the small packets of IDY.

Tom Lehmann/The Dough Doctor

6310

## [\*\*Dough Clinic / Re: Barley free pizza\*\*](#)

You might look into any "organic" flour as these will not typically be malted. General Mills has a very good one "Sperry Organic Flour" that comes in at around 12% protein. You might be able to pick up a bag from your local restaurant supply. We use this one quite often without any problems, as was mentioned, if you have a problem with supporting long fermentation times with this or this type of flour just add some sugar to your formula. About 2% sugar should be all that you will ever need.

Tom Lehmann/The Dough Doctor

6309

**[Off-Topic Foods / Re: Bacon Grease](#)**

Bacon grease, aka lard can also be used to make unique flavored breads and pizza crust. If you buy commercially rendered lard it can be used to make some of the best pie crusts you have ever had too. When I was a kid growing up on the farm we used to have a lard can on the kitchen stove that we poured any leftover frying grease into, and we used from that can to fry things too, so it really developed a lot of flavor. One of our favorites was to spread it onto rye bread like butter, salt it and eat it as is. It doesn't work though when you begin adding vegetable fat into the mix as the mouth feel is all wrong.

Tom Lehmann/The Dough Doctor

6308

**[Chicago Style / Re: Baking a Chicago style on a stone?](#)**

When I'm baking my Chicago style pizzas on a stone I always place a pizza screen under the pan to create a heat break which helps to prevent the bottom from getting overly done, heck, without it the bottom of the pizza burns in my oven.

Tom Lehmann/The Dough Doctor

6307

**[Prep Equipment / Re: Has anyone tracked down a manual dough sheeter for home use?](#)**

What ever happened to the old fashion rolling pin? Pie pin? Hand tossing? Table stretching?

My favorite when making pizza at home is to use a pin to open the dough up to about 2/3 of the finished diameter (pretty easy to do) then table stretch or hand toss to final size. Note: I have gravitated to table stretching at home due to the fact that hand tossing creates a bit of a mess with getting flour all over the place. Table stretching is a lot less messy when you're making pizza at a friends home too.

Tom Lehmann/The Dough Doctor

6306

**[Pizza News / Re: Nestle sued for "poisoning" pizza](#)**

Wow!

If alcohol is a poison (which it is) then beer, wine and distilled spirits should be taken off of the market. Wait! We've already tried that, and how did that turn out? Why not bacon too? No trans fats, but lots of cholesterol (and that's bad for you too).

Personally, I think these people need to find a hobby! How about making pizzas at home? Then they can have them any way they want them!

I like to live a little out on the edge, so please put some sausage on mine.

Tom Lehmann/The Dough Doctor

6305

**[Pizza News / Re: Nestle sued for "poisoning" pizza](#)**

Steve;

Spot on!

Just think of all the places where food coloring is used.

Just to name a few:

Chicago deep-dish pizzas (Egg-Shade coloring is what gives it the characteristic yellow color)

Peppermint; Red and green aren't the natural colors for this popular flavoring.

Whole-wheat bread uses caramel color to mask the typical muddy color of whole grain/wheat bread crumb.

Kool-Aid; You didn't really think all those colors were natural, did you?

M&M Candies are in the same boat as Kool-Aid.

Chuckles Candy (now that's an old one) suffers the same fate as the Kool-Aid too.

As you can see, the list could just go on and on, and if the colorings were all banned, eating might not be as much fun or appetizing as it presently is. Please don't share this with Mr. Nanny as he might see it as a solution to obesity in New York City.

Oh, one last one...Red Velvet Cake! Please don't take that one away!!

Tom Lehmann/The Dough Doctor

6304

### **Newbie Topics / Re: Dry dough**

To find the ingredient amounts in bakers percent divide the weight of the ingredient by the weight of the flour and multiply by 100. This will give you the bakers percent for each ingredient. To work your formula in bakers percent do the following:

1) Decide how much flour (by weight) you want to use.

2) Using your calculator, enter the ingredient percent you want to find the weight for, then press "X" and now enter the flour weight and press the "%" key and read the weight for that ingredient in the display window.

Also, please keep in mind that the absorption of any flour can/will change to some extent from bag to bag, so don't be too hesitant about making slight absorption adjustments to your dough as this is entirely normal. Normally these variations in absorption are in the magnitude of about 2% of the total flour weight.

Tom Lehmann/The Dough Doctor

6303

### **General Pizza Making / Re: Kneading times and finished dough temp**

I'm not sure I'm correctly following the last reply, but industry standard is to crumble the compressed/fresh/cake yeast into the flour and then begin mixing. There is no need to suspend it in the water unless you are mixing the dough by hand. If you are mixing the dough by hand you can put the cake yeast right into the cold water, or warm water, whatever you're using and stir it to suspend the yeast and you're good to go. Active dry yeast (ADY) should always be pre-hydrated in warm water (100 to 105F) for about 10-minutes before it is added to the dough. Once hydrated, it can either be added to the water in the mixing bowl, or it can be added to the flour just before you begin mixing. Instant dry yeast (IDY) is the one that can be added directly to the flour just as it is, but again, if you are mixing the dough by hand, you will need to pre-hydrate the IDY. To hydrate IDY put it into a small quantity of warm water (95F) and allow it to hydrate for 10-minutes, then you can add it either to the water or to the dry flour just as you would the hydrated ADY.

Regardless of which form of yeast that you're using, it is not a good idea to allow the yeast to come into direct contact with either the salt and/or sugar while you're assembling the dough, BUT IDY when used without pre-hydrating, can be put into direct contact with salt and/or sugar without any problems. This is commonly done by pizzerias when they make "goodie bags" containing salt, sugar (if used), IDY and a little flour.

Tom Lehmann/The Dough Doctor

6302

## [\*\*Dough Clinic / Re: Using a Pizza Peel with your dough???\*\*](#)

With reference to blowing under the dressed pizza skin to help release it from the peal, it has more to do with perception than food safety. How would you feel if you were at a restaurant where some snotty nosed kid was blowing, or coughing on your pizza? Don't worry, it will be sterilized in the oven. You might have a hard time selling that to your customers whose only comment might be "GROSS!". Then too, there might be a hard sell to your health department inspector. One old trick that I've used with very soft doughs is to open the dough into a pizza skin and place it onto a pizza screen for dressing, I then put the dressed skin (still on the screen) in the oven to bake for a couple minutes, then slip a peal under the now forming crust, remove the screen and continue baking on the stone. This is similar to a procedure called "decking" the pizza, but when decking the pizza, it is typically removed from the screen and placed on the stone/deck during the last couple minutes of baking to achieve a crispier crust than can be had by baking only on the screen.

Tom Lehmann/The Dough Doctor  
6301

## [\*\*Sauce Ingredients / Re: Baking Soda To Reduce Sweetness\*\*](#)

Adding a small amount of baking soda to your tomato product is an effective way to reduce their acidity. Without actually running a TTA (titratable acidity) to measure the amount of acid present it is impossible to predict just how much soda would need to be added. For most of us, when we have excessively acid tomatoes we just want to take the edge off of them, so a lesser amount of soda is probably the best way to go. While on the topic of pH and tomatoes, please remember that it is the acidity of the tomatoes that inhibits microbial growth with long term storage (think canned). A few years ago a young housewife poisoned her entire family when she canned low acid, yellow tomatoes following the same procedure that she normally used when canning regular tomatoes and used it to make a pasta sauce. The microorganism that grew in her canned, low acid tomatoes was clostridium, and the outcome was not good.

One last thing about pH and tomatoes, it is the acidity of the tomatoes that helps to prevent them from scorching during the baking of the pizza. We did some work on this a number of years ago and we found that the addition of 1-ounce of grated Parmesan cheese per gallon of tomato product did a pretty decent job of taking the edge off of the tartness of the tomatoes. You won't see/taste the difference though until you cook the sauce either by itself or on a pizza.

Tom Lehmann/The Dough Doctor  
6300

## [\*\*Newbie Topics / Re: Homemade yeast\*\*](#)

MC;

A sponge is different from a sourdough. A sponge might also be called a preferment. A portion of the flour (with yeast and a portion of the water) is blended together and allowed to ferment for 1 to 24-hours to develop flavor. This is then combined with the remainder of the flour and other ingredients to make the dough. A sour would be allowed to ferment for several days or more to develop an acidic flavor and also provide leavening. Only a part of this is used in making the dough. The remainder is replenished (fed) and used to make more dough at a later date. A sour that you made years ago might still be with you today if you have managed it properly so as to maintain the same microflora, hence it will always function the same and produce a like flavor profile. If the sour is mismanaged, either by allowing it to become contaminated or by allowing it to be subjected to incorrect

temperatures for the microflora you are cultivating the performance of the sour can change drastically, as can the flavor, normally when this happens it is said that the sour was "lost". TIP: If you work with a sour, store it in multiple containers in different storage facilities (locations), this way if the sour is lost at one location, for whatever reason, you can still use one of the others to inoculate a new sour, thus preserving the performance and flavor imparted by the sour.

Tom Lehmann/The Dough Doctor  
6299

### **New York Style / Re: Really disappointed in Grande 50/50 blend**

Mozzarella is really a pretty bland tasting cheese, even when blended with a higher butterfat Provalone cheese, the flavor is still on the bland and non-exciting side of great. To compound this, there seems to be a tendency to use too much dried oregano and basil these days and that pungent flavor completely over powers any flavor from the cheese. We have been working on this for some time now and we have found if we replace the dried basil and oregano with fresh, green leaf basil and oregano (my personal preference is to use just fresh basil and forgo the oregano completely) the cheese flavor comes through much better. Additionally, the addition of about an ounce (a good pinch) of shredded Parmesan cheese to replace an equal portion of Mozzarella does a lot to bring out the cheese flavor of the pizza.

Tom Lehmann/The Dough Doctor  
6298

### **Stones/tiles/steel, Pans & Accessories / Re: Small diameter turning peels**

American Metalcraft shows an 8-inch round peel (20-inches long) item # 17080.  
<[www.amnow.com](http://www.amnow.com)> 800-333-9133.

Tom Lehmann/The Dough Doctor  
6297

### **Chicago Style / Re: Chicago Deep Dish without Corn Oil**

L.A.  
There are a whole bunch of other options that you may not be as sensitive to:  
Sunflower oil  
Peanut oil  
Blue Bonnet Margarine (ya gotta try it)  
Straight olive oil  
Are you sure the canola oil you tested wasn't rancid?

Tom Lehmann/The Dough Doctor  
6296

### **Dough Clinic / Re: Unique oven config, need dough advice**

Varun;  
I can't say for sure that you will succeed with your oven, but it is worth a try. Here is how I would start:  
Pan: Deep-dish (1.5 to 2-inches deep having a dark color (anodized or seasoned to a dark color))  
Dough: 100% flour; Salt: 1.75%; Shortening/Butter: 4%; IDY: 1%; Sugar: 2%; Water: 55%  
Procedure: Add water (65F) to the mixing bowl, add flour and the remainder of ingredients, mix at low speed for 3-minutes, then mix at medium speed for 8-minutes, or do all of the mixing at low speed for 15-minutes. Targeted finished dough temperature is 80 to 85F. Immediately after mixing, scale the dough into 400-gram weight pieces and form into balls, wipe dough balls with vegetable oil

after placing into plastic dough boxes. Cross stack in the cooler for 18 to 36-hours. Remove dough from cooler and allow to temper AT room temperature for 2.5-hours, then either open the dough balls with a pin, and place into a lightly oiled baking pan. Cover and set aside to proof/rise for 45 to 70-minutes, take to the oven for baking. I think you will be able to bake right on the deck. Baking time will be about 4-minutes. NOTE: If you see a spot on the par-baked crust that appears to be an oil spot, it isn't. What you are looking at is an area of collapse. To correct the problem you will need to bake the crust a little longer, possibly at a lower temperature. Remove the baked crust from the pan immediately as you remove it from the oven and place onto a wire grid or shelf to cool. Let me know if you have any questions or problems.

Tom Lehmann/The Dough Doctor  
6295

**[Sicilian Style / Re: First attempt at Sicilian didn't turn out great....why?](#)**

C.G.;

A couple of things are probably happening here. The bright pan color is reflecting heat away from the pan, making it nearly impossible to bake the most difficult part of the pizza, the middle section. If you got just a little color development around the bottom edge, the dough might be pulling up slightly off of the bottom of the pan, thus creating an air gap between the pan and the dough, under this condition, it is all but impossible to get any bottom color at all. I think if you had been baking on a stone you would have had better luck with the bottom color. As for flavor, most of the crust flavor is developed as a result of baking, so if the dough is not properly baked, you do not develop any of the flavors that are characteristic to a baked pizza crust. You can see this if you take an English muffin and eat one half of it without toasting, then toast the other half and you will see a significant improvement in flavor.

Tom Lehmann/The Dough Doctor  
6294

**[Dough Clinic / Re: Best way to refrigerate dough?](#)**

I don't like to use plastic wrap as it does not allow for any expansion of the dough, instead, I like to put oil the dough piece and put it into a plastic bread bag, twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge. It still comes out nice and round but this method allows for some expansion of the dough ball. To use the dough ball, remove from the fridge about 90-minutes before you want to open it into a pizza skin, then strip the bag away from the dough ball, allowing the dough ball to fall onto/into some dusting flour and begin opening the dough in your normal manner. Note: DO NOT use a zip-lok bag as the seal can open allowing the dough to dry and crust over.

Tom Lehmann/The Dough Doctor  
6293

**[Dough Clinic / Re: air bubble on top of dough ball](#)**

I totally agree with Peter. One possible cause of the problem is due to hand kneading the dough as opposed to machine mixing the dough. During hand mixing we fold and push the dough so there is a distinct possibility of developing an air pocket in the dough during kneading, as the dough ferments, gas, created by the yeast moves into this pocket and expands it to create the bubble which you have observed. Just pop the bubble and continue in your normal manner.

Tom Lehmann/The Dough Doctor  
6292

## **Dough Clinic / Re: flour combinations**

G;

Probably the single most commonly used flour by N.Y. pizzerias, to make New York style pizza is General Mills All Trumps, coming in at 14 to 14.2% protein content. But from a realistic point of view any patent or straight grade flour with 12 to 14% protein content will also work. Very few pizzerias use a blend of flours to make their pizzas unless it is a specialty type of pizza dough such as wheat or multi-grain.

Tom Lehmann/The Dough Doctor  
6291

## **General Pizza Making / Re: Yes, I DO bake pies. All Trumps 1st**

You can get All Trumps flour un-bromated by requesting product code #50143. This one is malted and enriched only.

Tom Lehmann/The Dough Doctor  
6290

## **Dough Clinic / Re: Soggy in the middle**

Absolutely GREAT looking pie! I agree, just cut the peppers a little smaller and they should bake just fine.

Great color, great edge, great balance between toppings and edge dimension too, just an all around great looking pizza. : ) : ) : )

Tom Lehmann/The Dough Doctor  
6289

## **Events Calendar / Re: Report and pics from Pizza Expo, Las Vegas 2013**

I had a number of PM individuals come up to me during both of my presentations at Pizza Expo. My presentation on Tuesday (room 260-N) went from 4:00 p.m. until right at 10:00 p.m. we had a great group with lots of great questions.

Did anyone get over to the XLT Oven booth? My partner, Jeff Zeak was working in their booth making some fantastic pizzas (one was a 64-inch diameter monster!) as well as a lot of other tasty items using the XLT ovens.

Tom Lehmann/The Dough Doctor  
6288

## **Events Calendar / Re: Report and pics from Pizza Expo, Las Vegas 2013**

I'm glad you got to see that huge pizza. While Jeff was developing it I had the dubious honor of cutting one of those babies into 3-inch square party slices. That's the first time slicing a pizza was ever work for me! Jeff always tries to do something a little different every year, we can only guess at what he might be thinking about for the next Pizza Expo.

Did anyone have a chance to sample some of the other things he was baking in the air impingement ovens? Breads, rolls, ribs, wings, shrimp, fish, brownies, muffins, dessert pizzas, breakfast pizzas, the list of things he makes with those ovens just goes on and on, not to mention all of the different types of pizzas he makes. Jeff has become the master of the air impingement oven in my opinion.

Tom Lehmann/The Dough Doctor  
6287

## **General Pizza Making / Re: Yes, I DO bake pies. All Trumps 1st**

Walter;

The bromated flours are not illegal in California, but they are so frowned upon that

you might have a problem finding a supplier that carries it, hence the reference to the non-bromated version of All Trumps. The bromate has essentially no impact upon the flour when it comes to making pizza, so you shouldn't see any difference between bromated or non-bromated All Trumps except for availability.

Tom Lehmann/The Dough Doctor  
6286

**Dough Clinic / Re: Warm up time on racks**

B2D;

What you are experiencing is common for a pan style pizza store. First, there is no need to toss any dough out. Just remove any unused or over proofed dough from the pan and store it in the cooler until you make your next dough then incorporate into the new dough at a level not to exceed 15% of the total dough weight. This is also a good dough to convert to breadsticks or garlic knots. But that doesn't address your question; what I would propose is to manage your proofed dough (in the pan) directly from the cooler. Remove the proofed dough from the cooler, and place onto a heated shelf at 160 to 180F (anything close to this will work), think heated shelf for holding pizzas on for delivery or pickup. PVI used to make such a shelf but have discontinued it. Shucks! You could make your own with a piece of stainless steel and a couple of heat lamps under it. The idea is to allow the cold dough to set on the heated surface for about 2-minutes, then dress it and bake. As the overall dough temperature will be colder, you may need to experiment with baking using a screen under each pan to control bottom bake. There are several regional chains that use a similar process with good success. As a last resort, you can always par-bake your crusts too. This really works well for the deep-dish style pizzas. Par-bake the crusts using about 1/2 of the normal amount of sauce on the dough to control bubbling, depan, place on rack to cool, then store at room temperature until needed (should not be an issue with health department) to finish the pizza, place back into a pan, apply remainder of sauce, and dress to the order, bake with a screen under the pan to prevent over baking the bottom of the pizza.

Can you say "crispy"?

Tom Lehmann/The Dough Doctor  
6285

**Dough Clinic / Re: Let the dough set out before putting into the fridge???**

Tom;

Letting the dough sit out at room temperature is not recommended when the dough is to be frozen as it allows the yeast cells to swell in size, thus rendering them more prone to ice crystal damage during the freezing process, this in turn allows glutathione (first cousin to L-cysteine, think PZ-44) to leak out into the dough creating an undesirably soft and sticky dough condition when the dough is finally slacked out/thawed for use. As to allowing the dough to set out prior to going into the cooler, this allows the yeast to begin leavening the dough, thus effectively making it less dense and more difficult to cool in a repeatable, and efficient manner. A lot of stores that still follow this practice are doing it because they have always done it that way, or that was the way they were taught to do it by a previous owner. We have found that there is significantly improved cooling efficiency when the dough is divided/scaled, balled, boxed or bagged, and taken to the cooler all within 20-minutes of coming off of the mixer. This also results in improved consistency of dough performance when the dough is to be held for several days in the cooler and we are striving to get the same pizza on day 1 as we will get on day 3. When making pizzas at home these issues still remain, but the ramifications are not so great as we can easily accommodate changes in the way

the dough handles (try explaining/showing that to the average highschool or college student working in a pizzeria) and if the pizza needs an adjustment in baking time, so be it, but with the use of an air impingement or other conveyor oven those changes cannot really be made from pizza to pizza unless a deck oven is being used. For the most part, pizzerias work on the old adage of GIGO when it comes to dough.

Tom Lehmann/The Dough Doctor  
6284

**Dough Clinic / Re: Let the dough set out before putting into the fridge???**

Sly;

You could have also just increased the dough temperature by 10F and accomplished the same thing without changing your dough formula/recipe. This is how we normally make no-time/emergency doughs.

The down side to increasing the yeast level is that should you want to hold the dough for additional time in the fridge, you would stand a good chance of the dough "blowing" or becoming over fermented, plus depending upon how much yeast we're talking about, you can also change the flavor of the finished crust with an excessively high yeast level.

Tom Lehmann/The Dough Doctor  
6283

**Dough Clinic / Re: Let the dough set out before putting into the fridge???**

Sly & Peter;

Within the range that your yeast was used at there would not be an issue, but if you were at 1% IDY or more and doubled it, you might have brought a different crust flavor to the table. The flavor wouldn't be bad, but just different from the "norm", some might describe the flavor with high yeast levels as "yeasty", at least for me, this is not the normal flavor that I associate with a great tasting pizza crust. Peter brings up a good point with the temperature of the home fridge, typically being warmer than desired, not through a fault of the fridge, but rather because we're always opening and closing the door during the normal course of the day. Then too, our home fridge has a big temperature difference between the top and bottom, so much so that when we are gone for a few days the things in the lower vegetable drawers end up getting frosted. I can't begin to count the amount of lettuce we have had to toss-out because it got frozen while we were gone. I guess opening and closing the door frequently may not be all that bad afterall. Because of this, I really think it is better to make an adjustment in the water temperature to achieve a higher finished dough temperature rather than to increase the yeast level. It is actually pretty easy to get a dough that is about 10F warmer than normal by just using warmer water when making the dough. How much warmer? My experience with making pizzas at home has shown that an increase of 10 to 15F in the temperature of the water added to the dough should do the trick. Don't have a thermometer? You can get an inexpensive one from Walmart in the automotive department for \$7.00. They read up to 125F and are used to check the temperature of a car's airconditioning. I've also used a cheap oral thermometer that I had left over from when the kids were young. The exact finished dough temperature is a goal but not a prerequisite in making an emergency dough, just getting it warmer than normal will almost always do the trick, but in order to have repeatability, you never know when company will unexpectedly drop in, nothing beats working with actual temperatures whenever you can.

Tom Lehmann/The Dough Doctor  
6282

## [\*\*General Pizza Making / Re: Serving pizza for dine-in\*\*](#)

DD;

At home I slice my pizzas on a large metal serving tray and then bring it to the table on the same tray. In a store/pizzeria setting some operators do the same thing, others will cut their pizzas on cutting board made of UHMW (hard plastic), or any of those man made hard counter tops work well too. My favorite is a wood cutting board or even a cutting peel, but some health departments may push back on them so be sure to discuss your intention with them first. The reason why I like to cut my pizzas on a wood peel is because the wood is easier on my cutting tools (doesn't dull the edge) and it allows me to easily transfer the cut pizza to nicer serving tray.

One man's opinion.

Tom Lehmann/The Dough Doctor

6281

## [\*\*Sauce Ingredients / Re: If I gave you a can of Peeled Tomatoes? How would you make pizza sauce?\*\*](#)

One of my personal favorites is to use slices of fresh tomato in place of sauce on my pizzas, but when ripe, fresh tomato is not available I like to use whole peeled tomato that is first drained well, and then cut or torn into pieces and allowed to drain once again. I don't add anything to the tomatoes, but rather put a very light application of olive oil on the pizza skin, then add sliced or diced garlic followed by several leaves of fresh basil torn into pieces, a little white pepper, and then I add the tomato pieces, followed by the cheese and desired toppings. I think the large pieces of tomato add a lot to the flavor and texture of the pizza as well as providing something of a rustic appearance. I don't add salt to as I believe the cheese provides all the salt needed.

Tom Lehmann/The Dough Doctor

6280

## [\*\*Dough Clinic / Re: Let the dough set out before putting into the fridge???\*\*](#)

Tom;

Letting the dough sit out and ferment for a period of time is a part of his dough management procedure. It gives him the end product he is looking for when used with his formula and dough making process. Large scale, pizzeria operations are not especially fond of the process as it can be difficult to ensure that the recommended times will always be adhered to resulting in potential dough handling issues, or product quality issues, especially after several days in the cooler. With that said, we do see this done at a lot of the independent pizzerias where they have better control over how the dough is managed in their shop. It might have been in PMQ that I wrote an article on dough management techniques where I discussed the pro's and con's of different dough management procedures as they pertain to the pizzeria.

Tom Lehmann/The Dough Doctor

6279

## [\*\*Dough Clinic / Re: Reducing IDY\*\*](#)

Len;

Yes, I think that would be a reasonable expectation for a "normal" dough. Keep in mind though that at the lower yeast level, the dough may not be sufficiently conditioned/fermented after, say, 24-hours to provide optimum performance, but on the other hand, it should perform well several days out. As a rule we say that when

you formulate or manage for a long refrigerated shelf life you give up on the short shelf life side of the equation and when you formulate or manage for the short time you will give up some of the long term storage days.

Tom Lehmann/The Dough Doctor  
6278

**Dough Clinic / Re: Input on my Dough Recipe Please!**

SB;

Here's your formula in bakers percent:

Flour 100%  
Active dry yeast .57%  
Water 65%  
Salt 1.71%  
Brown sugar .71%

Ingredient weight divided by the flour weight X 100 = bakers percent.

A couple of suggestions:

Yeast: Hydrate the ADY in 100 to 105F water without the sugar and salt for improved yeast performance. At the same time allow the yeast to hydrate for about 10-minutes before adding it to the mixing bowl.

Dough Temperature: Get yourself a cheap thermometer to measure and record your dough temperature. This will help you to control the rate of fermentation as you continue to experiment with your dough. Decide what temperature is presently working best for you and then strive to maintain that temperature with future doughs.

The addition of some olive oil or butter would add another dimension of flavor to the finished crust. I would add about 2% or (700-grams flour X 2 (press the "%" key and read 14-grams in the display window) You can always experiment with this level to see what you like best.

Without knowing your actual finished dough temperature I cannot say how long your dough can be refrigerated for, but with the small size pieces you are making, I would guess that the dough should be good for 2 to 3-days in the fridge, possibly more.

As for the type, I would say from the formulation you have an American style thin crust that is leaning slightly toward Neapolitan (due to the higher absorption).

Have fun and some good eating while experimenting!

Tom Lehmann/The Dough Doctor  
6277

**Dough Clinic / Re: Going organic and getting a bit more rise**

Maybe I'm missing something, but why not use a 20 degree-L dry malt powder? A one pound bag is about the same size as a bag of IDY and you can get it from any bakery ingredient supplier. Just be sure to keep it tightly closed so it doesn't absorb moisture from the air and lump up. In almost all cases, all you ever need of the dry malt powder is about 0.25% based on the flour weight.

Tom Lehmann/The Dough Doctor  
6276

**Chicago Style / Re: South Side Thin Crust..**

Ed and Joe's Pizza was a family favorite after we moved into town (Tinley Park) from the farm. I was 10-years old at the time and everytime I go back to Chicago to visit family we always get a thin crust pizza from Ed and Joe's. Yup, they are still in business after over 55-years, and the best part is that for all practical purposes,

their pizza hasn't changed one bit! Only the very edges of the 4 corner pieces (party cut) have a little crisp to them, that's why they're always the first to go. The rest of the slices are akin to a piece of wet pasta, but a lot better tasting. Beggar's Pizza, a south side chain does a pretty decent job on this type of pizza too.  
Tom Lehmann/The Dough Doctor  
6275

**Dough Clinic / Re: When cooking - dough will not rise**

Sammy;

Also keep in mind that whole-wheat flour does not rise as well as regular white flour does. Think of it like this, whole-wheat flour is actually a blend of 80% white flour and 20% wheat bran (fiber), since only the white flour portion can develop gluten it is the portion that rises, the bran portion is just carried along for the ride. Also, the bran particles have a cutting effect upon the gluten structure resulting in a dough that is somewhat less capable of holding gas resulting in a lower rise than what you would normally get with a regular white flour dough.

If you can, open the dough up by hand rather than using a rolling pin, and then allow the dough to rise for at least 30-minutes between fitting the dough to the pan and dressing/baking it. This should help get you on track to a thicker crust.

Tom Lehmann/The Dough Doctor

6274

**Dough Clinic / Re: Air Bubbles and rising**

Rick;

I'm in agreement with Jeff V.

I would take the dough directly to the fridge right after the final kneading, then cut into dough balls, lightly oil the dough balls and place back into the fridge for an overnight cold ferment, then out a few hours on the following day before you open them into pizza skins.

Tom Lehmann/The Dough Doctor

6273

**Dough Clinic / Re: Why warm water??**

Cam;

The temperature of the water is the controlling mechanism for the finished dough temperature. Depending upon how the dough will be managed, different finished dough temperatures will be targeted. For example, I like to cold age (ferment) my dough for several days before I actually use it, so my preference is for a colder dough, such as 80F. It is not right or wrong, it's just what works best for me.

Others like to use a warmer finished dough temperature, again, it's what works best for them considering the type of dough they are making, and how they have elected to manage it. For the most part, doughs that are made at home are somewhat warmer than the doughs that are made for use in a pizzeria. If your dough temperature is too warm you will find that the dough exhibits a pronounced tendency to blow (over ferment). Of course, it might also have too much yeast for the temperature you're using too, but that's a whole different story. Experimenting with making pizza at home is half of the fun, the other half is eating it, and for the most part, our failures taste almost as good as our successes.

Tom Lehmann/The Dough Doctor

6272

**Dough Clinic / Re: Why warm water??**

Cam;

No, it is probably even more important under those conditions. If the dough is too cold when it goes into the fridge you may not get enough fermentation on the dough during the time in the fridge, and if it is too warm/hot you might get more fermentation than desired and find that the dough blows while in the fridge. Where temperature is more important is when you are going to use the dough soon after mixing it. By soon, I mean within the same day or even a few hours. This is where a warmer dough comes into its own. The warmer dough ferments faster so the dough receives sufficient fermentation within the time allocation and we are rewarded with a better finished quality pizza. If you need to source a good, low cost thermometer, try your local drug store/pharmacy, an oral thermometer or one of the newer infrared thermometers are designed to give readings pretty well within the temperature range that most of our doughs will be coming off of the mixer at. A trip to your local auto parts store and \$7.00 will get you a dial/stem type thermometer that is used for checking your car's air conditioning unit. This thermometer works well for measuring colder temperatures such as water temperature.

Tom Lehmann/The Dough Doctor  
6271

**Dough Clinic / Re: When cooking - dough will not rise**

Sammy;

Rather than going with gas, can you go with a wood fired oven? There are some excellent plans available for building your own, so with some local contractor assistance I'm thinking you might be able to get a first class pizza oven at a fraction of the cost of a commercial one. Just a thought.

Tom Lehmann/The Dough Doctor  
6270

**Dough Clinic / Re: Dough "relaxer" question.**

Hi Jeff;

Norma is right, with the correct formulation and the right dough management procedure there shouldn't be any need for a dough relaxer, but for those times when we just can't make our pizzas without them we have a number of them to select from.

Garlic and onion (powder or flakes) is a pretty decent dough relaxer especially well suited for those times when the dough just needs a little encouragement to open into a pizza skin.

For those times when more encouragement is needed, especially when we're making no-time or short time doughs something with a little more "oomph" is needed, this is where we get into L-cysteine (commercially available as PZ-44) or glutathione (dead yeast). You have to be careful with these last two since they can/will liquefy a dough if used at excessive levels. In the pure form this translates to about 90-parts per million based on the flour weight, but thankfully, there products are commercially blended to make scaling much easier so we're looking at 1 or 2% of the flour weight when used in a commercial ingredient blend. When used within the recommended use levels, you will never know it is there in the finished crust, but if used at excessively high levels, assuming you can handle the dough, which is now very soft and sticky, the finished crust can impart a slight stinging or tingling sensation to the lips as the crust is eaten. This closely mimics the effect of thirst on the lips (yes, you will be licking your lips), but that's about the extent of it. If you are holding the dough over in the fridge for several days, you might end up with an overly soft, unmanageable dough that has been so weakened by the reducing agent that the finished crust takes on a flat, poker chip appearance

with a knife edge. Plus, if the dough cannot support the weight of the toppings, it will collapse in the center section resulting in a beautiful gum line. How do these things work? The work by breaking the protein molecules at their bonding points (sorta like taking a bicycle chain apart by removing the master link(s). This can be reversed to a great degree by using an oxidizing agent such as ascorbic acid, or potassium bromate, just to name a couple. Enzymes (protease enzymes) can also be used to achieve the same end result but unlike L-cysteine and glutathione (both are amino acids/protein building blocks) the enzymes hydrolyze the proteins so they are no longer proteins, hence the dough softening resulting when protease enzymes are used cannot be reversed, plus, the enzymes have a nasty habit of continually working to hydrolyze the proteins, so they just don't stop working in most cases. This can make long term management of the dough in the cooler much more tricky, and management of scrap dough is all but impossible. Excessive use levels will easily turn a dough into a bucket of slime way before you will ever have enough to impact the finished flavor of the crust. Think of it like this, when we imbibe in a little relaxer it can be good for us, but too much can result in unwanted problems, the same can be said for relaxers and dough.

Have a great day, and use those relaxers in moderation.

Tom Lehmann/The Dough Doctor  
6269

### [\*\*Dough Clinic / Re: Dough "relaxer" question.\*\*](#)

Jeff;

All of our research has shown that about 0.25% of either garlic powder, onion powder, or a combined blend of the two will give the desired reducing effect. This is the reason why we suggest keeping the combined onion/garlic level to not more than 0.15% of the total flour weight when you don't want to experience the reducing effect.

Tom Lehmann/The Dough Doctor  
6268

### [\*\*Dough Clinic / Re: Dough "relaxer" question.\*\*](#)

Peter;

Yes, we used to buy generic garlic and onion powder from the supermarket and it performed similarly to the commercial stuff we now get from our supplier. The thing is that the mechanism of these products in breaking the gluten structure is different from L-cysteine or glutathione in that it breaks the protein chain at a different point (which I still don't fully understand) as a result the reducing effect is limited (not limited with L-cysteine, glutathione, or enzymes) to providing not much more than about a 25% reduction in dough mixing time. This makes it a pretty gentle and easy to use relaxer. Easy to use in that you just can't over dose a dough with it. When used in a home pizza making setting the natural thing to do is to slightly adjust the water (absorption) in the dough to compensate for this softening effect, or even add a little additional flour. I can't speak for others, but when I make my pizzas at home if the dough seems a little slack/soft I just use a little more dusting flour during the kneading of the dough to correct it. I'm guessing that this is what others are doing at home when they use onion or garlic powder in their doughs. Since the dough making process is much more regimented in a pizzeria setting they don't see the softening effect until after the dough has been mixed, and since they don't hand knead there is no way to correct for the softening until they make another dough, at which time they normally just reduce the dough absorption several percent to correct the dough consistency and handling properties.

Tom Lehmann/The Dough Doctor  
6267

### [\*\*Dough Clinic / Re: Critique my dough please\*\*](#)

Your dough formula in bakers percent looks like this:

Flour: 100%

Water: 62.5

ADY: 0.82

Oil: 1.028

Salt: 1.028

Sugar: 1.44

For an American style thin crust these percentages look to be pretty normal, so the formula is probably OK, if that's the type of pizza you are targeting.

Heating all of the water to 100F is going to give you a very warm finished dough temperature. Since you are using ADY the water used to hydrate the ADY should be at 100 to 105F, with the remainder of the water some what cooler, to give you a finished dough temperature in the 80 to 85F range. Warmer dough temperatures are OK if you can handle it, but often the dough tends to over ferment and gives a finished crust with varying degrees of flavor both from excessive yeast fermentation and from potentially unwanted bacteria growth (lactobacillus) which can result in a vast array of different flavor development.

For mixing the dough just add the remainder of the water, followed by the salt, sugar and flour, then add the yeast suspension on top of the flour and begin mixing. As soon as the flour is hydrated in the mixing bowl (you don't see any white flour) add the oil and continue mixing in your normal manner. After mixing, divide the dough into pieces, oil and place into individual containers or plastic bags, then place in the fridge for two to three days or more as you desire. Remove the dough pieces from the fridge about 3-hours before you plan to open them up into pizza skins and proceed with making your pizzas. This modified procedure should result in greater uniformity of the dough pieces, resulting in greater uniformity of your pizzas each time you make them. By this procedure you could also make a number of dough balls one day and hold them in the fridge for several days, using them as needed and getting pretty decent uniformity from day to day.

Tom Lehmann/The Dough Doctor  
6266

### [\*\*Dough Clinic / Re: Mixing all purpose vs high gluten\*\*](#)

Grathan;

Also, what you were seeing is completely normal for two such different flours. The All Trumps flour is a very strong, high protein flour that is capable of producing a very strong and elastic dough (this is why it appeared so tough and hard.firm, and kept wanting to climb up the dough hook. Additional water would have helped soften the dough making it more manageable but it would still have been more elastic than one made with an AP flour. The high protein flours typically require more water and fermentation.

Tom Lehmann/The Dough Doctor  
6265

### [\*\*Dough Clinic / Re: Does anybody add seasoning to their dough?\*\*](#)

Yak;

A number of years ago all of the big box chains were offering an herb crust, then there was the "dirty" crust with the herbs tacked on to the outside of the dough.

We have made herb dough by using the packaged Italian seasoning mix and just blending it into the dough and we have also made it by making our own herb blend consisting of dried basil, oregano, garlic, onion, sundried tomato, dried red and green pepper and a little ground white pepper. Depending upon how much onion and garlic that you use the dough might be a little softer than normal, but if you do any hand kneading you can just knead in a little additional flour to compensate for the softening effect of the onion/garlic. Aside from that, no real surprises.

Tom Lehmann/The Dough Doctor  
6264

**Dough Clinic / Re: Does anybody add seasoning to their dough?**

Flavor is the combination of aroma and taste. An herb flavored crust is just the opposite of a saltless soup cracker. It is loaded with flavor from the herbs that are added even if the dough itself doesn't contain any salt, the herbs can still carry the flavor of the finished crust. This is how the salt substitute "Mrs. Dash" works, at least from a flavor stand point.

Tom Lehmann/The Dough Doctor  
6263

**Dough Clinic / Re: Dough "relaxer" question.**

Craig;  
A number of researchers that I've discussed this with have also alluded to the aliianase reaction due to the limited reducing effect on the protein chain. Both L-cysteine and Glutathione work to break the bonds at the S-H bonding points on the protein chain (of which there are many), hence the ability of these products to literally liquefy a dough. I did the original application work on papain in wheat based doughs back in the late 60's. In addition to being an excellent meat tenderizer, it is also an excellent dough reducing agent, but extreme care must be exercised when using it due to the fact that it works very fast, and like the Everready Bunny, just keeps on working, and working, and working, and to add insult to injury, to the best of my knowledge, the action cannot be reversed by simply oxidizing the S-H bonds on the protein chain so the effect is more like that of a proteolytic enzyme. Bromelain, on the other hand, has been tamed and is, or at least was, available as a commercial product for softening wheat doughs at one time.

Tom Lehmann/The Dough Doctor  
6262

**Dough Clinic / Re: Does anybody add seasoning to their dough?**

Yakfish;  
You might want to check the salt level in your dough since salt is a major flavor contributor to the finished crust. We normally look for the salt level to be a minimum of 1.5% of the total flour weight. I personally like to use 1.75 or 2%. Fermentation is also responsible for a good chunk of the finished crust flavor too. Can you share with us how you are managing your dough? By this I mean, what you do with the dough from the time it is mixed until you actually use it. Substitution of the olive oil with butter will add a dairy note to the finished crust. Some other options are to brush the finished crust with olive oil or butter to impart some additional flavor.

Tom Lehmann/The Dough Doctor  
6261

**Dough Clinic / Re: Does anybody add seasoning to their dough?**

Yakfish;

Never mind the salt, you're at 3.2% already. I would think the crust might be tasting slightly salty.

Is there a possibility that all that salt is inhibiting fermentation to the point of impacting flavor?

Tom Lehmann/The Dough Doctor

6260

### **New York Style / Re: Dough sticking to pizza screen**

Scag;

You mention that you put three pizzas into the oven all at the same time. Is this normal practice for you? I mention this because the center of the pizza is the last part to get baked. If you overloaded the oven, and slowed the bake (possible to probable in a home oven) the longer bake at a now lower temperature might allow the dough to be forced down and into the screen openings, hence when the dough finally expands and bakes it is effectively locked onto the screen. You might be able to get a feel for this if you look at the center section where each pizza stuck to the screen. Was the dough inside of the screen openings, or was it merely sticking to the top surface of the screen? Also, look at the bottom of the pizzas, if they exhibited a tendency to flow into the screen, the bottom of the pizzas will have a somewhat nubby appearance.

Tom Lehmann/The Dough Doctor

6259

### **New York Style / Re: Dough sticking to pizza screen**

Scag;

Here's a little trick that we use in the lab when we need to weigh an ingredient that is outside of the calibrated limit of the scale. For example, say your scale only weights in 2-gram increments but you need only 1-gram for your dough. Weigh the two grams and put it into, say two cups of water (could be tablespoons, teaspoons, etc.) now just divide the water equally into two containers, each container will contain half of the amount you weighed. VWG is another ingredient that can be problematic, in this case just delete 50-grams of flour from your dough. Now scale 100-grams of flour and place it into container that can be lidded, scale twice the amount of VWG that you need to add and place it into the flour, apply the lid and shake well to get a uniform mixture, now all you need to do is to divide the flour/VWG mixture in half and you have added the correct amount of VWG and also replenished the 50-grams of flour that you deleted from the formula. Keep the other half of the flour/VWG mixture for the next time you make pizza.

Tom Lehmann/The Dough Doctor

6258

### **Dough Clinic / Re: so far so .. well**

J:

Were you using the dough formula with sugar? As dark as the crust appears to be it looks like you have sugar in it. When using that dough formula in a deck oven the sugar becomes an optional ingredient as the deck normally provides all the color one might want.

Tom Lehmann/The Dough Doctor

6257

### **Dough Clinic / Re: so far so .. well**

JR;

To make a 90-pound dough you would use 50 to 55-pounds of flour depending upon the dough formulation. Adding 1.5-cups of sugar to the dough formulation would be equal to about 10.5-ounces of sugar or 1.3% based on 50-pounds of flour. This amount of sugar will not significantly impact the finished crust flavor, especially when presented as a completed pizza, but it will impact the browning of the dough/crust during baking. It will brown faster, potentially resulting in a shorter baking time which can mean a slightly less crispy crust, or one that will not hold its crisp quite as long as a crust made without sugar in its formulation.

Tom Lehmann/The Dough Doctor  
6256

### [\*\*Newbie Topics / Re: Charring the Base\*\*](#)

Gnatto;  
A couple of things come to mind that might cause the problem you're experiencing (no/insufficient color to the bottom of the pizza). 1) is the oven burner shutting off because the oven is up to temperature? This would allow the pizza to suck a good deal of heat from the stone, cooling it to the point where it is not hot enough to properly bake/color the bottom of the pizza. If the burner stays on it would be putting heat into the stone continually resulting in more bottom heat and a better bottom bake.

2) A thicker stone will hold more latent heat to better bake the bottom of the pizza. This is how the wood fired pizza ovens work. They have very thick stones for the hearth and they store a lot of heat, so when a pizza is placed onto the hearth it bakes fast and thoroughly without any appreciable cooling of the hearth surface.

Tom Lehmann/The Dough Doctor  
6255

### [\*\*Prep Equipment / Re: Flat bottom ladles ?\*\*](#)

Jeep;  
Don't rock the Spoodle, just hold it flat. :)  
I've got a set from American Metalcraft covering just about any weight sauce I might want to use. They're cheap and work great.

Tom Lehmann/The Dough Doctor  
6254

### [\*\*Newbie Topics / Re: Charring the Base\*\*](#)

I'm guessing that the stone is getting heated during the preheating of the oven, but then when the pizza is placed on the stone the latent heat is drawn out of the stone and with the positioning of the burner/flame sufficient heat cannot be put into the stone to maintain a temperature which will induce browning of the bottom crust. I would also bet that the heat is just going right up the back wall of the oven. Think of it like this: If a frying pan was placed with only a small portion of it over the heat, how would that pan bake/fry? With that burner position, I'm not sure what would work except to try baking on a screen and putting some sugar or dairy whey in the dough formula to assist in color development.

Tom Lehmann/The Dough Doctor  
6253

### [\*\*Dough Clinic / Re: not really sure which direction to go.\*\*](#)

Jordan;  
For a wood fired oven dough there is a lot of sugar being added. This might explain the burning of the edges. The salt is also extremely high at 4.4%, I would be much happier to see it down at 2% or a little on either side of that. Your gum line issue

has been discussed in a number of my published articles in PMQ Magazine (In Lehmann's Terms), but for now, I would say that it is resulting from 1)The sugar is so high so as to not allow the pizza to be baked sufficiently without charring (think underbaked pizza). 2) The pizza skin is being stretched so thin that the heat from the deck is passing right through the dough and being dissipated as steam when it is absorbed by the sauce and toppings on the pie which are essentially 90% water. When this happens the dough never gets hot enough to fully bake. To test this to see if it is the cause of the gum line, prepare a pizza skin in the normal manner, then cover with a sheet of plastic and allow the skin to proof at room temperature for 30-minutes, then dress and bake in the normal manner. If the gum line disappears you will have good direction as to what is causing it. If it doesn't, make adjustments to the salt level and delete the sugar and bake again to see if the gum line disappears. Since there are so many different things responsible for the formation of a gum line we may need to do a little more experimenting to find the root cause. Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
6252

### [\*\*Dough Clinic / Re: What flour for New Yorker Pizza?\*\*](#)

PB;  
The traditional flour used in N.Y. is General Mills All Trumps flour. This flour has approximately 13.5% protein or a little more. For home baking, any good, high protein flour should work well.

Tom Lehmann/The Dough Doctor  
6251

### [\*\*Dough Clinic / Re: What are the differences between reddi-sponge and pz44?\*\*](#)

Tony;  
For all practical purposes there is not difference. Reddi-Sponge is the oldest of the two products (it has been around forever) and it is marketed to the bread making industry to reduce dough mixing time and give a dough with softer, more relaxed machining properties, these properties are critical in high speed bread production. PZ-44, on the other hand, is marketed primarily to the pizza industry to achieve the very same effects, only in this case we say that it reduces dough memory characteristics (also known as "snap-back") and this is the main reason for using it. Yes, it does still reduce the dough mixing time but in pizza production the doughs are significantly undermixed so reduction of mixing time is not as important as it is in bread production.

Tom Lehmann/The Dough Doctor  
6250

### [\*\*New York Style / Re: Spider Web Effect In Rim of Crust - How To Achieve?\*\*](#)

PE101:  
I think what you are making reference to is called "open crumb structure" aka "open grain". The best way that I know to get this characteristic is through a combination of high dough absorption and high baking temperature when combined with sufficient fermentation time (usually 2 to 3-days in the fridge).

Tom Lehmann/The Dough Doctor  
6249

### [\*\*Dough Clinic / Re: What are the differences between reddi-sponge and pz44?\*\*](#)

Tony;

Your dough formula doesn't show any fat, and since fat is a tenderizer in baked products it will contribute to a more tender, less chewy eating characteristic. You can graphically see this if you compare the eating characteristics of regular and fat free tortillas. The fat free tortillas eat like a piece of shoe leather. Also, you really are not giving your dough enough fermentation time to develop a tender eating characteristic. I think your crust would be a lot more tended eating if you allowed the dough to ferment in the fridge for 24 to 48-hours before using it. Lastly, I think your flour is WAAYY to strong for what you are doing with it. I suggest changing over to a flour with a lower protein content, something in the 11% range should work better than your present 13%+ protein content flour. Lastly, if you use a generous amount of oil in the pan rather than shortening you will achieve a fried bottom on your pizzas which significantly improves the crispiness, but does not address the excessively chewy issue. If you use oil as opposed to shortening/plastic fat in the pan you should open the dough up to a size slightly larger than your pan size on your bench top, then carefully transfer the formed pizza skin to the oiled pan for final proofing.

P.S. If you opt to go with an overnight or longer fermentation time in the fridge, you will need to delete the Reddi-Sponge from the dough formula.

Tom Lehmann/The Dough Doctor

6248

### [\*\*Dough Clinic / Re: Stuck dough\*\*](#)

DJ:

Is your aluminum tray well seasoned? If not seasoned, or one of the non-stick, dark colored finishes there is a high probability that the pizza will stick to the tray during baking unless the tray has been oiled.

Tom Lehmann/The Dough Doctor

6247

### [\*\*New Forum Members / Re: Pre mix for dough\*\*](#)

Kiran;

Based on the formula you provided (600-grams/0.600Ltrs, not 600 Ltrs of water) for each Kg. of flour weight to get 65-grams of PREMIX I think you will need something that looks like this:

Salt: 20-grams

Instant Dry Yeast: 7-grams

Baking Powder: 25-grams

Milk Powder: 4-grams

DATEM (improver): 4-grams

I think this will come pretty close to replicating the PREMIX based on the function of ingredients.

Tom Lehmann/The Dough Doctor

6246

### [\*\*New Forum Members / Re: Pre mix for dough\*\*](#)

H;

To put sugar into the mix I would suggest reformulating as follows:

Salt: 15-grams

IDY: 7-grams

Baking Powder: 15-grams

Milk Powder: 4-grams

DATEM: 3-grams

Sugar: 11-grams

I wouldn't be too concerned about the dry milk level as it is the least functional ingredient in this formulation. If you wanted to, you could easily delete the milk powder and increase the sugar by 4-grams.

Tom Lehmann/The Dough Doctor  
6245

**New York Style / Re: Dough turning into large flat blob**

In your Method #1 it appears that all of the water is at 100F. In most applications this results in a finished dough temperature that is way too hot to allow for decent dough management. It might work OK for an emergency dough that will be used in a very short time, but if the dough will be managed through the fridge, it probably won't cool off sufficiently fast to retard the yeast activity (this can be worsened if you put the dough into a covered container from the "get go"). This results in a dough that is what we refer to as "blown" or over fermented. The resulting dough can be so weakened by the excessive fermentation that it cannot rise, or rises insufficiently during baking, making for a flat pizza. To see if this might be your problem, try making a dough using 65 or 70F water, and leaving the dough uncovered for about 90-minutes in the fridge, then covering it to protect it from drying. If this is successful in preventing the dough from blowing, you can experiment with different finished dough temperatures to see what works best for your specific application.

Tom Lehmann/The Dough Doctor  
6244

**Dough Clinic / Re: How do I make dough this elastic?**

M;  
Without seeing your dough formula/recipe and dough management procedure I cannot say for sure what the problem might be, but fermentation is a big key to it. Once you have your dough developed just until it has a smooth skin on it, form it into a ball and wipe it with oil then place it into a plastic bag (not a Zip-Lok bag). A bread bag works great. Twist the open end of the bag to form a pony tail, then tuck the pony tail under the bag as you place it into the fridge. This allows for some expansion without tearing the bag. After 24 to 48-hours in the fridge remove the dough ball and allow it to temper AT room temperature for about 2-hours, then turn the dough ball out of the bag and with MINIMAL handling, drop the dough ball into mixture of flour and cornmeal (I like to use a 50/50 blend) now you are ready to begin opening the dough as shown in the video. You might need to make some adjustments to the refrigerated fermentation time and the tempering time depending upon your specific dough formulation, but this should get you started.

Tom Lehmann/The Dough Doctor  
6243

**Stones/tiles/steel, Pans & Accessories / Re: how good are non stick pizza pans?**

P.S.  
There are some absolutely great nonstick pans available, but not at discount house prices. The best (most durable and nonstick) is made by Lloyd Pans <[www.lloydpan.com](http://www.lloydpan.com)>. With these pans you just lightly oil the pan the first time and then just wipe them out with a clean towel. It's still a good idea though to very lightly oil the pans again if you wash them/it. Oil is not such a bad thing in a pan. It improves the heat transfer from the pan to the dough, and it can contribute to

something of a fried crust characteristic (think P.H. deep-dish) which is crispier than a baked crust, which is what you get in a dry pan. The biggest advantage that I see to a nonstick pan is that any toppings that might spill over will not stick to the pan, making clean up much easier and faster.

Tom Lehmann/The Dough Doctor  
6242

**New York Style / Re: Brushing crust and bottom with EVOO?**

C;  
Since it was baked on a screen, I'm guessing that the oil might have been from the dough ball itself. Pressed dough balls are literally dripping in oil, and I've seen even hand tossed dough balls dripping in oil. I would seriously doubt that anyone would go to the trouble, at the pizzeria level to apply oil to the bottom of the crust. To the inside bottom of the crust yes, since when used this way it helps to reduce moisture migration from the toppings into the crust (especially helpful during DELCO conditions). Some pizzerias do brush the outer edge/rim of the baked pizza with olive oil to improve the appearance and flavor of the crust (especially the edge).

Did you happen to get a look at the screens the pizzas were baked on? If they were extremely dark/black in color and appeared to be carboned up, there is a possibility that they were oiling the screens to compensate for gunked up screens, which do not exhibit the best release properties, some of that oil would be transferred to the bottom of the pizza skin as it is placed onto the screen.

Tom Lehmann/The Dough Doctor  
6241

**New York Style / Re: Brushing crust and bottom with EVOO?**

Peter;  
If the pizza skin is opened on an oiled table and baked directly on the hearth two things will happen. One is lots of smoke and the second is that with time (not very much of it either) the deck will become very well seasoned and literally carboned over effectively reducing its heat transfer properties, then it's time to break out the can of Carbon-Off, a few sheets of coarse sand paper, and a good deck scraper to undo the damage. Like you, I learned the hard way.

Tom Lehmann/The Dough Doctor  
6240

**New York Style / Re: Brushing crust and bottom with EVOO?**

Peter;  
I forgot to add, that this is most likely the reason why the pizzas are baked on a screen as these issues would be mitigated or atleast greatly reduced in severity. When I did the work many years ago we were trying to achieve a fried characteristic on a hearth baked pizza.

Tom Lehmann/TDD  
6239

**Dough Clinic / Re: How do I make dough this elastic?**

M;  
With reference to gluten development at the time of mixing, in our annual pizza course we use a planetary type of mixer to develop the dough just to the point of having a smooth skin. At this point in of development it is impossible to stretch the dough to form much of a gluten film (window pane), however, by the next morning I have a group of 4 or 5 students gather around in a circle and we stretch the dough

using the backs of our hands to form a dough skin that any strudel maker would be proud of. The resulting gluten film is thin enough to clearly see skin details of your hands through it. This is the result of what is called biochemical gluten development. This is also the way dough was made prior to Mr. Hobart's creative invention. Back in the early 80's I visited a bakery in Romania that had a total of 60 dough mixing stations, each mixing station was a large bowl into which flour, water, yeast, salt, a little sugar and some oil were added. The dough was then manually stirred by two men with slightly flattened mixing sticks (think baseball bat with a flattened end something like an oar.) The dough was mixed until it looked like wet oatmeal, and then covered and allowed to ferment for several hours, it was then transferred to a work table where it was given a couple folds, cut into pieces (never mind scaling), placed into beehive baskets, proofed, turned out of the baskets onto sheet pans and transferred to the oven for baking.

As for high gluten flour, technically it doesn't exist as was correctly indicated. Flour contains seven different proteins including glutenin, and gliadin which, when agitated in the presence of water combine together to make the adhesive mass that we call "gluten". As a general rule, the higher the protein content of a flour, the more gluten can be formed from it, but this isn't always the case, and to add confusion to this we then encounter differences in gluten properties which basically put, means that some gluten is strong, and some is weak, some is tight, some is more elastic, and this has been the subject of VERY EXTENSIVE research world wide for over 35-years now, and we still don't know why these differences exist or how to test for them aside from an actual mixing or bake test. Flour is not so easy to fully understand, it is a very complex ingredient.

Tom Lehmann/The Dough Doctor

6238

**[Dough Clinic / Re: Need help planning dough handling for company picnic](#)**

Brad;

I think you might be over complicating things a bit. How about something like this: Prepare, bag, refrigerate your dough in your normal manner, Then, about 2-hours before you transport the dough balls place them into a freezer to super cool them, even if they start to freeze it really won't hurt them as you will be using them soon. Do not re-ball the dough when you get to the site, instead, plan to have the dough balls out of the insulated box about 90-minutes before you plan to begin opening the dough balls into pizza skins. Be sure to oil the dough balls before you drop them into the bags so they will just drop out when ready to use. Drop the dough ball out of the bag into a container of 50% flour and 50% cornmeal, and begin opening the dough ball into a pizza skin. TIP: Drop and flour several dough balls before you begin opening them into skins as this will speed things up quite a bit. Those bags should work well. After dropping the oiled dough ball into the bag, twist the open end to close it, forming a pony tail, then tuck the pony tail under the dough ball as you place it into the cooler, this will allow for some expansion without tearing the bag(s). As you transfer the bags to the freezer, close each bag using a twist tie. Sounds like a fun day!

If you will send me your mailing address today or tomorrow I will be glad to send you a handful of bread bags and twist ties at no cost.

Tom Lehmann/The Dough Doctor

6237

**[Dough Clinic / Re: Convolved Mess](#)**

Fran;

Here is where I would begin: Add the water to the mixing bowl (70F) into that

water add the salt and sugar (no need to mix together) then add the flour followed by the IDY (it does NOT need to be prehydrated), mix the dough for 2-minutes at low speed, add the oil, then mix for 1 more minute at low speed, followed by about 8-minutes at medium speed. If your mixer won't handle the dough at medium speed mix for 15-minutes at low speed, then manage your dough in your normal manner. I'd suggest leaving the dough warm at room temperature for about 90-minutes before you use it on the following day(s). Note: Dough that is formed totally with a sheeter will have all of the unique raised edge characteristics of a poker chip. To get a more pronounced edge, use the sheeter to only open the dough ball up to about 2/3 of the desired finished diameter, then finish opening the dough by hand to the full diameter. Let us know how this works for you.

P.S. Anything that you can share regarding your formula amounts will also help.  
Tom Lehmann/The Dough Doctor  
6236

### **Dough Clinic / Re: inconsistant**

Lets take a look at a couple of things, Why would the crust be tough and rubbery?  
Ans: Either too much protein in the flour you are using or insufficient fermentation for the type of flour that you're using. For your process I would say that a flour with not more than 12% protein content should be sufficient. You might even be able to drop down into the 11% protein range. Examples of this type of flour are; 12% protein: General Mills Washburn's, Full Strength or Superlative. 11% protein: H&R Bread & Pizza, King Wheat, Doughbuilder, and GM-44. By using one of these lower protein content flours your should be able to use your short fermentation time without creating a tough, chewy finished crust. As for the failure of the crust to rise during baking, this can be partially related to an overly strong dough that resists expansion/oven spring during baking, again, going to a lower protein flour should help. The fact that you are blending the salt and sugar together might also impair the yeasts ability to function in a normal manner, so I would suggest adding the yeast separately. If it is IDY or compressed yeast it does NOT need to be suspended in water before addition. For your operation I think a better dough management process would be to mix the dough to a fixed time (say 15-minutes in low speed) as it is not recommended that you mix a dough to temperature as you will never know what the level of dough development is. Adjust the water temperature to give you the finished dough temperature you are targeting (\*I'm thinking 70F water should be about right), then after scaling and balling, allow the dough balls to set out at room temperature for 30-minutes before taking them to the cooler. For a dough of your size, it should not take more than about 15 to 20-minutes to completely scale and ball. For a one day dough such as you are using times and temperatures are more critical than they are with a dough that will reside in the cooler for 24-hours or more.

Tom Lehmann/The Dough Doctor  
6235

### **Dough Clinic / Re: Need help planning dough handling for company picnic**

Brad;

The reason for running the dough balls through the freezer for only 2-hours before transporting them is to super cool them, not to thoroughly freeze them. I've done this many times with good success in places where we transport refrigerated dough balls. The dough balls will begin warming as soon as you remove them from the freezer. I do not recommend leaving the dough balls in the freezer any longer than 2-hours at the most unless you want to have frozen dough balls. The type of freezer that works well in this application is a chest freezer, if you have a reach in

or walk in freezer, which operates much more efficiently, the time in the freezer will only be about an hour. Remember, we are only super cooling the dough balls, they might be slightly frozen on the outer edge but not more than that.

With the suggested dough management procedure you will not need to re ball the dough.

Tom Lehmann/The Dough Doctor  
6234

### [\*\*Dough Clinic / Re: Help with Pizza dough\*\*](#)

M;  
Can you provide us with the formula/recipe and procedure your wife used and also tell us something about the flour she used.

Tom Lehmann/The Dough Doctor  
6233

### [\*\*Neapolitan Style / Re: Is there a risk when using tiny amounts of IDY?\*\*](#)

All;

Just to clarify a few things, IDY is best added directly to the flour, but when it does need to be prehydrated it should be prehydrated in a small quantity of water at 95F (manufacturer's recommendations) we confirmed this using instrumentation in our laboratory. If the temperature of the water is as little as 5F on either side of the 95F recommendation some gassing power of the yeast will be lost. Cold water is a real bummer with IDY since it will extract glutathione from the yeast for a double whammy, loss of yeast activity and a softer dough (glutathione is an amino acid contained within the yeast cell that when extracted has the same effect upon the dough as L-cysteine (think PZ-44). This is actually sold as "dead yeast" where it is used as a dough relaxer to reduce the elasticity of the dough. When the dough is only allowed to cold ferment you can go too low on the yeast level, this is due to the fact that all of the yeast is typically not working for you in a cold ferment situation unless you allow the dough to fully warm after removal from the cooler, which is counter productive in a pizzeria where you need to have the dough last for several hours after it is removed from the cooler. When you make your dough as "fresh" dough it is not refrigerates, hence all of the yeast is working to leaven the dough so there is less chance of developing the "dreaded gum line". What is a gum line? A gum line is defined as a gummy, somewhat under baked portion of the dough located directly under the sauce. It can range from 1/16 to 1/8-inch thick, and it looks something like a layer of pasta directly under the sauce. There are two ways to ascertain if you have a gum line. 1) Cut a slice from the pie and tear it down the middle from heel (rim/edge) to the point observing the way the dough cleaves as you pull it apart. If the dough stretches and pulls rather than tearing cleanly, congratulations, you have a gum line. The way I like to use is to turn a slice upside down and carefully cut it using a sharp knife (Exacto Knife or a box cutter) and light strokes to cut through the bottom crust. Once you have cut the slice in half (heel to point) pick up one half and carefully look at the area just under the sauce. A paper thin layer of discolored dough (about the thickness of a business card) is perfectly normal, if it is any thicker you are looking at a gum line. Why do we call it the "dreaded gum line? Because there are so many different things that can cause it (I've written several good articles on the topic in PMQ/In Lehmann's Terms) and until you find the right cause, you can't get rid of it. Why all the fuss? A gum line detracts from the eating characteristics of the pizza, and in a DELCO situation it contributes to unacceptably tough, chewy eating characteristics that won't go away. If you are going to eat the pizza while still fresh and hot out of the oven you might not even notice the gum line, thinking it is just a tougher, more chewy pizza.

There are a whole raft of things that can cause the gum line development and these are all discussed in my articles.

Tom Lehmann/The Dough Doctor  
6232

### **Dough Clinic / Re: inconsistant**

PMP;

The yeast should never be allowed to come into direct contact with the salt, and when you have combined the salt and sugar, even in a slurry, you are leaving the door open to inconsistent yeast performance. Compressed yeast can be added directly to the flour without the need to suspend it first. I would still go to a fixed mixing time, if for no other reason, for consistency. Adjust the water temperature if necessary to achieve your targeted finished dough temperature. I would also suggest mixing the dough for about 2-minutes, or just until you don't see anymore dry flour in the bottom of the bowl and then add the oil and continue mixing as normal. This will give you a much more consistently hydrated dough. As for cutting, balling, and getting the dough into the cooler, you should strive to accomplish this within 20-minutes of completion of mixing. Consistency in times and temperatures will make your dough management much more effective.

Remember that old adage regarding quality: GIGO, or in this case, inconsistency in, inconsistency out. I wrote an article in my In Lehmann's Terms column in PMQ Magazine on Effective Dough Management that addresses all the steps needed to be taken to develop an effective dough management program leading to consistent/predictable dough performance and improved consistency with regard to finished pizza quality attributes. If you would like some help on this, please feel free to give me a call at 800-633-5137 (ext. 165) and I'll be glad to discuss it with you.

Tom Lehmann/The Dough Doctor  
6231

### **Dough Clinic / Re: How do I make dough this elastic?**

M;

Did I read that you "reshape" your dough balls during the refrigerated storage period? If you subject the dough balls to let's say 24-hours cold fermentation, and then reshape it you just tighten the dough back up again, so it will need even more fermentation time to become soft and elastic. This is what we refer to as a "bucky" dough condition. In your experiments, you might want to look at corralling your dough balls in individual plastic bread bags. Oil each dough ball and place into individual bread bags, twist the open end to close, forming a pony tail. Tuck the pony tail under the dough ball as you place it in the fridge. To use the dough, remove from fridge and allow to temper at room temperature for about 1.5 to 2-hours, then turn the dough ball out of the bag into a bowl of dusting flour and immediately begin opening the dough into a pizza skin. Just a thought.

Tom Lehmann/The Dough Doctor  
6230

### **Off-Topic Foods / Re: Garden 2013**

Spring time has finally arrived here in Manhattan, Kansas. Hard to think that just 3-weeks ago we had nearly 2-inches of snow on the ground! Due to the late spring this year I grew my plants in a protected area (garage) and moved them outside as soon as the temperature got above freezing. Basil will be ready for the first harvest this weekend (we make LOTS of pesto), tomato plants are growing well. We have over a dozen different varieties of tomatoes this year, some of them are heirloom

varieties with a record of developing great flavor in our climate. Some of the pepper plants (nothing special, just bells, sweet banana, Peter, and Jalapeno) are budding already. Oregano is doing quite well and we have already been picking leaves from it. Apple and pear trees are in great shape this year, but that last snow (frost) looks like it got the peach blossoms so I doubt that we will get any peaches this year.

Tom Lehmann/The Dough Doctor  
6229

### [\*\*Off-Topic Foods / Re: Stuffed Peppers\*\*](#)

We love stuffed peppers! For years we have tried to grow our own bell peppers for stuffing but we have never had any real success at it since the largest we have been able to get are no larger than a hen's egg. This year we started plants from seed and grew them in the garage until they were well established and then planted them into large barrel planters along our drive way with a full southern exposure to see if we can get a crop this year. If they fail again, I guess we just were not meant to grow our own bell peppers. Other pepper varieties do excellent in those planters so this will be our last shot at growing bells for us.

Tom Lehmann/The Dough Doctor  
6228

### [\*\*Dough Clinic / Re: How do I make dough this elastic?\*\*](#)

Peter;

You are absolutely correct in everything you state, however, without knowing how long the dough was allowed to further ferment after the re-balling took place, there is always a possibility that the dough might not be allowed to rest for a sufficient time for the dough to relax after the re-balling process, hence my questioning. It is also good to note that a dough that has been over fermented, often times can be brought back to an acceptable level of performance by re-balling it and allowing it to rest until it can be easily opened. This is also an old trick for working with frozen dough that even in its prime is not the best dough, and in a heart beat can go beyond its optimum shelf life/performance, and reworking it saves the day.

As for using a re-balling procedure in a commercial pizzeria setting, I think it would be extremely difficult to keep track of the time the dough was re-balled and kept separated from dough that is ready to use. Add to this the scarcity of refrigerated storage space, and you can see the dilemma that re-balling the dough presents. Aside from this, most pizzerias are in something of a struggle just to have enough dough ready to use throughout the course of the day, and in many cases, the store owner is also chief cook and bottle washer too (help in a pizzeria is hard to find), so in many shops they are short handed to say the least and they are always looking for labor saving steps that can be implemented in their store operation. It's a whole different dimension to pizza making when we are making a minimum of 150 pizzas (minimum) a day, plus doing all of the other things demanded in the shop. Been there, done that, just like Big Dave (Ostrander) that's why we're consultants today and have little if any desire to get back into owning our own shop again, but find great rewards in helping others fulfill their goals and dreams.

Tom Lehmann/The Dough Doctor  
6227

### [\*\*General Pizza Making / Re: Techniques for ensuring optimum bake time\*\*](#)

Pete;

I like to check the bottom, then the top edge, and the cheese color along with the

toppings. Each of us has a crust color or baked characteristic that we are looking for so you really can't apply any specifics, but like Walter said, it soon becomes pretty intuitive and a good oven tender can pretty well nail it "spot on" every time. Then you have the shops using the most popular type of ovens, the air impingement oven. With these ovens you place the dresses dough skin on one end of the conveyor, and a fully baked pizza emerges from the other end. Since the human element has been removed these ovens depend upon consistency to provide a decent bake, by this I mean that you must have a consistent product going into the oven to have a consistent pizza coming out of it. Dough temperature is critical, as is the temperature of the toppings, dough thickness also plays into the equation, and it goes without saying that all like pizzas must be baked on a like platform (pan, screen, etc.). These ovens are set up to bake pizzas for a specific shop, once set up they pretty well run themselves, as long as the operator continually provides a uniform and consistent product to the oven. If that doesn't happen, things go to heck in a hand basket pretty fast.

Tom Lehmann/The Dough Doctor  
6226

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Best Deep Dish Pizza Pan Material?\*\*](#)

Arnol;

When it comes to making Chicago style deep-dish pizza one must consider several things when selecting a pan. Steel pans work well, but they must be seasoned to give good release properties as well as improved baking properties. While this next one won't impact you at home, it will have an impact on a store's pan selection. If the pizza is sent out to the table in the pan it is baked in, the food safety laws will dictate that the pan be washed before it can be reused. Steel pans are prone to rusting, but the biggest problem is with the seasoning, if the pans are soaked in hot soapy water for any significant length of time, the seasoning will begin to peel off like a bad sunburn, the consequences of which are to raise the concern of the health department as they ponder where the material went, did it go with the pizza? Did the customer eat it? Not good. Hardcoat, anodized aluminum pans (good ones are made from heavy weight aluminum stock). The dark color of these pans will not lift off even if soaked for an extended time in hot soapy water. The finish on some manufacturers pans is very durable (can't be scratched or abraded with the edge of a coin), but just like a seasoned steel pan, the anodized coating can be damaged by cutting the pizza in the pan. This is why we commonly see the pizza removed from the pan for cutting and then placed back into the pan for serving. Pizza Hut used to do this at one time with their deep-dish pizzas, maybe they still do, but can't tell you the last time I was at a P.H., but the time would be measured in years. The better pans/coatings are also resistant to scratching when the pizza is dug/guided out of the pan using a cake decorating spatula.

Tom Lehmann/The Dough Doctor  
6225

### [\*\*Pizzeria & Restaurant Reviews / Re: How to ensure the pizza you order is top quality?\*\*](#)

Pete;

Allow me to weigh in on this one. We have done a lot of auditing for companies big and small over the years, including some of the bigger pizza chains. When we audit a store we NEVER announce who we are, or why we are there. Instead, we just order prescribed pizza and proceed to evaluate it, along with a shopping list of other store attributes. The reason for this is because a store's product is only as

good as the worst product it sends out to the customer. A great store's or chains reputation isn't built on only one pizza, but instead it is built upon the sum of all of their pizzas. I like to rank stores/chains as follows: Consistently good; Consistently bad; Inconsistently good and bad. If I've got to beg or ask for a decent pizza from a store, there is something inherently wrong there. Just my opinion.

Tom Lehmann/The Dough Doctor  
6224

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Best Deep Dish Pizza Pan Material?\*\*](#)

Arnol;  
Dark colored, heavy weight aluminum pans will provide you with MANY years of great service. Cheap aluminum pans are just that, cheap. They will be easily damaged and the coating is not very durable either. Many of the big box chains have gone to the Lloyd Pans product due to their durability. These box stores probably cycle their pans more times in a week then most of us would do so in a full year. Added to that, the person handling the pans is only concerned about getting his/her next pay check, so the pans are typically handled with tender loving sledge hammer care. I've got one of those cast iron pizza pans (deepsided cast iron frying pan) and it works great, it has been in the family for over 75-years now and it still looks as good as it ever did, but it does take a little longer to heat up.

Rusting??? The only way it will rust is if you wash it, and in my house that is a short cut to a world of pain. Cast iron gets wiped out with a clean paper towel, but it doesn't ever go near water.

Tom Lehmann/The Dough Doctor  
6223

### [\*\*General Pizza Making / Re: An Idea\*\*](#)

My hat's in the ring too!  
Tom Lehmann/The Dough Doctor  
6222

### [\*\*Dough Clinic / Re: Convolved Mess\*\*](#)

Fran;  
Please excuse me for not getting back to you sooner. I have no excuse except to say that your post fell off of my radar. In reviewing your dough formula, converting it into bakers percent it looks like this:

Flour 100% Water 51.6%

Salt 0.4%

Sugar 0.8%

Yeast 3.22%

Oil 1.41%

Comments: The salt level is much too low and that is severely impacting the flavor of the finished crust. I would suggest increasing it to a minimum of 1.75% (4.34-ounces/Call it 4.5-ounces and you'll be good)

The yeast level is quite high at 3.22% (hopefully this is compressed yeast). If my assumption is correct that you are using compressed yeast I would recommend reducing the yeast level to not more than 1.5% (3.72-ounces/Round it to 3.75-ounces). My personal preference is to have the yeast level at 1% compressed yeast (2.48-ounces/Call it 2.5-ounces). As for dough management, here is a very efficient dough management procedure for pizzerias:

- 1) Add water (75F) to the mixing bowl
- 2) Add salt and sugar to the water (no need to stir)

- 3) Add flour, and yeast (in that order)
- 4) Mix for about 2-minutes or until you don't see any dry flour in the bowl
- 5) Add the oil and mix 1-minute at low speed, then complete mixing the dough in your normal manner.
- 6) Finished dough temperature should be between 80 and 85F.
- 7) Take dough directly from the mixer to the bench for immediate scaling and balling.
- 8) Place the dough balls into plastic dough boxes, wipe the top of the dough balls with salad oil and immediately take to the cooler.
- 9) Cross stack the dough boxes in the cooler for 2.5-hours, then down stack and nest or cover the dough boxes to prevent the dough from drying.
- 10) The dough will be ready to use after about 18-hours and will remain good in the cooler for up to 72-hours.
- 11) To use the dough, remove about a 3-hour supply of dough balls from the cooler and allow to temper AT room temperature for 2-hours, then begin using the dough balls to make pizza skins as needed. The dough balls will be fine at room temperature for up to 3-hours AFTER you begin opening them into pizza skins.
- 12) Any unused dough balls can be opened into skins and placed onto screens and placed in a wire tree rack in the cooler for use later in the day. When placed in the cooler, allow the skins to cool uncovered for 30 to 45-minutes, then cover the rack with a plastic bag to prevent drying.
- 13) To use the preopened skins, remove from the cooler and allow to temper at room temperature for 30-minutes, then restretch to size, dress and bake in your normal manner. If you bake on a screen, NEVER EVER dress the preopened skin without first removing it from the screen, failure to do this will result in the dough locking into the screen openings, making removal from the screen impossible. You may need to experiment a little with your tempering times to find what works best in YOUR shop, but this should get you pretty close. Try this and let me know if it gives you an improvement, we can always make further adjustments to fine tune the formula and/or dough management procedure.

Tom Lehmann/The Dough Doctor  
6221

### **General Pizza Making / Re: Bulk fermentation and kneading?**

M;

In bulk fermentation the dough can ferment more efficiently due to heat of metabolism. As the yeast metabolizes nutrient it generates heat at about 1F per hour, this heating of the dough is conducive to faster, more efficient fermentation. When the dough is fermented in smaller size balls in the cooler/fridge, the smaller mass of the dough ball allows for faster, more efficient cooling of the dough. This is beneficial if the intent is to have the dough last for several days as opposed to just a single day as can be the case in bulk fermentation. There are also different flavors developed due to the differences in acids produced during warm (bulk) fermentation and cold (dough balls in the fridge) fermentation. In all cases, the fermentation period also sets the stage for enzymes and bacteria contained within the yeast to begin doing their work. Protease enzymes work on the flour proteins to give a softer, more extensible dough after fermentation; amylase enzymes convert a portion of the starch in the flour to sugars that can be metabolized by the yeast and the bacteria (*Lactobacillus*) is responsible for developing the unique flavors that we associate with fermented bread flavor. Additionally, the effects of the protease enzyme, and acids formed during fermentation work to reduce/weaken the flour proteins for improved dough extensibility and flavor. A major component of flavor as we know it is a result of protein denaturation during the baking process. The

proteins that are exposed to the protease and acids are more readily denatured during baking, and hence impact the finished flavor of the baked crust. These same effects take place when a cold fermentation process is used, but they take place at a much slower rate allowing the dough to be used over a several day period of time. This is just a very brief sketch of the differences in fermentation, there have been whole books written on the topic that you can check out from a local library if you really want to learn the nitty-gritty of yeast fermentation.

Tom Lehmann/The Dough Doctor  
6220

### [\*\*Pizza Ovens / Re: Gas vs Electric Conveyor oven\*\*](#)

Ajay;

In commercial conveyor (air impingement) ovens gas is the most efficient way to go. It produces a crispier pizza with significantly less bake time and at a lower temperature too. As for the power failure issue, if you lose electric you are "dead in the water" with both types of ovens since electric motors are used to drive the conveyor in both oven types (gas and electric) so I think that will be a moot question.

If you are really concerned over potential power failures, a gas deck oven might be a better choice since they typically don't require any electrical supply, so as long as you have gas you would be good to go.

Tom Lehmann/The Dough Doctor  
6219

### [\*\*General Pizza Making / Re: Bulk fermentaion and kneading?\*\*](#)

Derrick;

My professional opinion is that once you achieve a certain level of flavor in a pizza crust it becomes almost impossible to distinguish subtle differences because of all the extraneous flavors associated with pizza from the sauce, cheese and toppings. This is not to say that one cannot distinguish differences between different fermentation processes, such as a sourdough process and a normal yeast fermentation process, but when consumed in context, the flavor of a pizza typically is not greatly affected by a crust that was made from a cold ferment process or a warm ferment process (assuming neither were significantly over or under fermented). Studies that we have done with pizza consumers showed that very seldom did they comment on the flavor of the crust but what they were mainly focusing on was the texture (crispiness or toughness) of the crust. Most home pizza bakers become "pizza connoisseurs" in their own right, so they are much more focused on the individual component flavors and textures of the finished pizza so for this reason we can see differences in flavor and or texture resulting from seemingly slight differences in dough fermentation. I guess what it might boil down to is are you a pizza lover or a pizza connoisseur?

Tom Lehmann/The Dough Doctor  
6218

### [\*\*Dough Clinic / Re: Crunchy pizza dough\*\*](#)

Jack;

What is your total flour weight?

Tom Lehmann/The Dough Doctor  
6217

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Best Deep Dish Pizza Pan Material?\*\*](#)

Arnol;

When used correctly, I don't see any difference in bake between steel, aluminum or cast iron. The operative word here is "correctly", as each type of material bakes a little differently you must make baking adjustments to accommodate those differences.

Tom Lehmann/The Dough Doctor  
6216

**Newbie Topics / Re: garlic oil**

PLEASE DO NOT hold any home made garlic oil over from one day to the next. Garlic can, and has been known to bring clostridium to the party as a guest (since clostridium is found in the soil is it any wonder why it is associated with garlic?). While we don't normally think of garlic and clostridium together, it is only because clostridium is an anaerobe (will only grow without oxygen) and the oil provides that environment, hence the clostridium can grow to produce the aflatoxin botulinum resulting in botulism poisoning. As an aflatoxin, it is not destroyed by heating...and it is very deadly. It will not grow all the time, but when it does, well..... As Dirty Harry so aptly put it "Do ya feel lucky?"

Tom Lehmann/The Dough Doctor  
6215

**Dough Clinic / Re: Transporting dough for off site pizzas**

P;  
I don't think you will have any problems with what you are proposing. I would not transport the dough in the trunk of my car, but instead, put them into the air conditioned passenger compartment where you can regulate the temperature. Then, an hour or less at whatever the warehouse temperature is shouldn't cause any significant issues.

Tom Lehmann/The Dough Doctor  
6214

**Dough Clinic / Re: My bottled yeast is dead. Why?**

ADY does have a limited shelf life. Retail bakeries and most pizzerias will discard it if it has been opened for more than just a few weeks (30-days max.) This is one reason for the development of PADY (protected active dry yeast) as it is designed to have a better shelf life after opening/exposing to air. PADY typically has a shelf life after opening of 4 to 6-months. IDY, on the other hand, works well for up to about 3 to 6-months after opening (the shelf life will depend greatly upon how you handle the yeast after opening). After that you're on your own. Several times I have tried to use IDY that was fresh opened and partially used and stored in the fridge for 11-months only to be disappointed by poor leavening power. As for proving (as the British like to call it) or hydrating and activating the yeast as we like to call it, all ADY must be prehydrated, while prehydration/activation is optional when IDY is used. Actually, I always use IDY and I always add it directly to the flour and then mix the dough as normal and I never experience any problems, but we don't all use the same mixing procedure at home so some see better performance if the IDY is prehydrated. Experimentation will show what works best for you.

BTW: Once you open a bottle of yeast you cannot exclude the air in the bottle, so oxidation takes place regardless. We have found that moisture is probably the biggest enemy to dried yeast performance/shelf life. The fridge is a good place to store it, and I would suggest that you remove it only long enough to weigh out the amount you want to use, then recap the bottle and immediately place it back into the fridge. Our main concern here is the condensation that can form on the yeast in

the bottle. It only takes a couple of seconds for it to form. The individual packages are a great way to go if you live in a humid climate, or don't use the yeast very fast. The individual packets are MAP (modified atmosphere packaging) flushed to exclude most of the oxygen, providing for extended unopened shelf life, and since they are essentially a single use packet, condensation is never a problem. I buy my IDY in 500-gram packages (bags). To use it I cut a small opening in the top of the bag and pour out only what I need (extra is tossed in the trash, never returned to the bag due to the possibility of condensation. As soon as the yeast is poured from the bag, I fold the bag back down upon itself to exclude as much air/headspace as possible, secure the bag with a rubber band, and store it in the fridge. I normally get about 6-months of acceptable home performance from the yeast when handled in this manner.

Tom Lehmann/The Dough Doctor  
6213

### **Dough Clinic / Re: Transporting dough for off site pizzas**

What was the finished/mixed dough temperature? If it was too high (above 80F) this might be the cause. Also, high absorption doughs do not hold up especially well as a dough ball as they tend to flow out excessively. A quick fix when using a higher dough absorption is to ball the dough, oil it, then drop it into a plastic bread bag (please not a Zip-Lok) I like to use bread bags. Twist the open end to form a pony tail and tuck it under the dough ball as you place it into the fridge. When you remove the dough ball from the fridge, allow it to temper at room temperature for an hour or more, then turn the dough ball out of the bag into a bowl of dusting flour, then proceed to open the dough ball into a pizza skin in your normal manner. This method pretty well negates any stickiness issues.

Tom Lehmann/The Dough Doctor  
6212

### **Neapolitan Style / Re: Soupy dough?!**

Derrick;

I don't mean to toss out the old and bring in the new, but for comparison, here is a dough management procedure that works well in a scenario as you have described. Possibly you might be able to glean something from it.

- 1) Mix do normally, but adjust the finished temperature to 80 to 85F.
- 2) Immediately scale and ball the dough.
- 3) Oil each dough ball and drop into a plastic bread bag. Twist open end to close and tuck under the dough ball as you place it into the fridge.
- 4) Dough will keep well in the fridge for at least two days.
- 5) After the dough has been in the fridge a minimum of 16-hours, they can be transported in an insulated chest with a few chemical ice packs.
- 6) The dough balls will be ready to use in about 2-hours after placing them into the insulated chest and they will remain good to use for up to 4-hours, possibly a little more.

Tip: If you need to have more than a 4-hour supply of dough on hand, pack in a few more ice packets, even a little dry ice can be used. Then, when you get to the point of sale, remove about a 3-hour supply of dough balls from the insulated chest and allow to begin tempering in another box without the ice packets. These dough balls will be ready to use in about 2-hours and will keep for an additional 3-hours in the nonrefrigerated box/chest. As you feel you need more dough balls transfer more from the cold chest to the nonrefrigerated chest for use a couple of hours later. Like I said, maybe you can glean something from this.

Tom Lehmann/The Dough Doctor

6211

**Neapolitan Style / Re: Soupy dough?!**

Derrick;

I've found that I get better results with bagged dough balls than with boxed dough balls in a scenario like this. It is also easier to keep the dough balls clean, and even if they do over ferment a little you don't have to worry about them all growing together in the box, plus when you consider the time needed to scrape a dough ball out of a dough box (granted it doesn't take long) the time needed to turn a dough ball out of a bread bag might be faster and certainly easier too. I use a plastic food tub (with a snap on lid) to put the dusting flour in and a clean 5-gallon plastic bucket for the used bags. Considering the cost of the dough boxes and the need to wash and sanitize them regularly as you will be required to do as you have taken them out of your immediate kitchen area, the plastic bags might also prove to be cheaper too. You can buy plastic bread bags by the case from anyone selling to the retain baking industry (your corner bakery). If this is something that you will do on a limited basis, you might be able to buy a "wicket" of bags from a local bakery. This might save you the expense of buying a whole case of the bags.

Tom Lehmann/The Dough Doctor  
6210

**Sauce Ingredients / Re: Can sauce be stored in mason jars?**

Cam;

If we are talking about just opening a #10 can of sauce or tomato product and pouring it into Mason jars, then capping and storing at room temperature I would say "NO WAY" as the probability of contamination is just too great. Now, if we are talking about sterilizing the jars and heating the sauce/tomato product to above 160F and then "canning" in an accepted manner, that's a whole different story and very doable.

Tom Lehmann/The Dough Doctor  
6209

**Dough Clinic / Re: Dough consistency problems, I need help.....**

G.R.;

Bouncer flour is only in the 11.5 to 12% protein content range so it just barely qualifies as a "high protein" flour (whatever that is). Since you are using a bagged flour there is a possibility that the flour has dried out to some extent, thus increasing the absorption characteristics of the flour. For starters, this is what I would do:

- 1) Increase the total dough absorption to 62% of the total flour weight.
- 2) Put the water (65F) in the mixing bowl first, then add the salt and sugar, followed by the flour and IDY.
- 3) Mix the dough for 2-minutes at low speed, then pour in the oil.
- 4) Switch the mixer speed to medium and continue mixing just until the dough takes on a smooth, satiny appearance. The window test is not needed for pizza doughs since they are undermixed.
- 5) Immediately after mixing, measure the dough temperature. You are looking for something in the 80 to 85F range.
- 6) Immediately after mixing, scale and ball the dough and place into dough boxes. Wipe the top of each dough ball with salad oil.
- 7) Place dough boxes as they are filled into the cooler and cross stack. Allow the boxes to remain cross stacked for 2.5-hours, then down stack and nest/cover the boxes.

- 8) The dough will be ready to use after 18-hours in the cooler, and will keep for up to 72-hours or more.
- 9) To use the dough, remove a quantity from the cooler and allow to temper AT room temperature for 2-hours before opening into pizza skins.
- 10) The dough balls will remain good to use for about 3-hours after you begin opening them.
- 11) Any unused dough balls that are at 3-hours (at room temperature) can be opened and placed onto a pizza screen and stored in the cooler on a wire tree rack for use later in the day.
- 12) To use the pre-opened dough balls just remove from the cooler and allow to temper AT room temperature for 30-minutes, then remove from the screen and touch up to desired diameter, then dress and bake in your normal manner.

NOTE: If you are not letting the dough temper at room temperature the dough balls will be difficult to impossible to open in a pizzeria setting.

Tom Lehmann/The Dough Doctor  
6208

### [\*\*Shop Talk / Re: Can a Flour's Absorption rate change?\*\*](#)

Kirk;

The absorption properties absolutely does change. There are three things responsible for this.

- 1) As the flour ages in the bag it can/will dry out thus requiring more water.
- 2) As the flour ages in the bag it oxidizes (becomes stronger) this can result in a tighter feeling dough that is thought to be too low in absorption. Note: #1 and #2 above can combine to give you a double whammy.
- 3) Every lot of flour is made from a different grain grist (blend). No two lots of flour are made from the same grist so it is always changing. This is why commissaries and bakeries always request Farinograph data to provide them with the absorption and mixing properties of the current lot of flour. Note: The Farinograph is a laboratory instrument used to measure absorption and mixing properties of wheat based flours.

While the flour mill does everything within its power to provide a similar product in the bag each and every time, there will be differences in the wheat used in making up the grist that cannot be accounted for. This is sometimes called crop year variation and it becomes more evident as we near the harvest time for the type of wheat used to make the flour. Winter wheat is harvested during June and July while higher protein content spring wheat is harvested in late August into September in the U.S. and Canada.

Tom Lehmann/The Dough Doctor  
6207

### [\*\*General Pizza Making / Re: large pizzas sticking to bench\*\*](#)

Yep, that's why we have prep peels. Lightly topped skins can be transferred to a peel if the dough isn't too soft or warm, but when you start loading it up with some weight things begin getting a little dicey. If I were you, I'd just begin dressing all of my skins on a wood prep peel that way all of your pizzas will still be made the same way regardless of topping selection.

Tom Lehmann/The Dough Doctor  
6206

### [\*\*Newbie Topics / Re: flour storage?\*\*](#)

I've got a chest freezer in my basement where I store my bags of flour in. Under these conditions the flour will easily last a full year and more. To use the cold flour

I weigh out what I need and allow it to warm up for about an hour before I begin making my dough. If I plan on making dough early in the morning I will weigh out the flour the night before, cover the bowl with a sheet of plastic and allow it to warm overnight then use it as needed on the following day. I've tried keeping it in a sealed container at room temperature but I've encountered problems with flour beetles too many times. Yes, flour suppliers will tell you that their flour can be stored in a cool, dry place for up to a year and that is true IF the flour is not compromised between the time it is milled/packaged and you buy it from the store shelf. There was a reason why Grandma used to sift all of her flour before using it. I just find the freezer approach more appetizing than the sifting approach, but that's just me.

Tom Lehmann/The Dough Doctor  
6205

#### [\*\*Resources / Re: Shipping Flour to Australia\*\*](#)

If you can get the domestic, organic, Australian hard white wheat milled with no additives (comes with the "organic" territory) that might also be a pretty good alternative for a lower cost Caputo-00 flour. The protein range is even similar. But I don't know anything about the availability of domestic organic flour there. Just a thought.

Tom Lehmann/The Dough Doctor  
6204

#### [\*\*Resources / Re: Shipping Flour to Australia\*\*](#)

And if I remember correctly, in Australia the flour is milled to a slightly greater/higher extraction rate due to the white wheat being milled, and this would account for the slightly higher ash content of Australian flours. To my way of thinking, ash content is more important in flour that will be used for white bread production than in pizza production (taking into account only the impact on crumb color). From a more technical aspect, ash content can be indicative of other flour characteristics too.

Tom Lehmann/The Dough Doctor  
6203

#### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Glazed pizza stone\*\*](#)

I've not seen a glazed pizza stone, but I have seen glazed floor tiles used in that application. I don't recommend it though as they are more prone to breaking/cracking and any little pieces of the glazed part that got ingested would be like eating ground glass.

Tom Lehmann/The Dough Doctor  
6202

#### [\*\*Dough Clinic / Re: Need help planning dough handling for company picnic\*\*](#)

Brad;  
Your pizzas look GREAT!!  
Look! It's a bird! It's a plane! No, it's just Brad's pizza dough! Must be time to eat!  
Nice toss!  
Tom Lehmann/The Dough Doctor  
6201

#### [\*\*Dough Clinic / Re: Too much rise??\*\*](#)

Cam;  
In addition to what Peter has said, I would also wrap the dough balls individually to

enhance their cooling. My favorite way to wrap individual dough balls is to lightly oil each dough ball and drop it into a plastic bread bag, twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge. This will allow for some expansion of the dough ball without fear of blowing out the bag. To use the dough, just remove from the fridge and allow to temper AT room temperature for about an hour, then turn the dough out of the bag into a bowl of dusting flour and begin opening the dough up into a pizza skin. Also, what was your finished dough temperature? The finished dough temperature is probably the single most important aspect of dough management.

Tom Lehmann/The Dough Doctor  
6200

### [\*\*Resources / Re: Shipping Flour to Australia\*\*](#)

The thing about ash content of flour is that it imparts a dull, or some might say a grayish cast to the crumb structure. It used to be important that bread had a very brilliant, white crumb, but in today's world the average consumer doesn't really look for that anymore, infact, a yellowish/creamy crumb color is more typical today due to unbleached flour. In pizza crusts there is such a small portion of crumb in the crust that crumb color is a moot issue, additionally, with all of the toppings being dragged down over the crumb no one ever really sees the crumb color anyhow. The other thing about the ash content is that while some wheat will typically produce flour with a higher ash content, more commonly, the higher ash content is introduced into the flour through a longer extraction rate (amount of flour milled from a given amount of wheat). Hence a 76% extraction rate would mean that 76-pounds of flour were extracted from 100-pounds of wheat. Typically, the higher the extraction rate, the higher the ash content of the finished flour. This is due to milling the wheat closer to the bran (fiber) portion of the wheat berry. The flour that is extracted this close to the bran contains protein, but not a high quality, gluten forming protein, hence the resulting, high ash content flour will contain a higher protein content than the same wheat milled to a lower extraction rate. This is why we sometimes see higher protein content for flour made from white wheat varieties which don't perform quite the same as a slightly lower protein content flour produced from a hard red wheat variety. Due to the lighter color of the bran in white wheat is is more common for the miller to mill to a slightly higher extraction, to get a better yield while still retaining an acceptably white color. Red wheats, having a darker colored bran, on the other hand are milled to a slightly lower extraction to retain an acceptably white color, hence the protein is more of the high quality, gluten forming protein.

There is still a whole lot more to bran, but this covers most of what is important to us here.

Tom Lehmann/The Dough Doctor  
6199

### [\*\*Dough Ingredients / Re: General Mills Neapolitan Hearth Style Pizza Flour?\*\*](#)

Norma;

The "W" factor for flours is arrived at through the use of the Alveograph which is basically a machine that blows a bubble and measures the volume of the dough bubble. It was designed for use with soft wheat varieties as well as European wheat varieties but it is not well suited to use with the stronger U.S. and Canadian hard wheat varieties as results are not consistent. This is why you don't see much reference to it in our wheat flour specifications.

Tom Lehmann/The Dough Doctor  
6198

## [\*\*Newbie Topics / Re: do you put butter in pizza or bread doughs?\*\*](#)

Like Tom N. said, Butter Flavored Crisco works well. I'm especially fond of using it in my wheat or multi-grain type crust formulas. If you want to get a pronounced dairy note without adding butter, see if you can get some dry buttermilk solids.

When used at about 5% of the total flour weight it provides a great buttery flavor to the finished product. If you want to try it, but can't find it send me a message and I'll see what I can do for you. One of the problems with using lard today is that it is so highly refined so as to be essentially flavorless as compared to the way lard used to be. If you have a store that caters to the Latino taste you might be able to find some imported lard (good stuff). Or save your bacon drippings from your frying pan, it also gives a great flavor.

BTW: Liquid butter milk that you can buy at the supermarket doesn't provide the same level of flavor as the dried buttermilk solids (the drying process intensifies the flavor).

Tom Lehmann/The Dough Doctor  
6197

## [\*\*Dough Ingredients / Re: General Mills Neapolitan Hearth Style Pizza Flour?\*\*](#)

Scott;

It's not that it doesn't work, it just doesn't provide consistently accurate results with our hard wheat flours. Our research has now moved past the common laboratory testing methods (Alveograph, Farinograph, Mixograph, Extensograph) for determining flour quality as we are now exploring Infrared as a rapid quality assessment tool. We can now give you protein content, dough absorption, and mixing time date in less than a minute using IR. We are presently working on finished loaf volume (a true test for flour quality) using IR correlation too.

These are interesting and changing times that we live in.

Tom Lehmann/The Dough Doctor  
6196

## [\*\*Dough Clinic / Re: Using the freezer to cool dough balls after mixing\*\*](#)

Z;

Actually, you can put the dough balls into the freezer to help cool them down more efficiently, but I don't recommend using a Zip-Lok bag for this purpose for two reasons. 1) It is difficult to exclude all of the air from the bag so it's easy to end up with an insulating layer of dead air space around a portion of the dough ball which is counter productive when trying to freeze the dough ball. 2) in the event that some fermentation should take place (actually a probability) the Zip-Lok bag can burst, thus allowing the dough to dry out. A much better solution is to use either new or recycled bread bags. Just oil the dough ball and drop it into the bread bag, twist the open end to form a pony tail and tuck it under the dough ball as you place it into the freezer and then into the fridge. This approach will allow the bag to better handle any pressure developed when/if fermentation takes place without compromising the integrity of the bag, plus it is a lot easier to pull the bread bag down tight against the dough which improves the heat transfer properties, thus giving more efficient and consistent cooling of the dough. One home grown pizza maker brought it to my attention some time ago that they even save and reuse their bread bags by placing them into a plastic container for storage in the fridge. I've been pretty successful folding the used bags (these are the bags previously used for my refrigerated dough balls) and placing them into a Zip-Lok bag (see, there is a good use for those bags) for storage. Storing them in this manner keeps them cleaner and reduces any possibility of developing rancidity in the oil clinging

to the inside of the bags.

Tom Lehmann/The Dough Doctor

6195

### **Dough Ingredients / Re: General Mills Neapolitan Hearth Style Pizza Flour?**

Norma;

As you may already know, all of the existing flour quality assessment/measuring methods are somewhat time consuming, and to some extent accuracy of results contingent upon operator technique. The use of IR addresses both of these issues, but that isn't the driving force behind our work, as our world population grows, producing food will become ever more problematic and critical. The conceptual vision of a bakery in the future (we're only talking at most, 50-years) is one that is essentially fully automated. The variability of flour has presented the greatest challenge to developing this bakery. Our work is targeted toward using IR to measure (in real time) the absorption and mixing time characteristics of the flour, and then to make automatic changes as needed to produce doughs that are consistently the same (remember GIGO). We also use IR to look for specific ingredients in the dough to ensure the automated ingredient delivery systems are functioning properly. The level of confidence here needs to be high enough to allow for automated correction of any ingredient(s) during the dough mixing cycle, all without human intervention. The rest of the processing line is pretty straight forward and pretty well automated to a hands-off level already today. A good example of this is in the Rheon Bakery in Orange, California. The Rheon Company operates a bakery there making croissants to the tune of several thousand pounds per hour with only two people operating the entire line, and most of the time those two people are pushing brooms doing light cleanup work. If anyone is ever out in this area, check to see about getting a tour of the bakery...it's pretty amazing.

Tom Lehmann/The Dough Doctor

6194

### **Shop Talk / Re: keep slices warm in the bar..**

I am working on a concept right now that calls for holding the finished pizzas in a temperature/humidity controlled cabinet, probably like Norma has (The one we are working with is made by Hatco). The pizzas are held at 145F and when an order is placed, the slice is removed from the cabinet, placed in a small counter top conveyor oven (Blodgett) and timed so by the time the money transaction has taken place the pizza is out of the oven. The idea is not to bake the pizza in the small oven, but rather just to heat it up a little bit more and to help crisp it a bit too.

Tom Lehmann/The Dough Doctor

6193

### **American Style / Re: The secret of pizza hut shiny crust ?**

Ron;

When you used the regular vegetable oil exactly how did you use it?

Tom Lehmann/The Dough Doctor

6192

### **Dough Clinic / Re: Advice On Dough Processing**

Wes;

Here is what I would suggest:

- 1) Delete the NFDM to reduce the crust burning on the edges.
- 2) Continue managing the dough as you are, but after you sheet the dough the first time , before giving it the first 3-fold, brush some melted Crisco over 2/3 of the

dough surface, then fold the dry side over onto 1/2 of the side with Crisco, then fold the final 1/3 over on top so you will now have layers of dough and fat. Let the dough rest long enough to sheet it out again and repeat with another 3-fold and Crisco addition. Allow the dough to rest again until the dough can again be sheeted. This time give the dough a 3-fold but without and fat addition, then put into the fridge to rest overnight. On the following day, remove dough from fridge, allow to temper at room temperature until the dough can be easily formed to fit your pan. Use a greased or oiled pan, allow the dough to rise in the pan for about 45-minutes (you may need to experiment to find the best time to give you exactly what you are looking for), then dress and bake.

Note: Each time the dough is sheeted it should be sheeted 90 degrees from the direction it was previously sheeted.

If the dough is sized for just a single pizza, some people like to fold the dough that last time so it just fits into the pan. Be sure to place the dough into the pan so any overlapping dough edges are placed down.

Let me know how if this gets you closer to where you want to be.

Tom Lehmann/The Dough Doctor  
6191

### [\*\*Dough Clinic / Re: Improving Dough's Flavor\*\*](#)

Susan;

If we had a copy of your dough formula that would greatly help determine what might be necessary to achieve the flavor profile you're looking for. Two things come to mind:

- 1) Check your salt level, it should be around 2% of the total flour weight to promote the best finished crust flavor. Crusts that are deficient in salt generally have a flavor that is best described as being flat or even starchy.
- 2) You said something about not getting enough crust color. Proper baking and development of the crust color are vital in flavor development in the finished crust. I wouldn't recommend using more sugar to improve the crust color as this will also make the crust sweeter tasting, which may not be the flavor profile you're looking for, so at this time I might suggest seeing if you can bake at a higher temperature or for a slightly longer time.

Tom Lehmann/The Dough Doctor  
6190

### [\*\*Dough Clinic / Re: Improving Dough's Flavor\*\*](#)

Susan;

According to my calculations at 6-grams per teaspoon and approximately 1-pound of flour that you are using, your salt level is only about 1.3% which is a bit low for optimum flavor. I would suggest increasing the salt level to about 1.5-teaspoons for about a 2.2% salt level.

If the top of the pizza is getting done too fast you might also try moving to a slightly lower rack position for your baking as this will increase the bottom heat while decreasing the top heat.

To achieve a more open crumb structure and possibly better crust browning you might also consider increasing the amount of water that you are adding to the dough by about 1-ounce (again, assuming you are using about 1-pound of flour. I also noticed that you are using the SAF Gold Label yeast, is there a reason for this? The Gold Label yeast is actually intended for use with high sugar doughs such as sweet dough and Danish while the Red Label is intended more for typical U.S. bread and pizza dough formulations.

Tom Lehmann/The Dough Doctor

6189

[\*\*Dough Clinic / Re: Improving Dough's Flavor\*\*](#)

Susan;

That makes perfect sense with the SAF Gold.

Do you know what the dough temperature is immediately after mixing?

Do you take the dough directly from the mixer to the bench/counter for cutting and balling, or do you allow the dough to bulk ferment for a period of time before cutting and balling it?

Tom Lehmann/The Dough Doctor

6188

[\*\*Dough Clinic / Re: Improving Dough's Flavor\*\*](#)

Susan;

Fermentation plays a big part in the flavor equation. You might try making a dough and rather than taking the dough directly to the bench for balling, start by taking only one dough ball from the bulk dough, allowing the rest of the dough to ferment at room temperature for 30-minutes, then take another dough ball, keep repeating this in 30-minute increments until you are out of dough. Be sure to tag each dough ball so you will know how long it was allowed to bulk ferment for. This will provide for significantly more fermentation to the dough, which should help to provide the finished crust with a more pronounced fermentation flavor. You might need to do this a couple of times to find the time that works best for you and gives the finished flavor you're looking for. While I don't normally do it, it is perfectly OK to re ball the dough after allowing it to temper. My only argument with doing it is that it adds another couple of hours to my scheduling. I'd rather just pull the dough from the fridge, allow it to temper AT room temperature for 90-minutes and then begin making pizza.. You've just got to find what works best for you. The best part about experimenting with pizza is that even the mistakes taste good.

Tom Lehmann/The Dough Doctor

6187

[\*\*Neapolitan Style / Re: The dark horse that is gluten development\*\*](#)

Jamie;

As I always say, "Temperature control is the key to effective dough management". I'm betting that variations in finished dough temperature are creating greater differences in your dough than differences in kneading/mixing. A thermometer is cheap and it is easy to control finished dough temperature through minor adjustments in the temperature of the water that is added to make the dough.

Depending upon how you are handling the dough after mixing, a difference of only a few degrees in finished dough temperature over 50+ hours can have a rather dramatic impact upon the finished dough at the time of use. If you are not already doing so, I would suggest getting a note book (baker's journal) to keep track of your experiments over time. This will allow you to get a better feel for your dough, and develop a history of what works and what doesn't work in your specific application. Be careful though, as you might end up like Norma, with the curiosity of a cat and never ending desire to improve upon your dough. Norma, please take that as the compliment that it's intended to be.

Tom Lehmann/The Dough Doctor

6186

[\*\*Dough Clinic / Re: My pizza came out too hard....\*\*](#)

Without seeing a copy of the dough formula and dough management procedure employed, along with baking conditions it is difficult to say what the problem is, but if the dough formula doesn't contain any fat, that might be a contributing factor to a hard crust. Since fat is a tenderizer in the world of dough formulation you might try adding fat (oil or shortening) at the rate of 3% of the flour weight to see if that resolves the problem. Also, keep in mind that a dough made with a low absorption rate (50% or less) might also produce a hard finished crust characteristic.

Tom Lehmann/The Dough Doctor  
6185

**New York Style / Re: Help with my first pizza!**

Steve;

Don't forget when you turn the dough ball out of the bowl to allow it to drop into a container of dusting flour, which can also serve as a peel dust to facilitate transferring the dressed pizza skin from the peel to the oven for baking. While there are as many different opinions as to what constitutes a good dusting flour/peel dust as there are people making pizzas, my own personal favorite is made from equal parts/volumes of flour, semolina flour, and fine grind corn meal, placed into a bread bag and shaken (never stirred), and used as needed. I like to open the dough most of the way on the bench/counter top and then pick it up and transfer it to the peel (with some dusting flour/peel dust) where I finish bringing the pizza skin out to finished diameter. Be sure to give the peel a shake occasionally to make sure it remains free from the peel. Once you get a feel for it you won't need to shake it as often. Better to shake it once too many times than once not enough. As for "round" who ever said that pizza had to be round? We make what we call free form pizzas all the time. The irregular shape give it a more rustic look, and it tastes just as good. As for getting the dough skin stretched into a round circle, with practice it will come much easier. Until then, enjoy your pizza making experiences.

Tom Lehmann/The Dough Doctor  
6184

**New York Style / Re: Help with my first pizza!**

Steve;

From the looks of your dough ball it should be just fine out at 3 to 4-days. If it begins looking a bit too over fermented, you can always re-round the dough ball(s), then wait a few hours for them to loosen up before opening them into pizza skins. If you can, get yourself a wood prep peel and a metal blade oven peel. If you research back through the archives here you will find some excellent posts on home made wood peels.

Tom Lehmann/The Dough Doctor  
6183

**Neapolitan Style / Re: Explanation of Yeast Options/Approaches for Neapolitan Pizza**

I'll weigh in on the yeast thing too.

All yeast exhibits some type of a "lag" time from the time it is added to the dough until it begins to actively ferment. For compressed yeast this lag time is typically in the 15 to 20-minute range. This is why large bakeries have a hard and fast rule that the dough must not be allowed to receive more than 20-minutes floor time (rest between end of mixing and dividing/portioning the dough). If the yeast begins actively fermenting before the dough hits the divider the density of the dough

begins to change rapidly, making accurate scaling extremely difficult (by law their weights have to be accurate). The fourth type of yeast that most of us don't hear very much about is liquid/fluid, or as it is correctly called, cream yeast. Cream yeast contains about 80% water as opposed to about 70% water for cake/compressed yeast. Cream yeast is the exact same as compressed yeast with the exception for the difference in water content. It is intended for use only by the largest bakeries with suitable refrigerated storage tanks for holding it. The main benefit to cream yeast over other types of yeast is cost (it's cheaper to buy). For a large wholesale bread bakery the difference in cost of \$0.01 (one penny) per pound in yeast cost can amount to something close to \$10,000.00 a year.

If anyone wants to learn more about yeast, a good reference is Baking Science and Technology by E.J. Pyler. This is the hand book of the baking industry. Many libraries will have this book available and it may also be available on line. We also have them available for sale too.

Tom Lehmann/The Dough Doctor  
6182

### [\*\*New York Style / Re: Flour for shaping the skin\*\*](#)

Dhorst;

Actually, Wondra flour is an "instantized" flour, meaning that it has been modified to absorb water very quickly. If this happens to the flour when used as a peel dust it can go from flour to a paste and help to glue the pizza skin to the peel if you are not fast to make the transfer from peel to oven. Another interesting peel dust is the use of Japanese bread crumbs. There is a commercial product available called "Crispit" and another called "Pizza Crisp" that are based on this aspect of the fine ground bread crumbs. With all of the interest in healthy eating these days we are also seeing greater use of different types of fiber materials used as a peel dust too. Fiber is actually a very good peel dust since it is so slow to absorb water/moisture, and when it does, it has a tremendous capacity to do so.

Tom Lehmann/The Dough Doctor  
6181

### [\*\*Neapolitan Style / Re: Explanation of Yeast Options/Approaches for Neapolitan Pizza\*\*](#)

To the best of my knowledge, a different strain is used for the dry yeast products. It is still S.C. but just a species that is better suited to the drying process, hence improved yeast survival after drying. Since there are literally millions of different strains of yeast available to choose from, this does not surprise me in the least. There are also some select strains that have a thicker cell wall and as a result demonstrate improved survival/performance in a frozen dough application.

Remember, it's the ice crystal that forms inside of the yeast cell which with slow freezing, can grow to such a size as to puncture the yeast cell wall thus reducing its survival and/or performance after the dough is thawed. The thicker cell wall is better capable of resisting the damaging effects of the ice crystals.

ADY is a good product, but it does have some shortcomings, it does not exhibit the consistency in performance needed in commercial applications, but in home applications these differences just can't be seen, not that they aren't there, but who at home ever complains the the dough took an extra 5-minutes to rise to a certain height than it did a week ago? That CANNOT happen in a commercial setting since it would upset the entire timing of the bakery. IDY, on the other hand was actually developed for the commercial baking industry, not here in the U.S., but in Europe, hence more attention has been focused on achieving a consistency level of performance, which it does demonstrate. We have done numerous real world tests

on the different brands of IDY and all of them are so incredibly consistent that over a three year testing period control doughs ALL and ALWAYS gave final proofing times within two minutes of the fixed target time (60-minutes). That is a plus or minus of only one minute for doughs that were made by the 70/30 sponge-dough process, given 3.5-hours of sponge fermentation, mixed to full development, given 15-minutes floor time (rest) then divided, given 10-minutes intermediate proof (rest), molded, panned, and given a final proof (rising) at 100F/85% R.H. with a targeted time of 60-minutes. The consistency with the IDY was significantly more consistent than we ever got when using compressed yeast (which in reality is rather variable) giving a variation in the plus or minus range of 3F. ADY was in the range of plus or minus 6-minutes. In a home setting where dough absorption is not controlled, dough temperature is not really controlled in most cases, and room temperature varies considerably, not to mention scaling accuracy, not just with the yeast, but with the other ingredients too, is it any wonder why we don't see these differences? But with that said, those differences still do exist.

Tom Lehmann/The Dough Doctor  
6180

### [\*\*New York Style / Re: Help with my first pizza!\*\*](#)

Like a good cast iron pan I would suggest seasoning it first.  
Tom Lehmann/The Dough Doctor  
6179

### [\*\*New York Style / Re: Help with my first pizza!\*\*](#)

The biggest problem I had with my steel plate was rusting, especially if I didn't use it for a week or so, until my wife suggested that I season it like her cast iron frying pan. When the steel rusted, even after I scrubbed it well to remove all traces of the rust I still got something of a metallic taste imparted to the crust with the first pizza I baked on it, all was good after that. I even use mine for baking bread on (round loaves/cannon balls) and it even works well in that application.

BTW: Your steel plate will become naturally seasoned over time due to the natural oils in the materials (flour, corn meal, etc.) coming into contact with it, but I didn't want to wait a couple years for that to happen, besides the rust issue was killing me.

Tom Lehmann/The Dough Doctor  
6178

### [\*\*New York Style / Re: Flour for shaping the skin\*\*](#)

Pdog;;  
I ride motorcycles during my free time and I liken pizza research/experimentation to a motorcycle trip where the journey is as much, or more, fun than the destination. You might be surprised to learn that a couple of noteable food items we have today actually started out as a mistake while making something else; Schlotsky's sandwich bun was the result of the baker incorrectly scaling the water (too much) to make the bun. We all know how that turned out.

The pretzel is said to have been created when a baker was making a roll, as he was peeling the rolls into the oven one of the rolls fell off of the peel and landed in the container in front of the oven that held the water used to swab the wood ashes off of the oven deck. Wood ash is an alkali, so the water was presumably pretty alkaline. Since flour and dough were too hard to come by, he plucked the roll from the bucket, wiped it off (or so it is said) and proceeded to place it into the oven. Upon removal from the oven the roll looked different from all of the others (bright shiny appearance) and it tasted different too (like a pretzel rather than a roll),

hence the pretzel was born.

Today's mistake, tomorrow's new food/pizza concept. :)

Tom Lehmann/The Dough Doctor

6177

**New York Style / Re: Is it possible to bake NY-style-ish on a pizza disc?**

Is it possible to make a New York "style" pizza using a pizza disk or screen? You betcha! You could probably make it on a block of wood too. The operative word being "STYLE". To a purist, the answer is emphatically NO! but we are not talking "New York" pizza (authentic), we are talking New York style. Just what is a New York style pizza??? There in lies the issue. The word style is open to interpretation. Just a couple of meanings are: In the manner of, or in the appearance/likeness of. Even these definitions leave a lot to the imagination. A number of years ago I served as an expert witness in a high profile legal case where this exact issue was highly debated and I can tell you first hand that there were literally thousands of exhibits showing things made in the "style" of which really didn't look a whole lot like the item it was made in the "style" of. For example, with a pizza, if the crust is soft and chewy like a N.Y. pizza, that would qualify it to be said to be a New York "style" pizza, never mind all of the other features of the pizza.

Just bringing another view point to the table.

Tom Lehmann/The Dough Doctor

6176

**Dough Clinic / Re: Pizza dough is gluey and sticky under fresh ingredients.**

Jeff is "spot on". One trick that I occasionally use is to place the tomatoes on a few pieces of paper towel to blot up some of the excess moisture/juice from the tomatoes. Also, make sure you're not overloading the pizza with tomatoes and/or fresh vegetable toppings. This can be especially problematic in a commercial deck oven or home type ovens with limited airflow characteristics. The air impingement ovens that are all the rage to day with the big box chains actually do an excellent job of managing all that moisture, but same cannot be said for deck, woodburning, or home type ovens. One thing that you might try is to very lightly paint the pizza skin with oil before you dress it. The oil will help to create a barrier to the penetration of moisture into the dough, thus allowing more of the moisture to evaporate without soaking into the dough during baking.

Tom Lehmann/The Dough Doctor

6175

**Off-Topic Foods / Re: Bread is undercooked?**

Cam;

It appears that your baking temperature is too high for the type of bread that you are making.

I'm assuming that you allowed the shaped dough to proof for an hour, or more between forming and baking. This will provide for improved lightness in the crumb structure and a more thorough bake. If you are not already doing this, I would suggest it as a starting point. If that still doesn't work, you might need to reduce the baking temperature to 450F or a little less. When I make those cannon ball breads I am normally looking at a total baking time of around 25 to 30-minutes. Really great when served with honey butter.

BTW: Your "pizza" flour should be just fine, but if you find the bread to be a little too chewy, just add about 3% fat to the dough formula.

Tom Lehmann/The Dough Doctor

6174

## [\*\*Dough Ingredients / Re: Who is a bacteria expert?\*\*](#)

JD;

How about just using plain yogurt containing an active culture to start a sour, then propagate the sour for several days and use from that to flavor your doughs?

Tom Lehmann/The Dough Doctor

6173

## [\*\*Dough Clinic / Re: Dough ball temperature after 24 hrs in fridge\*\*](#)

Mil;

The key to effective dough management is the temperature of the dough after mixing. In a home setting there are so many variables involved that it is impossible to give a hard and fast temperature. As a rule, 70 to 75F temperature immediately after mixing should work well for you BUT in the end, you will need to experiment to find the temperature that works best for you using your own specific dough management procedure and fridge as well as dough containers, etc. The temperature of the dough ball(s) after 24-hours in the fridge only reflects the temperature of your fridge, and 40F is right at about where I would expect it to be. When using a refrigerated dough management procedure, I think it is best to keep the dough at a temperature slightly below 45F, but do not allow it to drop to freezing (32F). The main thing is to be consistent in always having the same dough temperature off of the mixer, and then using the same management times and placing the dough into the fridge in the same location. Like in real estate, location counts in dough management too.

Tom Lehmann/The Dough Doctor

6172

## [\*\*Dough Ingredients / Re: Who is a bacteria expert?\*\*](#)

JD;

I'm not a microbiologist, but I am betting that there is more than just one or two different strains of lactic acid forming bacteria. Each of the different types creates a different flavor. Even in a natural sour, there are different flavors due to the different bacteria that have been cultured. I've seen some cultures selling for as much as \$20,000.00, all because of the unique flavor resulting from that particular microflora. In a natural sour, it is possible to lose the sour all to easily. The easiest way is to let the temperature get out of control (forget to put it back into the fridge?), what happens then is that a different bacteria becomes the dominant strain, thus producing a different flavor in the end product, hence the sour was "lost". This is why we always advise if you have a really good sour, store it in separate containers in different places for management, that way if the sour is lost at one location, you can always use one of the others to seed a new culture, thus preserving the strain/balance of microflora that is responsible for the flavor you are looking for.

Tom Lehmann/The Dough Doctor

6171

## [\*\*Off-Topic Foods / Re: Bread is undercooked?\*\*](#)

We allow the bread to cool at least 30-minutes before cutting it. If it will be sliced, we go with 45 to 60-minutes.

Tom Lehmann/The Dough Doctor

6170

## [\*\*Dough Clinic / Re: Dough consistency problems, I need help.....\*\*](#)

G.R.;

A number of years ago we developed a process to help newbies open the dough into pizza skins with a much more consistent cross section thickness. We have demonstrated that we can train a total novice (someone who has never opened a dough ball into a pizza skin) in about 15-minutes in the "art" of opening dough into pizza skins. The procedure is simple, but as you have noted, it does require the use of a sheeter/dough roller. Using the sheeter, set the rolls to open the dough to about 2/3 of the desired finished diameter, then finish opening the dough by hand to the final size. Works like a charm! At A.J's here in Manhattan, Kansas we are constantly training K-State students to work at the dough bench so we are always training someone. That 15-minute time might even be a little on the long side. We typically run the dough twice through the sheeter to get a round shape of the correct diameter, we pre-sheet about 6 dough pieces and stack them up next to the sheeter, then we start bench stretching to finished size. For appearances, we finish with a hand toss.

If you want to learn more about pizza production we have our annual Practical Production Technology and Innovation course coming up October 28 - November 1, 2013. To get information on this course please send an e-mail to Jeff Zeak at <jzeak@aibonline.org> .

Tom Lehmann/The Dough Doctor  
6169

### **New York Style / Re: Why is my crust soggy??!!**

It is normal for a pizza crust to become soggy with time after baking, but there are some things that will hasten the transition from crispy to soggy.

- 1) Pizzas that are baked at a very high temperature may only develop a very thin crusty layer on the bottom of the pizza. This can quickly go from crispy to soggy. Parbaked pizzas seldom ever experience this problem.
- 2) Dough weight is incorrect for the size/type of pizza you're making. Typically a pizza skin that is stretched too thin, especially across the center section will crisp during baking but loses that crisp very quickly. This is normally accompanied by a gum line.
- 3) Excessive use of sauce and/or toppings, or sauce watering out.
- 4) Failure to place the pizza on a screen so it can steam off immediately after baking without the steam being driven back into the pizza as it would if placed onto a serving tray or other solid tray immediately after baking.
- 5) If the problem is due to excessive oil, look at the cheese and/or pepperoni, as either of these have a reputation for potential to oil out. Some cheeses and pepperoni exhibit much greater resistance to oiling out than others.

There are probably a few more that aren't coming to mind right now, but these are what I think might be the most common causes.

Tom Lehmann/The Dough Doctor  
6168

### **Dough Clinic / Re: sugar and salt rate?**

Air;

The salt level will typically come in at between 1.75 and 2.5% of the total flour weight. Without knowing what type of pizza you are making I cannot comment on the sugar level. Nor can I give you any specific amounts without knowing the amount of flour used in your dough formula/recipe.

Tom Lehmann/The Dough Doctor  
6167

## **Dough Ingredients / Re: The unique crumb characteristics of Cake Yeast**

Scott;

You're not alone, I don't see any significant difference in the flavor of products (breads and pizza crust) when made with either compressed or IDY. Compressed yeast has three recognized aromas 1) Kind of a musty, old, damp newspaper like aroma. This is the normal aroma for compressed yeast and it is indicative of good quality yeast. 2) Compressed yeast can also have an ammonia smell to it. This is also a normal aroma as the ammonia is simply left over from the culturing process. 3) Then there is a somewhat sharp, offensive odor which is common to yeast that is beginning to die-off. In addition to aroma, look at the color of the yeast, it should be a light tan/buff in color with some streaking, but if the yeast is turning a dark color (muddy gray to brown) this is an indication that the yeast is getting too long in the tooth. Because compressed yeast is highly perishable, and as it dies off, it releases glutathione (an amino acid contained within the yeast cell) which actually enhances dough mixing, in many home baking situations it may appear to actually perform better. This is NOT the case in a bakery or retail setting though. Glutathione is a dough relaxer (commercially sold as "dead yeast") and as such, it works exactly the same as L-cysteine aka PZ-44 giving a softer, more extensible dough with somewhat improved expansion properties during baking which often result in a drier crumb structure, and a crispier outer crust, which can also be said to give improved flavor to the baked product.

Tom Lehmann/The Dough Doctor  
6166

## **Dough Clinic / Re: Low sodium flavorful dough?**

A.D.:

While pizza dough certainly can be made without salt, the flavor might leave a little to be desired, but you could easily drop down to a level of 1% salt based on the total weight of the flour. I also have a very special (brand new product) coming in next week that is designed specifically for individuals on a low sodium diet. The product will soon be available at Walmart, but if you will send me a name and mailing address I'll be glad to send you a bottle along with the data sheet on it. I'll be out of the office all of next week but I can send it to you on the following week (July 15th). If you use fresh tomato, either sliced, diced, torn or pureed you can control the salt in the sauce (none is needed) so now you're down to the cheese (which is naturally high in salt). But you can address that too by going to a reduced sodium cheese. I would suggest contacting Boar's Head (800-352-6277) to get information and availability on their reduced sodium provolone and meats. B.H. has taken quite an initiative in developing reduced sodium products for the consumer market.

Remember to send me a mailing address and name, and I'll send the reduced sodium sample to you free of charge.

Tom Lehmann/The Dough Doctor  
6165

## **Commercial Ovens / Re: Commercial Pizza Oven (thin based)**

Michael;

I've written a lot about pizza ovens and how to choose the one best suited to your specific needs for Pizza Marketing Quarterly <[www.pmq.com](http://www.pmq.com)>. You should be able to find it in the archived articles I've written. A lot goes into selecting the correct pizza oven: type of pizza(s), volume needed, speed of bake desired/needed, closed/open kitchen, store concept, space available are to name but a few. These are all addressed in my most recent article on choosing the right pizza oven.

Tom Lehmann/The Dough Doctor  
6164

**[Dough Clinic / Re: Small clumps in caputo blue label!! help](#)**

V;  
I agree with Jeffery. Your flour might have been exposed to less than ideal storage conditions at some time after milling and bagging. Try sifting the flour to remove and clumped flour for now. You might even put some of the clumps into a plastic vial and send them to the distributor so they can take appropriate action.

Remember, if they don't know about it, they can't do anything about it.

Tom Lehmann/The Dough Doctor  
6163

**[Neapolitan Style / Re: Burnt crust](#)**

TD;

That certainly looks like scorched flour to me too. It's OK to use dusting flour on the bench to help form the pizza skins but the trick is to remember to get most of it back off again. When I'm in the shop I simply give the skin a toss or two and all of the surplus dusting flour is gone, but this really doesn't fly well at home so I'm forced to use a bench brush to lightly dust off the skin just prior to transferring to the prep peel. You typically don't need much flour on the peel to get good release, but if you do, try using a blend of fine cornmeal and semolina flour for your peel dust and try to dress the skin as quickly as possible, remembering to give it a shake to confirm that the dough is free from the peel before taking it to the oven. The rest of your crust, where there isn't any scorched flour looks like it is beginning to develop some pretty good coloring.

Tom Lehmann/The Dough Doctor  
6162

**[Sauce Ingredients / Re: Do you prefer using canned or fresh tomatoes?](#)**

When available, I will always go with vine ripened, fresh sliced tomato. That's the best part of summer here in Kansas as I grow plenty of my own tomatoes. When fresh tomatoes are no longer available, I like to use the Stanislaus 74/40 Tomato Filets (well drained and applied just as they are). The flavor and texture is fantastic in my opinion.

Tom Lehmann/The Dough Doctor  
6161

**[Commercial Ovens / Re: Commercial Pizza Oven \(thin based\)](#)**

Peter;

In 2009 I wrote an article that was published in my column (In Lehmann's Terms) titled "Important Considerations When Considering an Oven For Your Pizzeria". This is a good read for anyone just getting into the pizza business and trying to figure out what oven is the best choice for their store concept. I was provoked into writing this article after seeing all too many start ups struggling with the wrong oven for their pizza type or store concept, and then needing to back away from their present oven only to go out and purchase yet another oven. The pizza that broke the camel's back was a pizzeria in Nebraska that I was called to address a soggy pizza problem that was driving business away. Turns out their concept was one of "more toppings makes for a better pizza". Agree or disagree, that was their concept. The ovens they were using were conventional deck ovens (no significant airflow) so there was no way to remove all of the moisture being released from the vegetable toppings as they were cooked. I called in Middleby Marshall with their

traveling display ovens (tractor-trailer with various ovens used for on-site demonstrations) and with their air impingement oven of the time they were able to drive enough water from the pizza during baking that the pizza was no longer soggy and the store was able to retain their original concept. The kicker: The individual owning the store had to abandon his three existing deck ovens and purchase a double stack wide body air impingement oven, effectively doubling his oven cost within his first year of operation. Bummer!

Tom Lehmann/The Dough Doctor

6160

### **Dough Clinic / Re: pepperoni bread**

I'm not familiar with the product that you mention, but a good many pizzerias do produce what they like to call pepperoni rolls or pepperoni sticks. These are really nothing more than regular pizza dough to which they add chopped or ground pepperoni at the rate of about 25% of the dough weight, so for 1-pound of dough they would add about 4-ounces of pepperoni.

Tom Lehmann/The Dough Doctor

6159

### **Commercial Ovens / Re: Commercial Pizza Oven (thin based)**

Michael;

A good quality anodized, black colored pan or baking disk will probably serve you just fine. Optional, and recommended, is a nonstick finish. You can see pans of this type at Lloyd Pans <[www.lloydpans.com](http://www.lloydpans.com)>. Some of their pans and disks are to some extent product specific, meaning that they were designed to provide a superior bake to a specific type of pizza. For example, their cloud pattern, Hearth Bake Disks are designed specifically for use with the newer air impingement ovens operating at temperatures of 475F and higher using dough formulas devoid of any browning agents, such as sugar, milk or eggs. The Hex Disk is well suited to making a Domino's type of pizza as well as use in reheating certain types of pizza slices. This company also has a bunch of neat gadgets specific to the pizza industry. Take a look at their offerings. The Lloyd pans and disks are about as close to "bullet proof" as one can get.

Tom Lehmann/The Dough Doctor

6158

### **Pizzeria/Restaurant Recommendations / Re: Need South Chicago Suggestions**

Ed and Joe's!!!!

They have been in business there for over 50-years and still going strong. They used to be located just a block north of the train tracks on Oak Park Avenue on the west side of the street behind what used to be Funks Tavern. My sister and brother still live in Tinley Park and every year when I go up there to visit them we order out an Ed and Joe's Pizza (still the same from when I was a kid in the 50's). Beggar's in Oak Forest is also a pretty good bet (north of the train depot on Cicero (about 3-blocks on the west side of the road). Another good one in Oak Forest is Ken and Dicks at 15801 Central Avenue, (708-535-1212). The only excuse I've ever been able to come up with for not wanting to leave Illinois is the Chicago pizza.

Tom Lehmann/The Dough Doctor

6157

### **Dough Clinic / Re: Help with Oven Spring**

Cindy:

I agree totally with Peter. Additionally, I just wanted to confirm that you are opening the dough into pizza skins by hand and not using a rolling pin. The use of a rolling pin can significantly degas the dough and restrict oven spring. When opening the dough I like to pretty well keep my fingers away from the edge/rim portion.

Tom Lehmann/The Dough Doctor  
6156

### **Dough Clinic / Re: Prepping**

Jako;

Probably the most commonly used method is to place the opened skins onto pizza screens (the type some operators bake on), then store them on a wire tree rack in the cooler. I like to store them uncovered for about 30-minutes, and then slip a suitable plastic bag over the rack to prevent excessive drying. To use the skins, remove from the cooler about 20 to 30-minutes prior to anticipated use, remove the skin from the screen, and place onto a baking platform (screen, disk, etc.) touch up the skin bringing it out to full diameter, dress and bake. If you bake right on the hearth, place the skin onto a wood prep peel with a little peel dust. If you bake on a screen DO NOT dress and bake the skin on the screen that it was stored on unless you remove it first. Failure to do this can result in the crust becoming stuck to the screen as the dough expands down through the screen openings, expanding as it does and effectively locking the baked crust/pizza to the screen...BUMMER.

Tom Lehmann/The Dough Doctor  
6155

### **Dough Clinic / Re: Prepping**

Jaco;

In a word, no. The foil only serves to slow down the rate of cooling. The screens allow for a rapid cooling of the skins while allowing them to breathe to some extent, thus preventing development of condensation between the skin and the foil. Packaging the skins, especially in a vacuum package is not recommended, at least until the dough skins are all thoroughly cooled to the temperature of your retarder.

If you have room in your freezer, and have a supply of sheet pans or flat pizza disks you might try putting the pans/disks in the freezer for an hour, and then placing the skin onto a frozen disk/pan, turn over after about 20 minutes and allow to thoroughly cool/chill for another 20-minutes, then you might be able to stack them with a piece of parchment paper between each skin and store under constant refrigeration (2 to 4C) in a plastic bag (only after they have been thoroughly cooled). To use these refrigerated skins, remove from the plastic storage bag, place onto a lightly floured surface to warm for about 20 to 30-minutes, then straighten the skins out to full, desired diameter, place onto whatever your prep surface is and prep for the oven. I might also recommend docking these skins too and having a bubble popper near at hand while they're baking.

Tom Lehmann/The Dough Doctor  
6154

### **General Pizza Making / Re: Help with stuffed crust**

While in Mexico some time ago we made the stuffed crust pizzas using a domestic white cheese commonly referred to only as queso blanco. This is the same cheese that is used when preparing fried cheese plates as an appetizer. The color and texture of this cheese is reminiscent of Mozzarella cheese. Maybe you have something similar in Bolivia? Very soft cheese is difficult to use in making a stuffed

crust as it doesn't hold shape well at all, and as it melts it has a propensity to boil/melt out.

Tom Lehmann/The Dough Doctor  
6153

### **General Pizza Making / Re: Pizza while camping?**

Deets;

As an ardent deer hunter I find myself out in the boonies more often not, and with my background in food, you can guess who ends up being the camp cook. I've made decent pizza (considering the circumstances) any number of times using nothing but my steel frying pan. Dough from scratch, butter or margarine in the pan, press the dough into the pan (after 18-hours cold fermentation), then apply sauce of slices of fresh tomato, followed by cheese, pepperoni, sausage, onion, and green peppers. Top heat is provided by the lid set to allow for moisture to escape during baking. The rest of the guys all identify it as "pizza" so it hasn't lost identity, and to date I've never had any complaints, except occasionally they complain that there wasn't enough, so it really isn't all that bad. It's also a great way to use up camp left overs too. By the way, that same frying pan is also used to bake dessert. Cake from a box mix, mixed with water, an extra egg, and pieces of canned fruit. The cake bakes while we're eating dinner and putting camp in order, by then the cake is finished baking and has cooled tolerably for serving. Again, no complaints.

Tom Lehmann/The Dough Doctor  
6152

### **Dough Clinic / Re: Prepping**

Jako;

Due to the insulating properties of wood it is not a good substitute for a pizza screen in this application. You might check around to see if you can find a metal fabricator who can provide you with squares or rounds made from a fairly light weight aluminum and then have them perforated. These will work similarly to a screen in allowing you to efficiently cool the skins. I'm guessing that you probably won't need more than a dozen pieces as once the skins are thoroughly cooled you can stack them for use later in the day, thus freeing up the perforated sheets for use in cooling more skins. Another thought just occurred to me. Look around for some type of cheap, light weight aluminum tray/pan that is already being used in the restaurant trade locally, then all you will need to do is to perforate them (you can do this yourself using a drill and a 3/8-inch/9.3 mm drill bit. Examples of what I'm referring to can be found in the Allied Metal Catalog

<[www.alliedmetalusa.com](http://www.alliedmetalusa.com)> page 57 of their 2011-2012 catalog. Keep in mind that you don't need to perforate to the extent that these commercial pans are perforated, any perforations that you can add to a solid pan will help improve the cooling efficiency of your skins. If you look through their on line catalog in the section for "pizza supplies" you might be able to get some additional ideas.

Tom Lehmann/The Dough Doctor  
6151

### **Dough Clinic / Re: screens**

When you're using a screen and your dough exhibits a decided propensity to flow into the screen openings it usually means that your dough is over absorbed and too soft for use on the screen. The new Hex Disks from Lloyd Pans have a smaller opening than the usual metal screens so they offer better resistance to this problem. The fact that you are also having a problem using a wood peel also give insight that you might have too much water in the dough. Always be sure to use

some "peel dust" under the skin when you place it onto a wood peel for dressing. While there are many different ideas as to what constitutes a good peel dust, my personal favorite is equal parts regular pizza flour, semolina flour and fine cornmeal.

Tom Lehmann/The Dough Doctor  
6150

### **Dough Clinic / Re: Prepping**

It all depends upon the oven type and the pizza you're making as well as your formulation and the pan color in the case of deep-dish or pan pizzas. With thin crust and deck ovens, while many like the attributes of a pizza baked directly on the deck, others do not, and some don't like the mess they get from all of the peel dust going into the oven so they opt to bake on screens. Remember, unless manufactured with some type of release agent, all screens will need to be seasoned if you plan to bake on them or you will experience problems with the pizzas sticking to the screens. When an air impingement oven is used with an open wire link conveyor the pizzas are not supported well on the conveyor so some type of baking platform must be used under the pizzas while conveying them through the oven.

Tom Lehmann/The Dough Doctor  
6149

### **New York Style / Re: All trumps VS harvest king both from general mills**

Leo;

To add to Tin Roof's comments, Harvest King flour has about 12% protein content while All Trumps has 14+ % protein content. I've used both very successfully to make thin crust pizzas of all kinds, but when it comes to making thick crust/pan style pizzas my preference turns to Harvest King as it does not give the excessively tough and chewy characteristic that I get from All Trumps in this application. For me one big factor in using one over the other is availability, as Tin Roof said, the Harvest King flour can be purchased from most supermarkets as Bread Flour (intended for use with bread making machines) while All Trumps can be a bit more difficult to come by and is also more pricey. Like a friend of mine used to say "You pays yer money and takes yer pick".

Tom Lehmann/The Dough Doctor  
6148

### **Dough Ingredients / Re: Who here has tried King Arthur Whole Wheat White Flour**

Just as an FYI.

When it comes to whole wheat flour there is whole wheat flour from hard red winter wheat and also from hard red spring wheat. This is the type of whole wheat flour that normally comes to one's mind when thinking about whole wheat flour, then there is whole wheat flour made from hard white wheat. This is the newest kid on the block. In commercial circles it is known as Nutri-Grain Flour. This is what many of the commercial bread bakeries are using to make their whole wheat breads from. It is also very popular in schools as the bread doesn't have that typical bitterness associated with whole wheat bread made with flour from red wheat varieties, also the finished bread color is somewhat lighter in color so the bread is more appetizing to the kids. Lastly, there is whole wheat flour made from soft wheat varieties, this is also known as "graham flour". Remember those graham crackers you ate as a kid? I bet you didn't know that they were made from a whole wheat flour? Hence the name, graham crackers. Soft white wheat varieties are

typically used in making pastry and cake flours and have a lower protein content producing a weaker gluten than the hard wheat varieties.

Tom Lehmann/The Dough Doctor  
6147

**New York Style / Re: Is there anything better than fresh ingredients from your garden?**

Our home garden is just booming this year. We have cherry tomatoes as well as a couple of different table varieties (Comet, Big Boy, and Better Boy) as well as a heritage variety that I got from my son. We use all of them on our pizzas made at home. As many of you might know, I am not a big fan of sauce, so my favorite is to simply brush the pizza skin with a little olive oil, spread on a couple cloves of our home grown garlic (minced), followed by several leaves of our home grown basil and oregano, then the thin sliced fresh tomato (I like to place them onto a paper towel to absorb some of the excess liquid from the tomato slices). I like to just barely cover the surface with the tomato slices, then add the cheese and toppings, and finish with a hand full of shredded Parmesan cheese. We have a sun room on the back of the house where I grow basil during the winter months here in Kansas. Once you start using fresh green leaf basil, it's hard to go back to using the bitter dried stuff.

We also grow a lot of squash that we use as a pizza topping too, but our favorite dish using squash is to grate a couple medium size zucchini and a yellow squash or two, put this into a frying pan and heat thoroughly, tossing often. Then add about 1/2 cup of heavy cream, three garlic cloves thin sliced, about a dozen basil leaves, and the zest from 1/2 of a lemon, continue heating and then add 3 to 4-ounces of Parmesan cheese, stirring in until melted, serve immediately over your favorite pasta. For variety we will occasionally add pieces of fresh tomato, or use our own dried tomato (great way to use all of those prolific cherry tomatoes), or onion, and even some sweet banana pepper slices. Any way you cut it, it's good stuff!

Tom Lehmann/The Dough Doctor  
6146

**American Style / Re: Simple Pan Pizza questions**

Mal;

I like to use 14-ounces of dough for my 12-inch deep-dish pizzas (for a dough density of 0.124-ounces per square inch of pan surface area). All of my pans are dark colored so I don't need to bake them on a stone, but I do need to move them around in the oven. I start out with the pizza on a lower rack position to get the bottom started (about 2/3 of the total baking time) and then move the pizza to a higher rack position to achieve the top bake that I'm looking for. When I've used a stone I always end up with a darker bottom color/bake than what I like. My oven is an electric oven with only a bottom element in the oven chamber and I bake at 425F. Total baking time typically runs about 20-minutes, maybe a little longer. I normally don't bake to time, but instead prefer to bake to color and doneness. I look for the nice, golden brown top color and then use a cake decorating spatula to pick the pizza up out of the pan to get a peek at the bottom. If the color is nicely browned, it's done.

Tom Lehmann/The Dough Doctor  
6145

**General Pizza Making / Re: Pizza while camping?**

Deets;

You've exposed my secret, that's exactly where I got my cake recipe from. I was in

scouting for a number of years and really learned a lot from it, including camp cooking, map reading and how to pick a camp location least likely to flood in the event of a thunderstorm, and where insects will present a minimum of harassment.  
Tom Lehmann/The Dough Doctor  
6144

### [\*\*Dough Ingredients / Re: Who here has tried King Arthur Whole Wheat White Flour\*\*](#)

Bert;

From your post it sounds like your finished whole wheat or wheat crust is quite dry. This is a common problem when whole wheat or multi-grain flours are used and the total dough absorption is not properly adjusted to compensate for their absorption properties (which is somewhat higher than regular white flour). If you are making a dough in the traditional manner (all ingredients in the bowl and mix) the amount of water needed will initially produce a soft, wet, sticky dough mass, but upon standing the whole wheat or multi-grain flour will hydrate resulting in a more normal handling dough. Since all whole wheat flours and multi-grain blends exhibit different total absorption properties you will need to experiment a bit to find the correct amount of water to add to your dough, but once you have it you can make some pretty decent pizza crusts with your whole wheat flour or multi-grain blend.

Tom Lehmann/The Dough Doctor

6143

### [\*\*New York Style / Re: Is there anything better than fresh ingredients from your garden?\*\*](#)

Norma;

Here is my "secret" recipe for Alfredo sauce. Very lightly saute several cloves of sliced fresh garlic in olive oil (just to pop the flavor), not to brown it. Set aside. In a sauce pan or deep side fry pan add some heavy whipping cream, heat until you just begin to see bubbles around the edges, then add the garlic and whisk in, then add Parmesan cheese until the sauce is thickened to the desired consistency, add a good dose of freshly ground white pepper and whisk in, here's the wrinkle; I then add about a dozen fresh basil leaves that have been rolled and cut into small pieces and stir in with a spoon. Have your pasta plated and immediately serve over the pasta. The amount that I normally make is based on about 1/2 carton (1-cup) of heavy whipping cream and it serves two. During the summer months I puree all of my surplus basil in olive oil and freeze. Then, during the winter months if I don't have enough fresh basil growing in the sunroom I can simply add a spoon or two of the pureed basil to my Alfredo sauce. Right now I already have four pints of pureed basil from this years crop in the freezer along with I don't know how many baggies of dried tomatoes....it's going to be a good winter. By the way, some time back I posted that I have never had any luck growing bell peppers, well, it appears that I've had a change in luck this year. While I only have one bell pepper plant (due to my previous failures) this year it is doing great! It is loaded with developing peppers that are already bigger than I've ever had before. I'm guessing that we'll soon be eating stuffed bell peppers along with our stuffed tomatoes. Life is good when the garden is great.

Tom Lehmann/The Dough Doctor

6142

### [\*\*Starters/Sponges / Re: Starter is eating itself\*\*](#)

Biz;

It certainly appears that you have "lost" your starter. This can and does happen

from time to time to even the best of us.

There are some fungals that can form in a starter that will induce the exact thing you have described. These fungals (molds) could have been introduced with the flour used to feed the starter, or just through contact with the air , or they might have even been on a spoon or whisk used to stir in the flour. Hopefully you had a second reserve starter going in the fridge as a back up? But from the sounds of things possibly not. In that case your only recourse is to begin the task of making a new starter and hopefully you can achieve a similar microflora to give you a similar flavor and performance. Remember to always back up your starter/sour in at least one different location so if you lose one, you can use the other easily grow/culture a new one having the same microflora.

Tom Lehmann/The Dough Doctor  
6141

### [\*\*Dough Clinic / Re: Help with Oven Spring\*\*](#)

Cindy;

I don't think you will have much luck finding a bromated flour in California as one of the many propositions all but bans its use in any food item. If you know someone outside of CA you might be able to get them to pick some up for you and UPS it to you. In CA when a food item contains bromate it must be labeled in a similar way to that which is seen on a pack of cigarettes or a bottle of wine. In short, it says that this stuff might give you cancer....With that thought, give me two more bags of that bromated flour. LOL

6140

### [\*\*Starters/Sponges / Re: Starter is eating itself\*\*](#)

Biz;

Over the years we have noticed that we seem to get more calls regarding off flavors or performance issues with starters during the warmer months of the year in states where they have a seasonal change. We have attributed this to one of two things: Forgetting to put the starter back into the fridge in a timely manner (if it is a refrigerated starter), during the times when the room/kitchen is warmer can result in a shift in the microflora or contamination through exposure to unwanted wild yeast or mold spores which are more prevalent during the warmer seasons of the year. If you are in a location where snow cover is common during the winter, mold counts are really down during the winter, but as soon as the snow melts, mold spores in the air can really spike. When I was young, and living on the farm we used a starter to make all of our breads. It was stored in a glass jar at room temperature with cover consisting of a piece of paper secured with a rubber band. The cover was removed, the jar was "swished" around a little and an appropriate amount was poured out where upon the lid was immediately replaced on the jar. The doughs were always prepared in the evening and allowed to develop overnight for use on the following day. We only made fresh bread twice a week but when we went into town (about every two weeks) we brought back "store bought bread" as a treat for the women so they wouldn't need to make bread for a couple of days as the commercial bread remained soft and fresh for several days, even back then.

Tom Lehmann/The Dough Doctor  
6139

### [\*\*Dough Clinic / Re: % IDY\*\*](#)

Sonny;

If you will send me a message requesting my Dough Management procedure I'll be glad to send you a copy. This is the complete procedure that is typically followed to

make pizza dough at the pizzeria (but it also works at home too) from mixing to final use of the dough. Keep in mind that this is just the base procedure, there can be any number of modifications or changes made to the procedure as necessary to give you the finished pizza under your existing shop/kitchen conditions.

Tom Lehmann/The Dough Doctor  
6138

**Dough Clinic / Re: High Gluten Flour !!**

Rosie;

Can you share your dough formula/recipe along with how you bake your pizzas with me?

If you are not cold fermenting the dough at least 24-hours this might also be a cause for the excessive dough bubbling. After mixing I like to form the dough into individual balls, and take them immediately to the fridge where they are allowed to ferment under refrigeration for at least 24-hours, but 48-hours is better in my opinion. Then remove the dough from the fridge, allow it to temper AT room temperature for 2 to 3-hours, then open the dough ball(s) into pizza skins, dress and bake. This generally produces a minimum of bubbling from a dough management standpoint, but the underlying cause might be something different possibly related to formulation of baking.

Tom Lehmann/The Dough Doctor  
6137

**New York Style / Re: Is there anything better than fresh ingredients from your garden?**

Polo;

That is one of the varieties I'm growing this year. While not as flowery as regular sweet basil, the purple basil has a more spicy, complex flavor profile that while slightly different, seems to work very well in pizza and pasta applications. Keep in mind that I only use fresh basil, rather than dry my surplus, I puree it with a little olive oil for use during the winter months.

Tom Lehmann/The Dough Doctor  
6136

**Dough Clinic / Re: High Gluten Flour !!**

Rosie;

Here is what your dough formula looks like in bakers %:

Flour 100%  
ADY 0.375%  
Sugar 2%  
Salt 1%  
Oil 3%  
Water 47.75%

Comments: For what you are doing, I think 0.375% ADY might be a little low, I'd suggest increasing it to 0.5% (4-ounces).

The salt is also on the low side at only 1% which might be hurting the flavor of the finished crust. My recommendation would be to increase the salt to 1.75% (14-ounces). Your water seems rather low for All Trumps flour. I would suggest increasing it to something in the 60 to 65% range (480 to 520-ounces).

You indicate that most of the water is hot (105F). A better temperature for the most part of your water would be 75 to 80F, with only about 16-ounces of the water reserved and heated to 105F for use in hydrating the ADY. This should give you a

finished dough temperature in the 80 to 85F range. Take the dough balls directly to the cooler. To use the dough balls, remove them from the cooler and allow to temper AT room temperature for about 2-hours, then sheet the dough to only 2/3 of the finished diameter and finish opening the tough up to full diameter by hand. You should then be able to immediately dress and bake the skin without the need to allow it to proof on the screen as you presently do. If you will send me your e-mail address and I'll send you a copy of my Dough Management Procedure.

Tom Lehmann/The Dough Doctor  
6135

### [\*\*New York Style / Re: All trumps VS harvest king both from general mills\*\*](#)

Walter;

The yellowish color that you note is due to the flour being unbleached. The brighter white color of the flour is an indication that it has been bleached. This is just a color thing and does not impact the performance of the flour in any way. Fact is, when making pizza crust it is all but impossible to distinguish if a bleached or unbleached flour was used when looking at the finished crust. With bread you can tell, but not with pizza crust, it's just too thin.

Tom Lehmann/The Dough Doctor  
6134

### [\*\*General Pizza Making / Re: I Have Questions about "Thickness Factor"\*\*](#)

Rather than "thickness factor" we like to call it "dough density". This is a value referencing the weight of dough per square inch of pizza surface area. One very important aspect of using this is that you can make any size pizza you want having the same thickness here is an example of how it works:

Lets say you make a 12-inch pizza using 10-ounces of dough. The 12-inch pizza has 113 square inches of surface area so we divide the weight of dough by the surface area (113) and we get 0.0884 (you might call it 0.09 if you wish. Said another way, each square inch of this pizza contains 0.0884-ounces of dough weight. Now, lets say you want to make a 14-inch pizza. How much dough will you need to make the same pizza but only to a larger size? Use Pi X R squared to find the surface area of the new pizza size.  $\pi = 3.14$ ;  $R = 7$ ;  $R^2 = 49$  so,  $3.14 \times 49 = 153.86$  (call it 154) square inches. Now, multiply the new pizza diameter by the dough density value of 0.09 that we had for the 12-inch pizza and we come up with  $154 \times 0.09 = 13.86$ -ounces of dough will be needed to make the same crust that you made as a 12-inch only now as a 14-inch pizza. You can easily do this for any size pizza. You can also use this method for calculating the sauce and cheese weights too. In this application you will need to replace the dough weight with the sauce or cheese weight to arrive at a sauce density or cheese density value.

Tom Lehmann/The Dough Doctor  
6133

### [\*\*Newbie Topics / Re: OK WTH am I doing wrong?\*\*](#)

PAJ;

What you have is what we like to call the "dreaded gum line" which appears directly under the sauce as a gray colored, raw dough textured area. The first thing to do is to confirm that you really do have a gum line. This is done by cutting the pizza into slices, then turning a slice over and using an Exacto knife or box knife with a new blade, carefully cut the bottom crust from heel to point, then separate the two pieces, look to see if you can see a gum line about 1/8-inch thick you have confirmed your suspicions. Another quick test is to tear a slice apart, again from the heel to the point observing the way the crust separates. If it cleaves cleanly,

you don't have a gum line, but if it feathers as you pull it apart (forms a film) congratulations, you have a gum line. In home baking, the most common causes are 1) Forming the pizza skin too thin. 2) Baking the pizza at an excessively high temperature. Occasionally, we find that the cause can also be due to an excessively low yeast level. If you can share your dough formula and dough management through forming technique I might be able to better ascertain just what the causative factor is.

Tom Lehmann/The Dough Doctor  
6132

### [\*\*Dough Clinic / Re: Bakers pride convection oven\*\*](#)

Sonny;

Convection ovens are not pizza ovens as they provide little bottom heat that is required to properly bake a pizza. In a home setting you can make them work by using a heat sink under the pizza, but in a commercial application this will not work. Like Walter said, leave that oven to what it was designed for, baking cakes, cookies and some breads.

Tom Lehmann/The Dough Doctor  
6131

### [\*\*Newbie Topics / Re: OK WTH am I doing wrong?\*\*](#)

PAJ:

If you are putting the yeast into water that is uncomfortably warm the water is wwaayy too hot. Think of it like this, ideal yeast hydration temperature is 100 to 105F, body temperature is 98.6F, the water temperature in which you hydrate your yeast should feel only very slightly warm (only about 7F warmer than your finger). You are right, you might be cooking your yeast rather than hydrating it. Do you see any activation foam forming in the yeast water after about 10-minutes?

Tom Lehmann/The Dough Doctor  
6130

### [\*\*Neapolitan Style / Re: Burnt crust\*\*](#)

Please keep in mind that Wondra is an "instantized" flour, which accounts for its granular texture. As an instantized flour it is designed to hydrate very rapidly, faster than any regular flour will. When used as a peel dust, if you leave the prepped skin on the peel too long, or if the dough is slightly wet, the Wondra flour will hydrate in a heart beat, turning into what we used to call school paste, only now strategically located between your peel and what you are hoping will become a great tasting pizza, that is if you can get it off of the peel without destroying it. Just a cautionary note.

Tom Lehmann/The Dough Doctor  
6129

### [\*\*Chitchat / Re: So where does everyone live?\*\*](#)

Manhattan, Kansas, home to Kansas State university (Wild Cats) and Fort Riley (Big Red-1 /Seventh Calvary) about 100-miles west of Kansas City, Missouri or Kansas take your pick. Our local motto is "go west young man, go west, anyplace west of Kansas is fine".

Tom Lehmann/The Dough Doctor  
6128

### [\*\*Newbie Topics / Re: OK WTH am I doing wrong?\*\*](#)

Since you have confirmed yeast activity, we can probably safely take that off of the

table for now, so the next most likely caused are either stretching the dough skin too thin, or incorrect baking.

Another thing to look at is use of an excessive amount of sauce, pre-saucing the dough skins, or excessive amount of toppings. These are pretty easy to test by just barely using sauce, sauce only when you are ready to dress and bake the skins, and reduce the amount of toppings used.

Stretching the dough skin too thin is a very common cause of a gum line. To test this, leave the dough thicker for one pizza and see if things improve any. As for baking, you can test that by reducing the oven temperature by about 25F and baking for a slightly longer time.

Keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
6127

### **Dough Clinic / Re: Oven Rack Placement - top or bottom of oven**

Cindy;

You might increase the sugar level to 3% to see if that helps, otherwise you might need to do what I do in my electric oven, and that is to start the pizza out closer to the bottom to get a jump on crust color development and then move the pizza to a higher rack position to achieve top color. Also, can you share information on your stone with us. There is a possibility that it isn't holding sufficient latent heat to bake the bottom crust....i.e.; you may need to use a thicker/heavier stone.

Tom Lehmann/The Dough Doctor  
6126

### **Shop Talk / Re: Freezer ready pizza using commercial premade pizza dough - How to?**

C;

By "commercial pizza dough" I assume that this is dough that you are making in your store (you referenced staff). I will also assume that you are talking about a bake to rise concept pizza which is a raw dough skin that is topped and frozen to be baked from frozen at a later time/date. I will also assume that you are going to be baking the pizzas in a commercial pizza oven as opposed to a home oven which most T&B pizzas are ultimately baked in.

I would suggest the following:

- 1) Use fresh mixed dough formulated with 50% more yeast if possible, if not possible disregard and use your normal dough.
- 2) Scale, and ball as normal, wipe dough balls with oil and set aside to proof until the dough can be opened into pizza skins by your normal manner.
- 3) Open the dough balls into pizza skins, very lightly brush with oil, sauce and dress. NOTE: Do NOT dress too heavily with vegetable toppings as these will breakdown as a result of slow/static freezing and water out, leading to the development of a beautiful dreaded gum line.
- 4) Freeze the pizzas unwrapped until solidly frozen (about an hour).
- 5) Stretch wrap/shrink wrap the pizzas on a pizza circle with a piece of baker's parchment paper between the circle and the pizza.
- 6) Immediately place back into the freezer. They should keep for up to 2-weeks.
- 7) To bake these pizzas you will need to use a lower oven temperature. Depending upon your dough formulation something around 400 to 425 should work.
- 8) Bake the pizzas (possibly on a screen) until you achieve decent color top and bottom.
- 9) Adjust your expectations as you will not get the same pizza as you would if you were to bake it fresh (not frozen).

Thinner crust pizzas are better suited for this application than thick/thicker crust pizza types.

Tom Lehmann/The Dough Doctor  
6125

### **Dough Ingredients / Re: Bread Flour vs. High Gluten Flour**

Mary Ann;

While "high gluten" is synonymous with pizza, it is not the only flour that can be used to make pizza because there are so many different styles of pizza. My personal favorite flour to use for pan style and thick crust pizzas is a flour that comes in at between 11% protein on the low side to about 12.5% on the high side. My experience has been when I use a higher protein flour with my dough management process I get a finished crust that is too chewy for my likes. It should also be noted that the term "high gluten" isn't a whole lot of help when determining the protein content of the flour since there is no standard for high protein flour we have seen the words high gluten used on flour bags containing flour with anything from 12 to nearly 14% protein. Check on the flour bag for the protein content, usually expressed as grams of protein per 100-grams of flour. When expressed in this manner the grams of protein will be the protein content. For example, 12-grams of protein per 100-gram serving = 12% protein content. You can also go to the web site of the manufacturer to find the protein content of the flour in question.

Tom Lehmann/The Dough Doctor  
6124

### **Stones/tiles/steel, Pans & Accessories / Re: Rusty Sicilian Pizza Pan**

Mary Ann;

If it isn't too late, pull that rusty pan out of the trash, you can salvage it without any problem. Thoroughly scrub all rust out of the pan, then coat the inside (and outside) of the pan with salad oil and place into a 400F oven for about 30-minutes, be prepared for some smoke. Remove and allow to cool to the touch, then repeat. Your pan has now been seasoned. DO NOT soak the pan in water...ever. To wash, simply rinse in warm soapy water, rinse, wipe dry and place into the oven while it is still warm from baking your pizza(s) to thoroughly dry. Properly cared for, a seasoned pan will last for a very long time.

As for the dark colored pans, they are fine at temperatures all the way up to about 600F with dough in the pan, keep in mind that the pan will never reach that temperature as your pizza inside of the pan will hold the temperature down. Your baked pizza will only reach temperatures in the 200 to 210F range.

Tom Lehmann/The Dough Doctor  
6123

### **Off-Topic Foods / Re: Anyone make their own butter?**

I was raised on a small dairy farm and as a kid one of my chores was to make butter each day. Go to the milk house, skim off the cream from a milk can (you can substitute whipping cream if you don't live on a dairy farm), fill a quart size mason jar about 3/4-full, add a couple good pinches of salt, place lid on jar and begin shaking as you walk back to the house. Continue shaking until the cream begins to curdle/thicken, strain through a cheese cloth and squeeze out excess water. Serve fresh or refrigerate.

Tom Lehmann/The Dough Doctor  
6122

### **Dough Clinic / Re: WF Pizza great in house, gets spongy in box if taken**

## [home.... help?](#)

I see this as a common problem with many pizzas that are baked at a high temperature for a short time. Sometimes just reducing the temperature a bit and extending the baking time a little can have a great impact upon the quality of a DELCO pizza. You also want to make sure you are using something like a ripple board or pizza crisp sheets/mats under the pizza in the box.

Tom Lehmann/The Dough Doctor  
6121

## [Dough Clinic / Re: WF Pizza great in house, gets spongy in box if taken home.... help?](#)

We have looked at both and with our testing we haven't seen any real advantage of one over the other. They both provide an improvement over just placing the pizza right onto a cardboard circle and then inserting it into a box. Which brings up one other cause for soggy boxed pizzas, make sure your boxes have steam vents, and make sure they're punched open.

Tom Lehmann/The Dough Doctor  
6120

## [Off-Topic Foods / Re: sweet and sour chicken didn't turn brown](#)

GFG;

I'm guessing that the culprit is the soda. Soda is an alkali which raises the pH of the batter allowing it to brown faster and better. Just the opposite is also true in that an acid lowers the pH thus slowing/blocking the browning reaction to give a much lighter crust color. This is why sourdough breads have such a light crust color. You could probably encourage your new batter formula/recipe to brown better by adding some baking soda to it.

Tom Lehmann/The Dough Doctor  
6119

## [Shop Talk / Re: Conveyor pizza oven](#)

XLT is a great oven, and they have superb back up assistance to boot, even if you did not buy the ovens from them, they will still totally support any ovens with their name on it. Keep in mind that when buying ANY oven that it may not be what it appears to be. While any XLT, Edge, Middleby-Marshall, Lincoln, or Avantec oven might appear to be a pizza oven, this does not mean that it was profiled as a pizza oven when it left the factory or was used in a different application. For example, a number of years ago there was a young fellow who had just bought a used Lincoln air impingement conveyor oven, but try as he did, he could not get it to bake a decent pizza. When I asked my friend at Lincoln to run the serial number for me we discovered that the oven was originally bought by a major seafood restaurant chain, and it left the factory with a proprietary finger profile designed specifically to bake.....you guessed it, seafood, not pizza. He had to spend another \$700.00 to get the right finger profile to use the oven to bake pizzas. Moral of the story, know what you are buying before plunking your change down on the counter. If you do an "In Lehmann's Terms" archive search at [www.pmq.com](http://www.pmq.com) you should find my article covering all aspects of buying a used air impingement oven. My bottom line advice is to know what the power source is (electric in your case) and also the model number which is also the size designation, such as 32-55 (32-inches wide by 55-inches long) and then call XLT <[www.xltovens.com](http://www.xltovens.com)> or 888-443-2751 and ask to speak to someone about the recommended top and bottom finger configuration for that particular oven when used for baking pizzas. You will then need to pull the fingers to confirm what you have or will need to make that particular oven work for

you.

I hope this helps,

Tom Lehmann/The Dough Doctor

6118

**Shop Talk / Re: Keeping Pizza by the slice fresher.**

B2D;

Does your slice warmer have both temperature and humidity control?

Tom Lehmann/The Dough Doctor

6117

**Dough Clinic / Re: pizza dough and making pizza**

Jerry;

Let's start with the easy things first. It sounds as if the dough isn't getting baked properly. With the much drier climate in Las Vegas it could be that your flour is somewhat drier, thus needing more water in the dough would help the dough to better expand (oven spring) during baking, resulting in a better, more thorough bake and an overall crispier finished crust. I would suggest adding at least 1/4-cup additional water to see if that helps move you in the right direction.

Tom Lehmann/The Dough Doctor

6116

**Dough Clinic / Re: Instant Dry Yeast to Fresh Yeast Cake weight conversion help?**

According to the SAF conversion chart you will need to replace your 2-ounces of IDY with 6-ounces of compressed yeast.

Tom Lehmann/The Dough Doctor

6115

**Dough Clinic / Re: pizza dough and making pizza**

Sonny;

When he was in Buffalo he was using an 80% absorption rate. We might assume that Buffalo (N.Y.) is significantly more humid than Las Vegas, NV. As we are talking about the use of bagged flour of undetermined age, but can assume that it was stored/inventoried in a proximity close to each city, there is a distinct possibility/probability that the flour used at the Buffalo location had a higher moisture content. When he moved to the drier, Las Vegas location the flour could have been lower in moisture content due to the desert environment, hence, if he were to add the same 80% absorption, the resulting dough would be somewhat drier/stiffer and potentially lack the oven spring properties of the dough he was making in Buffalo, so, my reasoning was that the addition of some additional water to the dough might restore the rheological properties to the dough (as they were in Buffalo) resulting in more oven spring and a resulting improved bake-out. It looks as if the additional 1/4-cup was too much, but a lesser amount might give the desired results. Like I said, this is the easiest thing (and somewhat logical in my twisted mind) to do first. If additional water/absorption doesn't work we will need to dig deeper.

Tom Lehmann/The Dough Doctor

6114

**Stones/tiles/steel, Pans & Accessories / Re: Rusty Sicilian Pizza Pan**

Mary Ann;

Canola oil should work just fine...why waste perfectly good olive oil? LOL

As you continue to bake in your seasoned pan/pans they will continue to darken to an almost black color. Cherish those pans when they get to that color since that's when they will bake the best.

Tom Lehmann/The Dough Doctor  
6113

**[Shop Talk / Re: Keeping Pizza by the slice fresher.](#)**

B2D;

What many slice vendors do is to fully bake the pizzas, place them onto aluminum serving/display trays and store them in the heated (145F) cabinet with approximately 70 to 75% R.H. (relative humidity). Under these conditions the pizza will hold up well for about 2-hours, but the cheese will begin to look something like a melted blob of plastic (ain't much that can be done about that). Then, when a slice is ordered, the slice is removed from the cabinet and placed into an oven for warming/re freshening. The type of oven that seems to work the best is a small counter top conveyor oven, but I've seen deck ovens used to great success too as well as toaster ovens for use at bars where time is not a great issue. The reheating process brings the cheese back to a level of life, but if you give the slice a very light sprinkle of additional cheese as you put it into the warming oven it restores the slice to that fresh baked appearance again.

Tom Lehmann/The Dough Doctor  
6112

**[Shop Talk / Re: Conveyor pizza oven](#)**

Airruiz;

I have a good friend here in Manhattan, KS with three pizza stores and he has had some very good luck finding used XLT's as well as used Marsall deck ovens on the internet. Another very good resource on ovens of all kinds is George Mills. George is a regular at the PMQ Think Tank. Just make a posting in the Think Tank directed to George Mills and he'll be sure to respond to any questions you might have on ovens, hoods, or just about any other store equipment or design.

Tom Lehmann/The Dough Doctor  
6111

**[Newbie Topics / Re: Whole Wheat/Vegan Pizza?](#)**

TLK;

Actually, when made correctly, whole-wheat crusts are not all that bad. The biggest problems that I see are two fold, first, they really should be made from a hard, whole white wheat. This will eliminate some of the bitterness often associated with whole wheat crusts. Second, you need to have enough water in the dough to fully hydrate the whole wheat flour. This generally means a dough absorption of around 70%. The dough will feel soft and sticky at first, but if you allow the dough to rest/ferment/hydrate for about an hour, you should see a significant improvement in the dough as the whole-wheat flour hydrates. Once the dough has hydrated you can ball it and put it into the fridge for some overnight cold fermentation to develop some flavor. With regard to formulation, I personally like to formulate my whole-wheat doughs with higher sugar levels, like up around 5% to achieve a sweeter tasting finished crust. After that, I don't use it for anything but the thinner crust types because I think the flavor and texture might be too much in a thick crust format. Aside from the vegetable toppings, and traditional sauce, or my favorite, slices of fresh tomato to replace the sauce, use a vegan cheese and you should be good to go.

Tom Lehmann/The Dough Doctor

6110

**Dough Clinic / Re: Tom: When did pizzerias start cold fermenting dough?**

Walter;

I don't know when that school started doing it but I worked as an adviser to a very similar one all the way back in the early 1970's when we were still up in Chicago. When my wife was still teaching elementary school I organized several student run fund raising dinners at her grade school. With help from the ladies in their kitchen to prepare the food (pizza dinners and sometimes pasta dinners) the kids would sell tickets, meet and escort diners to their table, bring the food to the tables, bus and reset the tables for the next dinner guests. This was a great learning experience for the kids, and it was always one of their best fund raisers too, so I can fully appreciate all the benefits something like this brings to the students.

Tom Lehmann/The Dough Doctor

6109

**Dough Clinic / Re: Tom: When did pizzerias start cold fermenting dough?**

Walter;

No telling for sure, but I'm willing to bet that the practice goes back to some of the very first pizzas made. If you are referring to the modern cold ferment process as we use it today in our pizzerias, it can be dated to about 1958 and it was in pretty common use just a few short years later. The use of the process follows the development of the pizza chains as we know them today.

Tom Lehmann/The Dough Doctor

6108

**Newbie Topics / Re: OK WTH am I doing wrong?**

PAJ;

You will probably be best off by just adding the ADY to the warm water with just a pinch of sucrose (regular table sugar) to help get it started. There is no need to add any flour or anything else.

If you have too much yeast for the length of time you are fermenting the dough the dough can become over fermented, thus weakening the dough to the extent that it can't support the weight of the toppings, so it now collapses, and readily allows heat to pass through the dough/crust into the toppings where the heat is dissipated in the form of steam, hence the dough never becomes baked to the point of being very crispy or firm. If you see both of these in your pizza, the dough might be over fermented. If you just see the gum line you might also be stretching the dough too thin, or if you are making your own sauce, you might be adding too much water to it, or an excessive amount of toppings. To test for this, try brushing on a VERY THIN layer of oil on the skin, then add thin slices of blotted, fresh tomato (one average tomato is about right for a 12-inch pizza), now apply your cheese and see if the problem has been addressed. If it has, this is an indication that you just need to work on dressing the skin. In some cases the gum line can also result if the pizza isn't baked long enough. To test for this, reduce the baking temperature by 50F and bake to color. If this addresses the problem you may need to make an adjustment to your baking time and temperature.

Tom Lehmann/The Dough Doctor

6107

**Dough Ingredients / Re: Bread Flour vs. High Gluten Flour**

And don't forget to add fermentation to the mix. Remember that fermentation rate is influenced by yeast level, salt level, sugar level, finished dough temperature, and

we could probably toss pH into the bag too (but that probably won't influence the issue at hand). With that said, if you employ a long fermentation time or high fermentation rate it could weaken a lower protein bread flour while not weakening the high protein flour this would give a significantly higher finished volume/height to the finished crust made with the high protein flour. The converse is also true. What does all this boil down to? The flour characteristics must be matched to the type of pizza being made as well as the dough formulation and dough management procedure used to manage your dough, and then it must be weighed against what characteristics you are looking for in the finished crust. This is why we see so many different types of flour being used by so many different people to make the same or different pizzas. Of course this is where the fun now actually begins, looking for the flour or flour blend that works best for your specific pizza. Remember, your mistakes ARE edible. :)

Tom Lehmann/The Dough Doctor  
6106

### **Dough Clinic / Re: Pizza Dough Recipe "Weighed not Measured"**

DSW;

My "partner in crime" here at AIB is Jeff Zeak, with about 25-years pizza experience loves to make free from pizzas such as yours. His comment when he saw your photo was "cool". The dough looks good as do the toppings, but if I was to make a change it would be to work towards more top crust color on the pizza. How was the bottom color? From the looks of the top, I might assume it to be on the light side. If you can't get improved crust color by manipulating the position of the pizza in your grill, or through the temperature try adding some sugar to the dough formula to increase crust color development under your baking conditions.

Nice job!

Tom Lehmann/The Dough Doctor  
6105

### **Dough Clinic / Re: HELP! I keep adjusting my percentages.... BUTT!**

PF;

Here is what I would suggest;

- 1) Use only about 1/2 cup of warm water (100 to 105F) to hydrate the yeast in.
- 2) Add only a pinch of sugar to the yeast suspension and stir for about 15-seconds. Allow to hydrate/activate for 10-minutes.
- 3) Have the remainder of your water at a temperature of about 75F.
- 4) Add the yeast suspension and the 75F water to the mixing bowl. Note: You might want to consider increasing the water to 60% absorption (720-grams total).
- 5) Add the remainder of the sugar and the salt on top of the flour.
- 6) Mix as you normally do.
- 7) Portion into doughs ball as you are presently doing.
- 8) Place dough balls into your oiled containers, and place into the fridge uncovered for 2-hours.
- (9) Place lids on the containers and allow the dough to cold ferment overnight in the fridge. This dough should keep for at least 2 to 3-days (possibly longer) if kept in the fridge.
- 10) Remove the number of containers from the fridge that you need to make your "pizza fix", and allow to set at room temperature for about 2-hours.
- 11) Turn the dough out of the container(s) onto a flour dusted surface, flour both sides of the dough ball and begin opening the dough ball into a pizza skin. An easy way to do this is to use a rolling pin to open the dough to about 2/3 of the finished diameter, then set the dough piece aside to rest for 5-minutes, now you are ready

to begin opening the dough by hand to the full desired diameter.

12) Place the pizza skin onto a seasoned screen, lightly brush with olive oil, dress as you wish.

Tom Lehmann/The Dough Doctor  
6104

**Dough Clinic / Re: Pizza Dough Recipe "Weighed not Measured"**

DSW;

Ohhhh.....Very nice bottom crust color. It looks like all you need is a bit more top heat to get the sugar free dough to color up (in my opinion).

Tom Lehmann/The Dough Doctor  
6103

**American Style / Re: The secret of pizza hut shiny crust ?**

I think Vince is pretty close. PH does use a LOT of oil in their pan pizzas as does Old Chicago too resulting in more of a fried than baked pizza. I normally use peanut oil in the pan in this application.

Tom Lehmann/The Dough Doctor  
6102

**Chitchat / Re: Edge Pro Knife Sharpener.....**

I've also been a knife collector for more years than I can now remember (over 50) and during the winter months I build hunting knives (drop-point design) and make all of my own knife sheaths and pistol holsters, but that's a whole different story. I use nothing but a series of diamond sharpeners from coarse grit to ultra fine for polishing the finished edge, I then strop the blade to remove the wire edge. Even though I include a warning with each knife, I still get e-mails from purchasers telling me that they were just checking the edge by running their thumb over it and ended up with a split thumb. We also have a number of ceramic knives in the kitchen and they work great so long as you don't try to pry with them, and by all means don't put them into the dishwasher. With time even the ceramic blades need to be sharpened and I find that my diamond sharpeners are up to that task too. The biggest challenge to using my type of diamond sharpener is learning how to hold the knife to get a 20 - 22-degree angle along the entire blade length. Once you have that part mastered, sharpening knives and maintaining the edge the old fashion way is fun and easy.

Tom Lehmann/The Dough Doctor  
6101

**Dough Clinic / Re: how can I improve my dough?**

Chase;

What is your starter comprised of? What are the amounts that go into making the 98-grams?

Tom Lehmann/The Dough Doctor  
6100

**Dough Clinic / Re: My dough is too soft, why?**

Dustin;

50% absorption seems to be rather low for the type of flour that you're using. This might be restricting the oven spring of the dough during baking thus making a more dense dough which is more difficult to get to brown during baking than a lighter, better risen dough. I would suggest increasing the dough absorption to 63% (15.12-ounces) call it 15.5-ounces. The dough will most likely take longer to

pull off of the sides of the mixing bowl but that is normal with the higher absorption. When you remove the partially baked pizza from the pan, try placing the pizza onto a rack in the highest or second to highest rack position as this will provide more top heat to the pizza for better top color development. The softer dough consistence should exhibit better oven spring during baking which will improve both the color and crispiness of the finished crust.

Tom Lehmann/The Dough Doctor  
6099

### [\*\*Dough Clinic / Re: cooking on lloyds pans\*\*](#)

Sonny;

The bake issues that you are presently having are a result of your oven not having any top heat control. When you go commercial you can opt for an oven with both top and bottom heat control to address those problems. Covering the top of the pizza with a piece of foil is a common way to balance the bake of a deep-dish pizza in a home oven or any oven that does not have top and bottom heat control. One neat trick that I've seen used with ovens like yours is to bake the pizza on the deck with a piece of foil covering the top of the pizza until you have the bottom color you are looking for, then place an inverted pan into the oven and place the pizza on top of the inverted pan without the foil covering. This insulates the bottom from the heat of the deck while moving the top of the pizza closer to the top of the oven where you will get better/faster color development to the top of the pizza. This is similar to what many people do in their home ovens where they bake the pizza on a lower rack position to get the bottom crust color/bake and then move it to a higher rack position to get the top color and finish baking.

Tom Lehmann/The Dough Doctor  
6098

### [\*\*Pizza Toppings / Re: Toppings.....Sliced vs Diced\*\*](#)

I'm a fan of sliced toppings as opposed to diced. To my eyes, the sliced makes for a much better looking pizza, not as "commercial" but more "rustic" if not gourmet for whatever that means. I also like to retain some of the texture in the vegetable toppings so I tend to lean towards a slighter thicker slice. I also really like the flavor that I get from the sliced toppings as it gives some variety as you eat through the pizza. As you might imagine from this, my greatest dislike of a pizza comes when all of the toppings are diced uniformly fine so the second bite is just like the first bite, and the last bite is just like the first bite too. I even go so far as to make sure I have a nonuniform distribution of toppings on the pizza to give an additional depth to the layering of flavors as I eat through the pizza.

Tom Lehmann/The Dough Doctor  
6097

### [\*\*Dough Clinic / Re: Overly elastic dough\*\*](#)

Chuck;

Your problem is one of two. Either you are underfermenting the dough or you are using the wrong type of flour (excessively high in protein content) for the dough management procedure you're using. Not knowing anything about the type of pizza you're making, the formula/recipe, or your dough management procedure, the best I can offer at this time is to say that fermentation reduces the elasticity of the dough. If you are using a refrigerated method of dough management it is common to allow the dough to cold ferment for 2 to 5-days. and if you are using the dough the same day to make your pizzas and fermenting the dough at room temperature a minimum of 6-hours of fermentation time should be used. If you want to attack the

problem through the use of an additive, I'd suggest using something like PZ-44 (a blend consisting of L-cysteine (an amino acid) and dairy whey), or "dead yeast" which is rich in glutathione (also an amino acid). The dead yeast product is available from just about any yeast manufacturer while PZ-44 is available from Agropure (formerly Foremost Farms USA). You might Google either of these to see if you can find a source selling in quantities of less than 50-pounds. Since both of these are used at a range of 2 to 4% of the total flour weight you will find that a little goes a long ways. One other thing you could also add to the dough to help reduce the elasticity is onion and/or garlic powder. Used individually or in combination at around 0.25% of the total flour weight this can help reduce some of the elasticity in your dough.

Tom Lehmann/The Dough Doctor  
6096

**Dough Clinic / Re: Great Recipe and Fantastic Taste - just need it to be more fluffy + light**

MO;

Two options come to mind, you have room to increase the IDY slightly. You can take it up to 0.375% and still be within the normal yeast range. This will provide additional leavening to the dough for a lighter, less dense finished crust. If your dough management procedure allows, you could also increase the finished dough temperature by a few degrees to speed up the rate of fermentation, thus providing for a lighter finished crust texture, or you could just allow the dough skin to proof/rise (maybe 10 or 15-minutes) between shaping and dressing/baking. This is how we impart the characteristic lightness to bread and rolls.

Tom Lehmann/The Dough Doctor  
6095

**Dough Clinic / Re: Why bulk ferment?**

A lot of it will depend upon the flavor you're looking for in the finished crust. My personal preference is to take the dough directly from the mixer to scaling and balling and then directly into the fridge where I leave it cold ferment for 48 to 72-hours before using it. To use the dough balls that have been cold fermented I like to allow them to temper at room temperature for about 2 to 3-hours depending upon ambient temperature, then open the dough balls into pizza skins ready for dressing and baking. Allowing the dough to ferment partially or totally at room temperature will impart a different flavor to the finished crust. I'd experiment to see where your flavor preferences lie and to see what management procedure works best for you.

Tom Lehmann/The Dough Doctor  
6094

**General Pizza Making / Re: Camping Pizza Making with no cooler**

MPO;

How long are we talking about holding these toppings before they're used? If we're in the 3 to 5-day range, perhaps a little longer you can dehydrate just about any vegetable toppings you wish and rehydrate them at the time of use. Use a meat topping that is packaged and sold at room temperature, or make your own jerky to rehydrate. As for the dough, simple, put together an emergency dough using IDY and shortening as opposed to oil. Put it all together in a durable plastic bag (I use a 1-gallon Zip-Lok bag) force out as much air as possible for ease of packing and secure with a couple rubber bands. When pizza day arrives, add a prescribed amount of water directly to the bag and knead the mixture to make a sticky dough.

Set aside to ferment for an hour or a little more, then remove the dough from the bag by inverting the bag, and using some dusting flour or oil on your hands, knead the dough for a minute or so, then form onto a piece of oiled heavy duty aluminum foil. Set aside to proof/rise for 10 to 60-minutes while you're dressing the dough, then carefully transfer to a bed of hot coals to bake until the bottom begins to brown, using another piece of lighter weight foil, tent the top of the pizza to get some top heat and bake until it is reasonably done. Remember, this is a backwoods pizza, anyone not inclined to like it is free to go to Pizza Hut, or order one from Domino's! LOL.

I've made pizza like this a number of times with the scouts.

Tom Lehmann/The Dough Doctor  
6093

### **Chitchat / Re: poofing boxes**

I just lightly oil my dough balls and put them into reclaimed bread bags, twist the open end to close and tuck the pony tail under the dough ball as I place it into the fridge. Works great, and the cost is free if you eat packaged bread or know someone who does.

Tom Lehmann/The Dough Doctor  
6092

### **Prep Equipment / Re: Spiral Hook for KitchenAid K5SS**

I can't speak to the K-5A mixer specifically, but when Hobart first came out with the new spiral hook design back in the late 1960's it was retrofittable to all of their mixers at the time.

Tom Lehmann/The Dough Doctor  
6091

### **Dough Clinic / Re: dough won't fully cook through**

As I've said so many time, temperature control is the key to effective dough management. This is extremelt important, especially in a store setting where pizza quality can make or break your business. Be sure you are correctly hydrating the ADY in a small portion of 100 to 105F water for about 10-minutes. The dough temperature should be 80 to 85F after mixing. If you are using large dough boxes, be sure to cross stack them after you put them for the first 2-hours after you put them into the cooler, then cover or nest the boxes to prevent drying and the dough will be ready to use in about 18-hours. To use the dough (this is CRITICAL for what you are doing) bring the dough balls out of the cooler and allow them to temper AT room temperature for 2.5 to 3-hours, then begin opening the dough balls into pizza skins for immediate use. Once you begin using the dough it will remain good to use for the next three hours, just remember to keep those dough boxes covered.

Let me know if you see any improvement from this.

Tom Lehmann/The Dough Doctor  
6090

### **Prep Equipment / Re: Spiral Hook for KitchenAid K5SS**

While on the topic of K5-A mixers, keep an eye out for the Hobart industrial version of this mixer, model designation N-50. This is a three speed mixer that was developed fir industrial applications.

Tom Lehmann/The Dough Doctor  
6089

### **Shop Talk / Re: 5 Year Plan**

Wes;

Your local SBA should be able to provide you with all the information you need. Many times they can point you to retired business execs that that volunteer for them and are more than happy to assist you.

Tom Lehmann/The Dough Doctor  
6088

**Dough Clinic / Re: Great Recipe and Fantastic Taste - just need it to be more fluffy + light**

MO;

You are not locked into using any specific absorption so I might suggest just a further increase in dough absorption. This will provide a softer dough that will rise more readily (oven spring) during baking to provide for a lighter textured crust.

Tom Lehmann/The Dough Doctor  
6087

**General Pizza Making / Re: Really need help with bottom crust issues**

If your pizza skin is too thin, or doesn't exhibit any/sufficient oven spring characteristics during the early stages of baking the heat that is applied to the bottom of the dough is conducted right on through the dough into the toppings where it is dissipated as steam during baking, leaving the bottom of the dough/crust without sufficient heat to develop the desired color. Reasons for this can be forming the pizza skin too thin, or insufficient dough absorption which inhibits expansion of the dough during baking resulting in a thin, leathery finished crust. The best sugar to add to get browning without flavor (sweetness) is lactose. Lactose is a reducing sugar so it will readily participate in the browning reaction and it also has the lowest sweetness value of all the sugars, only about 10% of that of sucrose. Dairy whey is about 73% lactose so the addition of whey to the dough formula can be a good way to achieve pronounced browning without the unwanted sweet taste.

Tom Lehmann/The Dough Doctor  
6086

**Chicago Style / Re: Springform Cake Pan? Can't get my deep dish out of the dish!**

I use a deep-dish pan gripper and a cake decorating spatula with a narrow bendable blade. I first grab the pan with the gripper, then run the spatula blade around the pan to make sure the crust is fully released from the pan, then slide the spatula blade down the side of the crust and with a slight flip of the wrist I slide the spatula blade under the pizza to help guide it out of the pan onto a cooling rack. American Metalcraft [www.amnow.com](http://www.amnow.com) has the heavy weight aluminum removeable bottom pans (3" deep X 8, 9 or 10" diameter). You may need to season these pans though. Or you can get the same type of pan with a black, non-stick coating from Lloyd Pans <[www.lloydspans.com](http://www.lloydspans.com)>

Tom Lehmann/The Dough Doctor  
6085

**Chicago Style / Re: Springform Cake Pan? Can't get my deep dish out of the dish!**

Mike;

The Lloyd Pans item that you are looking for is available in both 2" and 3" depth and 3" to 16" in diameter.

Their product number is PCC-12-2-DK for the 12" pan that is 2" deep. if you just

change the 12 to the diameter you want and the 2 to either 2 or 3 depending upon the depth that you want, you should find what you are looking for. DK is their designation for their Dura Kote (black, non-stick) finish.

Tom Lehmann/The Dough Doctor  
6084

**Prep Equipment / Re: Has anyone tracked down a manual dough sheeter for home use?**

I have several of what are probably the least expensive dough rollers/sheeters ever made. The more expensive one have handles to hold onto that connects to a central axle around which a wood or metal barrel rotates. This one is called a "rolling pin" the other is nothing more than a 2" diameter piece of round hardwood 14" long. This one is commonly referred to as a pie pin. Both work great on pizza dough, croissant dough, sweet dough, donut dough, biscuit and yes, even "pie" dough. :)

Tom Lehmann/The Dough Doctor  
6083

**Dough Clinic / Re: Doh! Brown my crust - tips plz**

I can toss out a couple thing that you might want to experiment with. I also bake as you do but I also move the pizza to a higher rack position for the last couple minutes of baking.

You might try brushing some olive oil on the dough edge just before you put it into the oven for baking, this will give an improvement in crust color.

I am in agreement with Ryan in that you might be pushing the semolina flour a bit too high. I seldom ever use more than 25% of the total flour as semolina. I have also had problems getting crusts made with AP flour to color up as well as I like so I always use a bread flour. My "go to" flour is the Pillsbury Bread Flour available from just about any supermarket. Like Ryan said, go to 100% regular flour and then begin introducing the semolina flour at increasing levels to see what you get, it will also be a good excuse for making pizzas, just be sure to log your results, and remember, even bad pizza tastes pretty good!

Tom Lehmann/The Dough Doctor  
6082

**Dough Clinic / Re: Doh! Brown my crust - tips plz**

Ryan;

Peter nailed it. My references for Gold Medal flours shows that all of the winter wheat based all purpose flours are malted, but when you go to the soft wheat flours such as Helmet, Golden Shield and Cameo these are not malted. All purpose flours typically have a lower protein content than bread type flours and since the proteins are a functional part of the browning equation the higher protein flours will contribute to a better color on the finished crust. Just for comparison, bread flours average from 11.1 to 12.6% protein content, All Purpose flours run from 8 to 10.5% protein content, and strong bread/pizza flours run from 13 to 14.2% protein content and semolina flour comes in around 12% protein but it is not malted. One thing to keep in mind is that while a pizzeria can easily get away using 100% of an all purpose flour with good crust color due to his commercial oven, when we try to replicate the same thing in our home ovens we don't have the same baking properties so it can present a challenge to get enough heat to brown the crust to the color we're looking for, so in some cases we may need to cheat a little by adding things like sugar, whey solids, or nonfat dry milk solids. Even the addition of vital wheat gluten to the formula will increase the protein content to the point where we see an improvement in crust color.

Tom Lehmann/The Dough Doctor  
6081

**Dough Clinic / Re: Spotty dough, how can I make it smooth?**

KDAQ;

You say you are using ADY but your formula shows IDY. There is a significant difference between the way the two different types of yeast are handled. ADY must be hydrated in 100F water prior to addition to the dough or you will get lumps/spots of yeast throughout the dough. IDY can be added as you have indicated BUT the dough must be mixed for more than 4-minutes. It does not appear that you are mixing the dough this long so again, the problem has a high probability of being due to yeast agglomerates (pieces of yeast) not suspended throughout the dough. We have a similar problem in pizzerias when a VCM (vertical cutter mixer) is used and the mixing times are very short (about 70 to 90-seconds). The solution to the problem, if this is the root of the problem, is to suspend the yeast prior to addition to the dough. This is easily accomplished by putting the IDY into 95F water or ADY into 100F water and allowing it to hydrate for 10-minutes, then stir well and add along with the rest of the dough water. Note: The yeast should only go into a small portion of the total water. The remainder of the water should be at whatever temperature your dough management process calls for (typically around 85F).

Tom Lehmann/The Dough Doctor  
6080

**Dough Clinic / Re: 1 Dough, 2 Ferments?**

Dan;

A good compromise ADY level for both cold and room temperature fermentation would be 0.25% ADY. As for finished dough temperature I would suggest shooting for something in the 70 to 75F range. My own personal preference is to place the room temperature ferment dough in the cooler of the two locations mentioned.

Tom Lehmann/The Dough Doctor  
6079

**Dough Clinic / Re: Freezing dough for future use?**

I'm assuming you mean to freeze the dough for future use? The best way to freeze the dough in a home application is to open the dough into pizza skins, and place onto a lightly oiled flat surface that can be placed into the freezer for freezing. I would allow the dough to freeze for at least an hour, then wrap it in stretch/cling wrap and place into a plastic bag and immediately back into the freezer. You can store dough frozen this way for up to 3-weeks. To use it, just place onto a lightly floured surface, cover to prevent drying, and allow to slack-out (thaw) until the dough is again soft, which normally takes about an hour total time. My own twist to this is to open the dough up to only about 2/3 of the desired finished diameter, then allow to slack-out as described above, but then proceed to bench stretch the dough to full diameter before dressing and baking. By doing it this way you don't need to wait as long for the dough to slack-out as the dough can be worked on the bench as soon as it is soft enough to be handled and by the time you are through opening the dough it has warmed sufficiently to allow you to proceed with building the pizza.

Tom Lehmann/The Dough Doctor  
6078

**Dough Clinic / Re: Help!!!**

JV:

Adding a release agent to the pan, such as oil or shortening is the only option you have. Also, be aware that the bright shiny pans will bake much differently from a dark colored pan. To correct this condition you will need to season the bright colored pans by wiping them with salad oil and placing them into the oven at 425F for about 20-minutes. Repeat this at least twice and the pans should be ready to begin baking in. DO NOT allow the seasoned pans to ever soak in water as this will cause the seasoning to peel off necessitating that the pans be completely stripped of their seasoning and be reasoned.

Tom Lehmann/The Dough Doctor  
6077

### **Neapolitan Style / Re: Preferred temp of Dough Ball to push out and get best Oven-spring**

SP;  
Your number are pretty close to what we have found in our research here at AIB. We have found that the "magic" number/temperature is 50F. If you try opening the dough ball much below this the dough can be a bit problematic to get opened, and then it can give you fits with bubbles. At 50F the dough opens well and bubbles are minimized. The upper end of the temperature scale is around 60F. At this temperature the dough opens very well but depending upon the dough formulation, if you have a number of dough balls to open things can start to get out of control pretty quickly.

Tom Lehmann/The Dough Doctor  
6076

### **Newbie Topics / Re: Crispy fried crust**

WRM;  
What you experienced is common for any type of hard or plastic fat as opposed to using oil in the pan. The use of shortening, butter, margarine, etc will give a dry, almost bread like crust surface while the use of oil in the pan will result in a fried texture and appearance.

Tom Lehmann/The Dough Doctor  
6075

### **Dough Clinic / Re: Crunchy dough**

What was your formula/recipe?  
How did you manage/handle the dough after mixing.  
How did you open the dough into a pizza skin?  
What can you tell us about how you baked the pizza?  
Tom Lehmann/The Dough Doctor  
6074

### **Dough Clinic / Re: Crunchy dough**

At about 0.5-pound for about a 12-inch pizza you are on the light side for dough weight, depending upon the type of pizza you are attempting to make. With the limited fermentation time that your dough is subjected to it can be rather difficult to open the dough without developing thin spots in it, and baking the pizza in a pan may be a detriment to getting the dough to rise in the oven as it would if you were baking on a stone. What you might do is to add additional water to the dough and also allow the dough to ferment longer, overnight in the fridge or at least 2-hours at room temperature before opening the dough into a pizza skin for topping and baking. Add sufficient additional water to just get a soft, pliable dough after the fermentation period. You might then try one of my tricks to open the dough ball

into a pizza skin, that is to use a pie pin or rolling pin to open the dough ball to about 2/3 of the finished diameter, then finish opening the dough by hand. This method of opening the dough aids greatly in achieving a more uniform thickness across the diameter of the pizza skin.

Tom Lehmann/The Dough Doctor  
6073

### [\*\*New Forum Members / Re: Crust not cooking all the way\*\*](#)

David;

Your problem might also result from rolling the pizza skin too thin. This can result in a degassed dough which allows the latent heat in the stone to pass right on through the dough into the sauce where the heat is dissipated in the form of steam. A good test for this would be to allow your opened pizza skin to rest/proof for about 30-minutes prior to dressing and baking. If the bottom now bakes better and develops more color this is probably where the problem is, if not, possibly moving the stone closer to the source of heat might help.

Tom Lehmann/The Dough Doctor  
6072

### [\*\*New Forum Members / Re: Crust not cooking all the way\*\*](#)

David;

Others may have had a different experience, but when I have tried to bake my pizzas in my son's oven with the convection mode turned on, the top of the pizza colors up too fast and I can not get the bottom bake I'm looking for.

Tom Lehmann/The Dough Doctor  
6071

### [\*\*Newbie Topics / Re: Crispy fried crust\*\*](#)

WRM;

Within reason, the more oil used in the pan, the greater the fried effect will be upon the finished crust. The biggest drawback to using this much oil though is in getting an oily finished crust...but they are soooo good.

Tom Lehmann/The Dough Doctor  
6070

### [\*\*Shop Talk / Re: 5 Year Plan\*\*](#)

I agree, with today's economy and uncertainty, a 5-year plan is pretty optimistic. I use a 3-plan to keep me pointed in the right direction.

Tom Lehmann/The Dough Doctor  
6069

### [\*\*Dough Clinic / Re: What happens??\*\*](#)

A couple of things stand out about your formula;

The oil level is rather high for this type of pizza. I would suggest reducing it to around 2%.

The salt level is a bit on the low side so I would suggest increasing it to 1.75 to 2%. Your yeast level is probably a bit low for ADY, you could go as high as 0.5%.

All of this said, I doubt that the problem is with the dough formula, but rather with either the protein content of the flour (protein content might be too low) or even more likely, your finished dough temperature (the temperature of the dough immediately after mixing) is/was too high. This would cause the dough to over ferment during the overnight period, resulting in what many describe as a "rotten" dough. I would think that, under your conditions, a finished dough temperature of

70 to 75F/21 to 24C might work pretty well for you. Additionally, it would also help if you could tell us how you manage your dough after mixing. This is everything you do with the dough from the time it is removed from the mixer until you use it on the following day.

Tom Lehmann/The Dough Doctor  
6068

### [\*\*Dough Clinic / Re: Frozen pizza dough\*\*](#)

Dana;

I hate to have to answer your question like this but there is no other correct way to answer it.

The best frozen dough will be the one that performs best for you in YOUR kitchen/store giving the finished crust characteristics that you desire. The best thing to do is to shop around and try dough from different manufacturers. The same advice holds true for par-baked crusts and gluten-free crusts.

Tom Lehmann/The Dough Doctor  
6067

### [\*\*Dough Clinic / Re: Why add semolina to pizza dough?\*\*](#)

The addition of semolina flour (the same flour that pasta is made from) should not impart a grittiness to the finished crust unless the dough is extremely dry as are used for making some of the cracker type crusts. The semolina flour adds toughness/chew to the finished crust as well as a slightly different finished crust flavor profile. All of our work has indicated that you can go up to about 25% substitution of semolina flour for your regular flour with good results, beyond that toughness in the finished crust (especially as it cools) can begin to pose a problem. Semolina flour has a larger particle size than your regular flour (this is why it also works well as a peel dust) so it hydrates at a slower rate, due to this it is common to add just enough water to the dough to give you the desired consistency, but then the semolina flour begins to hydrate, and the dough tightens up, making handling/opening the dough difficult. To correct for this I always adjust the absorption on any doughs made with around 25% semolina flour so they are softer than normal and even somewhat sticky as these characteristics will disappear as the semolina flour hydrates over the next 30-minutes or so.

Tom Lehmann/The Dough Doctor  
6066

### [\*\*Dough Clinic / Re: Frozen pizza dough\*\*](#)

Dana;

Something to keep in mind is that pizza dough is not all that different from French bread dough, Vienna bread dough, Italian bread dough, and depending upon the type of pizza you want to make, bread dough may not be too far off base. So keep your options open and be sure to look at other types of frozen dough, one of them just might be exactly what you're looking for.

Tom Lehmann/The Dough Doctor  
6065

### [\*\*Dough Clinic / Re: What happens??\*\*](#)

Runeli;

Don't worry, your English is just fine.

If you don't already have one, try to pick up a stem or dial type thermometer, like you see the chef's running around with in their pocket. These are usually pretty low cost and they will work great for measuring the dough temperature. If you use

some type of a closed box to store your dough in you might also consider leaving the top off of the container for the first two or three hours in the fridge/cooler to allow the dough to cool down more uniformly, then cover the containers until you're ready to use the dough.

Tom Lehmann/The Dough Doctor  
6064

### [\*\*Dough Clinic / Re: Why add semolina to pizza dough?\*\*](#)

Ryan;

At 52% absorption, your dough might have been too dry to fully hydrate the semolina flour. If you are trying to get that characteristic yellow color of the Chicago deep-dish pizzas, remember that they get that color through the addition of a yellow food coloring called "Egg Shade" you can Google it and it comes up.

Tom Lehmann/The Dough Doctor  
6063

### [\*\*Dough Clinic / Re: Crunchy dough\*\*](#)

Hey Ryan;

I bought some "dirt" this past summer from Walmart for \$2.00 for a 40# bag (\$0.05 per pound), come to think about it, I think they were referring to it as "top soil". :)

Tom Lehmann/The Dough Doctor  
6062

### [\*\*Dough Clinic / Re: Need some advice regarding this dough\*\*](#)

G.L.;

Converting your dough formula to bakers percent it looks like this:

Flour 100%  
Water 61.8%  
Salt 1.66%  
Oil 0.97%  
Sugar 0.97%

Based on this I would decrease the IDY to 0.375% (2.7-grams), and increase the salt to 2% (14.4-grams). Optionally, you could delete the sugar from the dough formula if the flour you are using is malted (it will tell you on the bag if it is malted).

Tom Lehmann/The Dough Doctor  
6061

### [\*\*Dough Clinic / Re: Pizza dough\*\*](#)

TZ;

Most are using flour with about 12 to 12.5% protein content, similar to Pillsbury Bread Flour available at most supermarkets.

If there is a "secret" to their dough management procedures it is in allowing the dough balls to cold ferment for three or more days before opening the dough balls into pizza skins. They also spend considerable time in training their operators how to open the dough balls into pizza skins too.

Tom Lehmann/The Dough Doctor  
6060

### [\*\*Dough Clinic / Re: Dough recipe questions\*\*](#)

Maybe I missed it, but what is the diameter of the pizza?

Tom Lehmann/The Dough Doctor

6059

**Dough Clinic / Re: Dough recipe questions**

If you are making deep-dish pizzas, are you allowing the dough to rise in the pan prior to dressing the dough? If you're making a thin crust, where you roll the dough out, place it into the pan and then directly into the oven, a small amount of oil in the pan may improve the way the dough bakes by improving the heat transfer from the pan to the dough. Something else that strikes me as strange, your bake time and temperature for an air impingement oven are long and high. Typically, we see baking times in the area of 6 to 7-minutes at 440 to 460F. This leads me to believe that you might not have the best finger arrangement/configuration for baking YOUR pizzas.

Tom Lehmann/The Dough Doctor

6058

**Dough Clinic / Re: Advice needed for "Rising crust" frozen pizza dough recipe please.**

I have several excellent bake to rise dough formulas in the RECIPE BANK at the PMQ web site, [www.pmq.com](http://www.pmq.com) (click on the RECIPE BANK option), or if you wish, you can send me a message and I'll be glad to send them to you.

Tom Lehmann/The Dough Doctor

6057

**Gluten Free / Re: gluten free NY style. yes. GF NY.**

You also mentioned to use 25-grams of "flour" to stretch and fold the dough, is this the "Gluuteny" flour or some other flour like rice flour?

Tom Lehmann/The Dough Doctor

6056

**Chicago Style / Re: After many failed attempts I finally got a decent thin crust**

PY;

Looks like a pretty decent rendition of a Chicago style thin crust! :)

Did you use raw sausage like they do in Chicago too?

Tom Lehmann/The Dough Doctor

6055

**Dough Clinic / Re: A Couple of Questions**

Julian;

To substitute ADY for the IDY you are presently using increase the amount of ADY to 1.25-teaspoons, but be sure to put it into a small amount of warm (100F) water to hydrate for about 10-minutes before using it. You should not add it dry as you do IDY. Since pizza dough is best undermixed, mixing is really not an issue. I normally mix my home made pizza dough by hand just until the dough comes together, then place it into a lightly oiled bowl and allow it to ferment a couple hours, or more. Then turn the dough out of the bowl and knead for a minute or so, divide the dough into individual pieces for each crust you want to make, place each of these into a small, lightly oiled bowl and allow to ferment for 1 to 2-hours at room temperature. Turn the dough out of the bowl into some dusting flour and open into pizza skins. As for using bread flour, it works great. I like to use Pillsbury "BREAD" flour available from most supermarkets (it is intended for use in making bread with a bread machine).

I'll be in Overland Park next week at my son's home making my traditional pizza

and calzones by this method.  
Tom Lehmann/The Dough Doctor  
6054

### **Events Calendar / Re: pizza expo**

I'll be there too as I'm on the program. My presentations are titled Time With The Dough Doctor, Tuesday, March 25 at 4:00 p.m. until ??? Then again on Wednesday, March 26 at 4:00 p.m. until ??? These are sometimes marathon sessions so we never know what time we might be asked to leave the room.

Pizza Expo is a great opportunity for anyone thinking about opening a pizza store in the future, or looking for reasons not to. You can easily get both perspectives from the many attendees and participants. And then there is all of the equipment and ingredients, just mind boggling! Be sure to bring along an extra bag to carry back all of the literature you will pick up on the show floor. I know many of you are interested in different flours, all of the flour suppliers (even Caputo) will be there to talk to you and give you literature on their many different types of flour available. Also, if you get a chance, try to sit in on some of the pizza competitions, and don't miss the Beer & Bull Session, this is an excellent opportunity to grab a couple beers and casually visit with owners and operators or pose some questions to the moderator.

If you don't enjoy the show it's only because you didn't attend.

Tom Lehmann/The Dough Doctor

By the way, the NAPICS Show (Columbus, Ohio) is also a great show to attend too, it is a smaller show than Pizza Expo, but it is less costly too for both getting into the show and attending the learning sessions, so if you're in the neighborhood, and can't make Pizza Expo, don't pass up the NAPICS Show.

Tom Lehmann/TDD  
6053

### **Dough Ingredients / Re: Special technique for this pizza crust?**

Just to add a little fuel to the fire, a number of years ago a number of wholesale pizza manufacturers were offering pizzas made on what they called either a croissant or Italian pastry type of crust. I've got slides of it in my old pizza presentation materials. When we replicated the crusts we were able to do so in a manner already described, that is by sheeting the dough thin, brushing it with a very light coating of oil and then folding the dough to get the laminations. This was repeated a number of times until the finished crusts had a similar appearance, much like the pictures provided. We were also able to replicate the crust characteristics using what is called a dry laminating procedure which is how saltine crackers are made. The dough is sheeted very thin, allowed to dry/skin over (with the help of IR heaters and fans) and then folded/laminated to achieve the desired internal structure. The last method we used was to incorporate hard fat flakes into the dough which also worked very well. By this method the dough is made a little softer than normal and hard fat flakes are added to the dough during the last few minutes of mixing, the dough can be used as it is, but best results were had when the dough was given a single lamination. If anyone ever spent time working in a retail bakery you might recognize that method as the "blitz" method on making pastry dough.

One of these methods was so successful at replicating the target product so as to earn me a visit by two corporate attorneys representing the company producing the target crust. No, they did not have a case and I was not sued for giving away their trade secrets, but in view of the attention I drew from them, I must have been awfully close to what they were actually doing.

Tom Lehmann/The Dough Doctor  
6052

## **Dough Ingredients / Re: Special technique for this pizza crust?**

Norma;

Hard fat flakes are (I'm going to use a bad word here, so look away if you will be offended) heavily "HYDROGENATED" fats that due to the hydrogenation process are now very hard, much like soap flakes in both size and appearance (do you remember American Family soap flakes?) I'm dating myself here and anyone else who admits to remember them. These hard fat flakes are added to the dough in much the same manner as raisins are added to a raisin bread dough. The result is a mixture of fat flakes and dough which imparts the appearance of a laminated dough. The BLITZ method of making pastry calls for taking butter and cutting it up into small pieces, about the size of a cherry pit on the small end and about the size of the cherry on the large end. The butter is then refrigerated to completely harden it, the dough is mixed in the normal manner and about 5-minutes before the mixing is complete the frozen butter is added and mixed just to distribute the butter pieces throughout the dough mass. The amount of butter added to the dough in this case is the same as the amount of roll-in that would typically be used in making Danish, about 20 to 25% of the dough weight before addition of the butter. The dough is then given one or two foldings for lamination and the process is complete. This eliminates the need to roll the dough, add the roll-in fat, fold the dough, rest the dough, roll it again, give it a laminating fold (3-fold or 4-fold), resting the dough, rolling it again, give it another laminating fold, rest the dough, and then take it to the bench for forming into pastries. As you can see, this is a lot of work as others here have already alluded to. I'm sure you can Google the process for more details. If anyone is looking for the hard fat flakes I think Bungee (Kankakee, Illinois) is still a supplier as is ConAgra Foods.

Tom Lehmann/The Dough Doctor  
6051

## **General Pizza Making / Re: duration of gluten build and hold?**

Gluten quality is influenced by temperature: At temperatures above 90F the protein/gluten begins to weaken.

As fermentation progresses the byproducts of fermentation exhibit a pronounced weakening effect on the protein/gluten: The main byproducts of fermentation are acids (acetic, lactic and propionic), alcohol, and carbon dioxide. Of these, the acids have the most pronounced impact (weakening) on the gluten. Additionally, enzymes present in the yeast (amylase and protease) will impact the gluten structure. The amylase hydrolyzes starch releasing water into the dough that makes the dough feel softer, and possibly less elastic, while the protease enzymes hydrolyze the proteins resulting in a significantly weaker gluten structure.

Time is also an important element too, especially when it comes to fermentation. The longer a dough is fermented the more impact the fermentation will have upon gluten strength. Since temperature is also an element of fermentation, a dough that is fermented at a higher temperature, even though for a shorter time, can have a similar degrading effect upon the gluten due to the increased speed at which fermentation is progressing at the elevated temperature.

Mixing, especially high speed mixing can impact gluten strength by over extending the protein to the point where the bonding points between the proteins begin to break (if you mix dough in a food processor long enough you can see this).

Fortunately, these bonding points can be repaired by oxidation, such as adding ascorbic acid to the dough, or even by just allowing the dough to mix at low speed

for a few minutes followed by a short rest period.

So, just how long will the gluten remain in tact in the dough structure? Technically that cannot be answered unless you know what the variables above are, but from a realistic approach in home made pizza dough, 4 to 6-hours would be a good guess, after that, you will probably see the dough collapse. At that point you can simply rework the dough back into a ball to restrengthen the gluten and have another go at it, but this time it will take less time than the first, probably something on the short side of 3-hours. As you continue this process you will reach a point where the acid content and the effect of enzymes on the gluten will either destroy the gluten, or weaken it to the point where it is more like a wet dish rag than a pizza dough. This is why we refrigerate or cold ferment the dough and we limit the amount of flour used in the preferment be it a sponge, poolish or sour as the raw flour added provides sufficient gluten strength to the dough to allow us to make whatever products we are making.

I tried to keep this in very general terms to keep it easy to understand, hopefully I haven't added to any confusion.

Tom Lehmann/The Dough Doctor  
6050

### **Dough Clinic / Re: Newbie - dough too thick**

How much does your dough rise during the cold fermentation period?  
Tom Lehmann/The Dough Doctor  
6049

### **Dough Clinic / Re: refrigerator temprature**

Morten;  
I like to set my fridge to operate at 36 to 38F (2.2 to 3.3C)  
Tom Lehmann/The Dough Doctor  
6048

### **New York Style / Re: How is Stone Better than Steel Grade?**

A steel grate doesn't have much capacity for storing latent heat, instead it allows the pizza to bake by allowing the heat to pass right through it to the dough. A solid stone or heavy steel deck can store latent heat and quickly transfer that heat to the pizza that has been placed on it so you actually end up getting a better bake if done right. Another way to look at it is like this;

You can put your hand inside of a 600F oven without getting burned...I do it all the time, just don't touch anything while you're in there.

Using that same oven and temperature, put a solid stone deck in it and allow it to fully heat to oven temperature, now if you were to touch that stone you would instantly get a burn. This is rate of heat transfer. Air is a poor transfer medium while steel, stone, water or oil are all much better and a lot more efficient. A couple of things that need to be considered with a solid deck, it must be sufficiently heavy to be able to store sufficient latent heat to provide heat to the bottom of the pizza during the entire baking cycle, and you must allow sufficient preheat time to allow the surface to absorb as much heat as it can (this could take the better part of an hour).

Tom Lehmann/The Dough Doctor  
6047

### **Chitchat / Re: My Pizza Calories,... kind of explored**

If your dough has any oil it don't forget to include the calories (9-calories per gram) from it too. If you want to get into "healthy" pizza you can blend your existing

cheese 50/50 with a tofu based cheese product ("0" cholesterol) to get a 50% reduction in cholesterol from the cheese component, then you can explore poultry sausage (actually pretty good). If you're going to Pizza Expo you should be able to find to find some there to sample. In some supermarkets you can find cholesterol free cheese product from Galaxy Nutritional Foods which can be blended with your regular cheese. Or for toppings just stay with the veggies, or if meat is on the menu use skinless chicken or fish/seafood. It sure beats eating only a single slice! :)  
Tom Lehmann/The Dough Doctor  
6046

### [\*\*Chitchat / Re: My Pizza Calories,... kind of explored\*\*](#)

Bob;

I'd like to say that I have a good low carb alternative for a pizza crust, but I don't so I can't. I never bought into the low carb thing of years past. Some things are just intended to be made with carbohydrates and I believe pizza is one of them. When people used to ask me about a low carb alternative to their existing crust my stock answer was to find a decent low carb crust and buy it (I had to really lower my bar to buy one and then I still didn't like it). My other answer was to simply make the thinnest pizza skin possible, that way it will still taste like a pizza crust but contribute fewer carbohydrates. One of the things I experimented with along these lines was a yeast free crust. What it boils down to is to make your favorite dough without yeast. You will probably need to adjust the water/absorption to achieve a dough consistency that will allow you to pin the dough out. After mixing, scale and ball the dough, and set aside to rest for about 15-minutes, then pin the dough out very thin and trim to desired size. Place the skin on your preferred baking surface and parbake (the crust will bake out firm) immediately dress as desired and place back into the oven to finish baking. Sorta like pizza on a cracker, but still better than the other "twig and leaf" renditions that I found being touted as so great.

If all of this sounds familiar it is because it's only half a bubble off of making a pizza on a tortilla skin, maybe a little thinner.

Tom Lehmann/The Dough Doctor

6045

### [\*\*General Pizza Making / Re: The Fat Flake Pizza Dough\*\*](#)

Jon;

Actually, the moisture in your fat is desirable as it provides for enhanced pocket formation within the crumb structure resulting from the vaporizing of the water in the fat. This is how puff pastry is made. In fact, the hard fat flakes that Norma is working with used to be available in three different forms, plain (100% fat); hydrated (with water) and nitrogen infused.

Norma, if you are reading this, please resend me your mailing address as I have some more material on hard fat flakes to send to you.

Tom Lehmann/The Dough Doctor

6044

### [\*\*Dough Clinic / Re: Katy's Kitchen all purpose flour\*\*](#)

Chet;

Look on the bag, it should show the nutritional composition of the flour. What you are looking for is protein. If it shows 9-grams protein per 100-gram serving the protein content is 9%. If it shows something like 4-grams per serving and the serving is defined as 50-grams you would have 8% protein content.

If it doesn't have any information on nutrimetics you will need to either Google the

product/manufacturer or contact the manufacturer/distributor directly.

Tom Lehmann/The Dough Doctor

6043

### **Dough Clinic / Re: what should I do pls**

Claudebo;

It sounds like you put the dough into the containers, sealed them closed and then went to the refrigerator. This would create a dead air space around the dough thus insulating it from the cooling air and allowing the dough to continue rising. Due to the heat of metabolism the dough will actually continue to gain heat, thus further speeding up the fermentation process.

Tom Lehmann/The Dough Doctor

6042

### **Dough Clinic / Re: Thin and flexible dough**

Shari23;

You might try this:

Change your flour to a stronger, bread type flour such as Pillsbury "Bread Flour" available at most supermarkets. This flour has about 12% protein content. To the flour, add 1-tablespoon of wheat gluten (also available at most supermarkets). If you can't get the gluten, don't sweat it.

Adjust the water temperature to 105F.

Put the active dry yeast into the water and stir well, then set aside for about 10-minutes, or until you see bubbles forming in the yeast suspension.

Stir the yeast suspension and pour into mixing bowl.

Add flour and remaining ingredients and begin mixing the dough in your normal manner.

Immediately after mixing, form the dough into a ball, lightly oil it and place it into a bread bag. Twist the open end into a pony tail to close it and tuck the pony tail under the dough ball as you place it into the refrigerator. Allow the dough to cold ferment overnight. The dough can be used over 24 to 48-hours. To use, remove the dough from the fridge, and allow to temper AT room temperature for about 2-hours, then turn the dough out of the bag into a bowl of dusting flour and open into pizza skin(s) for dressing and baking. Bake on a preheated stone in a HOT oven. You may need to experiment with the position in the oven.

Tom Lehmann/The Dough Doctor

6041

### **Dough Clinic / Re: Thin and flexible dough**

Norma;

No I didn't. I just caught the one that is posted above. With my very heavy and tight travel schedule right now (will continue through the entire first quarter) I don't have time to go back and read all of the earlier posts all the time. You are absolutely correct, it is a big thing to go from home pizza making to making pizza in a store. Anymore, I don't even encourage anyone to practice making pizzas at home in preparation for their store because so many things will ultimately change unless they have a taste for home made pizza. What a lot of people don't realize is that you can get away with a lot more in your home kitchen than you can in your store where you will be forced to crank out pizzas faster than leaves falling off of a tree in the fall, plus you are tasked with managing a lot more dough than just a few dough balls, and the end pizzas all have to be of consistent quality if you expect to get a good price for your pizzas. Right now I'm working with a company that is expanding from just a couple of stores to over 50 and now they have discovered

that what they were doing previously in those two stores cannot be effectively managed across the number of stores they already have much less 50 stores.  
Tom Lehmann/TheDough Doctor  
6040

### [\*\*Events Calendar / Re: pizza expo\*\*](#)

There is the NAPICS Show in Columbus , Ohio every year around the end of January or mid-February. I used to participate in this show and I can say that it is a very good show to attend. Typically around 2,000 attendees, lots of vendors, as well as seminars and hands on instruction. The show is a lot cheaper than P.E. as are the seminar sessions.

To get more information on the NAPICS Show (North American Pizza and Ice Cream Show) contact the Ohio Restaurant Association for next years dates and details.

Tom Lehmann/The Dough Doctor  
6039

### [\*\*New York Style / Re: Bulk Cold Fermenting Experiment\*\*](#)

Walter;

When using any kind of bulk fermentation keep in mind that temperature control of the dough is absolutely critical to getting consistent dough quality. This is probably why you find that the dough is too tough to ball at times. The room temperature will have an influence on the actual finished dough temperature but it really won't have much influence on the way the bulk dough ferments. Since you are using a straight dough process the formula for desired water temperature is  $3 \times$  desired water temperature minus the sum of the flour temperature, room temperature and friction factor. You will need to find the friction factor for YOUR dough in YOUR mixer. To do this, mix a dough using your coldest tap water (record the temperature of the water). Then mix the dough in your normal manner and record the finished dough temperature. The formula for friction factor is  $3 \times$  the actual dough temperature minus the sum of the room temperature, flour temperature and the water temperature. The resulting number is the friction factor that you will need to plug into the above desired water temperature calculation. This calculation works great and it will consistently get you to within 1F of your targeted temperature. Remember, the flour and room temperatures will probably change and will be used in your calculation for desired water temperature but the friction factor will not change, it will remain a constant so you can just plug your number into the equation each time. keep in mind that if you make a significant change to the mixing time or size of the dough the friction factor may need to be recalculated.

Tom Lehmann/The Dough Doctor  
6038

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Need a first peel, fast.\*\*](#)

Depending upon its construction, that bamboo peel might actually be better than the other more traditional wood peels which exhibit a tendency to split and/or warp over time. Do not wash it, just wipe it down. I normally don't like to oil that type of peel as it can make it more difficult to peel the pizza into the oven, instead, I like to burnish the peel with a fine grind corn meal from time to time. Don't worry about stains on your peel either, they just give it more character. If you like it, and it works well for you apply the rest of your money toward buying a metal blade peel for removing the pizzas from the oven.

Tom Lehmann/The Dough Doctor  
6037

## **Dough Clinic / Re: Dense dough - any tips to make it light and fluffy?**

Also, be sure to let us know how you are shaping the dough into pizza skins. Do you hand stretch it or do you use a rolling pin to open the dough. When it comes to trouble shooting a pizza problem there is no such thing as TMI.

Tom Lehmann/The Dough Doctor  
6036

## **Neapolitan Style / Re: Np recipe using ADY yeast?**

Sure, not a problem using ADY. Just make sure you rehydrate it in a small amount of 100 to 105F water for about 10-minutes before you add it to the dough. As to the amount that you will need to use, I would start at about 0.25% of the total flour weight. Regarding the use of a bread making machine, keep in mind that pizza dough is not mixed the same as bread dough is. It is mixed only about 50% of what a typical bread dough is. The under mixing of the dough is one of the factors that contributes to the desired open, porous structure of the baked crust. After mixing, get a temperature on the finished dough, you will be looking for something around 85F. I like to divide the dough into individual balls for each pizza. About 9-ounces for a 12-inch pizza is about right. Then lightly oil the dough balls and place into individual plastic bags (bread bags work well) twist the open end to close and tuck the pony tail under the dough ball as you place it into the fridge. Allow the dough to cold ferment for at least 3-days, then remove the dough from the fridge and allow the dough to rest at room temperature for a couple of hours before opening the dough balls into pizza skins. For this type of crust it is recommended that you open the dough balls by hand rather than using a rolling pin.

6035

## **Dough Clinic / Re: Can I use pizza flour to bake bread?**

WNORN;

Do you have any idea of what the protein content of the two flours are? Typically, but not always, flour that is sold as "pizza" flour is higher in protein content than a typical bread type flour. High gluten/pizza flours can run from 12 to 14.5% protein content and bread flours can run from 10.5 to about 12.7%. Without knowing the protein content of the two flours, I would begin by just replacing the bread flour with my pizza flour and see how the dough and finished product compares to what you have been getting when using bread flour to make your bread. If the difference is significant enough to warrant making a change to the dough formulation or process we will then know what characteristics need to be addressed and also have some idea as to what magnitude.

Tom Lehmann/The Dough Doctor  
6034

## **Neapolitan Style / Re: Np recipe using ADY yeast?**

On a weight basis, use 5-parts water to one part dry yeast.

Tom Lehmann/The Dough Doctor  
6033

## **Gluten Free / Re: Sourdough Starter**

For over a hundred years now, bakers have used potato as a basis for their SD starters. If you Google "potato starters in bread production" you will find several options for using potato flakes as the basis for a S.D. starter.

Tom Lehmann/The Dough Doctor  
6032

## [\*\*American Style / Re: Leonard's Attempt at Chain-Style Pizza \(Split Topic\)\*\*](#)

Leonard;

If I remember correctly, I think P.H. uses a reman (re-manufactured) tomato product in their sauce. A characteristic of a reman product is the very deep, dark color and a somewhat sweeter taste. I believe that Contadina brand is a reman product so you might try developing your sauce around their tomato sauce or paste.

Tom Lehmann/The Dough Doctor  
6031

## [\*\*Dough Clinic / Re: Can I use pizza flour to bake bread?\*\*](#)

Gig;

No, using our smaller bench top mixers and our larger 80-quart mixers we don't see any difference in mixing time with only 1% difference in protein level. This is not to say that there isn't a difference in mixing time to achieve full gluten development, but since pizza dough is seldom, if ever, mixed to full gluten development we just don't see any differences in those undermixed pizza doughs. Bread dough, on the other hand, is normally mixed to either full development or a little past full development depending upon the type of bread being made so in that case we sometimes even see differences between two different flours of the same protein content.

Tom Lehmann/The Dough Doctor  
6030

## [\*\*Shop Talk / Re: open a pizzeria in Shanghai either\*\*](#)

Minn;

In addition to what Peter has said, PMQ <[www.pmq.com](http://www.pmq.com)> also has contacts in China as they do a pizza show there annually so they might be able to provide some additional input based on their contacts in China. I would suggest that you contact Steve Green directly at <SG@pmq.com> Steve is the publisher of PMQ Magazine so he should be able to direct you to their Chinese contact person.

Tom Lehmann/The Dough Doctor  
6029

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: My New Peels\*\*](#)

Now for the bad news, they're too pretty to use! LOL :-D

Those might be the prettiest peels I've ever seen. They would make a great gift for any pizza lover.

Have you given any thought to selling them over the internet?

Tom Lehmann/The Dough Doctor  
6028

## [\*\*Dough Clinic / Re: Ingredients\*\*](#)

Mitch;

To answer your question, let's look at each ingredient one at a time.

Flour: Provides structure in the form of gluten that is developed biochemically (through fermentation) as opposed to mechanically as with the use of a mixer or extensive kneading. In general, the higher the protein content of the flour, the stronger and more elastic the finished dough will be, all things equal.

Water: Hydrates the proteins (Glutenin and Gliadin) in the flour to form gluten. It also allows for hydration and dissolving of other ingredients in the dough. Water provides extensibility to the dough allowing it to be stretched and pulled into a

defined shape. Water also adds fluidity to the dough allowing it to rise both during fermentation and also during the first minute or so in the oven (oven spring) which provides the desired open, porous structure so often sought after in rustic breads and pizza crust. The water also provides for part of the leavening process in the form of steam vapor.

Salt: Provides for flavor in the finished crust. A finished product that is too low in salt will have a somewhat "starchy" taste. Salt also strengthens the gluten network allowing the dough to be stretched and pulled without tearing (doughs made with insufficient or no salt are somewhat sticky and tend to tear easily, this is why exhibition doughs are high in salt). Salt also helps to regulate the rate of fermentation, too little or no salt caused the dough to ferment too fast or at an inconsistent rate while excessive salt will cause the dough to ferment slower than normal or desired.

Oil/Fat: The fat content in the dough provides a level of lubricity to the dough allowing it to be more easily stretched and stretched further without tearing. It also improves the flavor of the finished crust due to the fact that the fat will hold some of those great flavors released from the pizza while it is baking. Fat can also impact the mouthfeel of the finished crust, making it softer and richer tasting. In certain applications fat can also impact the way the crust reacts with saliva during mastication. In this case the fat will retard the absorption of moisture creating a finished product impression that the product is less dry. Without any fat the crumb portion readily absorbs moisture from the mouth creating a dry eating impression. Fat is also an enriching ingredient, meaning that when fat is present the consumer perceives that the product provides a richer, more desirable eating characteristic than the same product made without fat. Lastly, fat helps to provide for a more tender eating characteristic. There is also some theory that both fat and sugar are craved by the body due to an inherited (from our cave dwelling ancestors, not uncle Guido) survival instinct. We like to simply call it the "fat gene". Now you know why all those fat free products are now either low fat or gone from the market entirely.

Sugar: Sugar is a source of nutrient for the yeast to feed upon. The yeast contains enzymes (amylase) which help to convert starch (present in flour) to sugars that can be readily metabolized by the yeast, but this can be a slow process so the flour is sometimes "malted" to provide additional amylase, or we may add the malt in the form of "diastatic malt", in any case we are just helping the yeast to convert starch to sugar. We can also add sugar directly to the dough too. With exception to lactose, most common sugars that we work with are able to be broken down into sugars that can be metabolized by the yeast. Any non-metabolized (surplus) sugar present in the dough will contribute to both crust color and flavor of the finished crust. Some forms of sugar, such as honey, molasses, or non-diastatic malt can also provide a unique or distinctive flavor to the finished crust.

So, why all of the differences? Well, it all depends upon what you want from your pizza crust. Remember, the true definition of a pizza crust is that of a relatively flat, leavened or unleavened bread to which various toppings are applied prior to baking. That's a pretty wide description and there is an equally wide variance in formulations to cover all those bases.

Tom Lehmann/The Dough Doctor

6027

## **Dough Clinic / Re: Ingredients**

Mitch;

Since you are mixing your dough by hand it is suggested that you pre-hydrate the IDY in a small amount of 95 to 100F (measured temperature) water and allow it to

activate for 10 to 15-minutes prior to addition. I like to add the pre-hydrated yeast suspension to the regular dough water when I'm mixing the dough, but in your case you can split it up as you have been. For example, if you hydrate the yeast in 10-ounces of water, and then weigh out 1-ounce you will have the 1/10 of an ounce of yeast you are looking for.

Tom Lehmann/The Dough Doctor  
6026

### [\*\*Dough Clinic / Re: Ligura Bakery Focaccia\*\*](#)

M;

Grandma Lasagna (another story) used to make what she called tomato pie for sharing (actually trading) with other Italian neighbors where she lived (Roseland, Illinois a south suburb of Chicago). Her pie was a lot like what you have described. She made a very plain dough formulated as follows: Ceresota Flour (any bread type flour will also work) 100%, Salt: 3%, Olive oil 5%, ADY 1% (I know it's high, but that's what I calculated from her recipe), and 65% warm (100F) water. She would put the ADY into the water to hydrate for about 10-minutes, then add all of the other ingredients and begin mixing (actually stirring) with a wood spoon. When the dough was too thick to continue stirring she would scrape the dough out of the bowl onto a floured counter top and begin kneading the dough until it became somewhat elastic, about 10-minutes. She would form the dough into balls, dust with a little flour and cover with a towel to rest until when she poked a finger into the dough the impression would remain in the dough. The dough would then be rolled out to fit into an oiled (olive oil) rectangular shaped pan about 1.5-inches deep and dark in color. The dough was then fit into the bottom of the pan. The pans of dough were set aside to proof for about 45-minutes and she would press and stretch the dough to fully fit the bottom of the pan. The pans of dough were once again set aside to rise, this time until the dough was about half way up the side of the pan (45 to 60-minutes), the dough was then sauced using nothing but tomato sauce (She used Contadina, what can I say?) and lightly sprinkled with just a kiss of dried basil and baked in her home oven at 425F, first in a higher rack, then after about 15-minutes in a lower rack position until the crust was a beautiful golden brown and crispy and very light. Occasionally, she would change the game by adding a few pieces of sausage or a few shavings of Parmesan cheese to it just before baking, and as she always did, she gave it a sprinkling of EVO as it came out of the oven.

I can still taste that light crispy crust with a little tartness from the tomato sauce. When I make it at home for my family today I always make the version with a few shavings of Parmesan cheese.

I'm sure other readers will have other versions, but this is what I got when I was dating my wife and we went to visit her grandparents.

Tom Lehmann/The Dough Doctor  
6025

### [\*\*Dough Clinic / Re: Dough climbing the dough hook\*\*](#)

Chaze;

You're using an A-200 or AS-200/20-quart mixer. Congratulations for having a great mixer!

The problem you are experiencing stems from the fact that you are using a regular "J" hook instead of a reverse spiral dough mixing arm. The reverse spiral will completely eliminate the problem.

Tom Lehmann/The Dough Doctor  
6024

## [\*\*General Pizza Making / Re: How do you get the pizzas to slide off onto the grill?\*\*](#)

When I bake my pizzas on the grill I like to start out using a well seasoned pizza screen until the crust begins to set, about 90-seconds, then slide the dressed pizza skin onto the grill to finish baking. I've found that this also helps to control the dough from sagging between the grill grates.

Tom Lehmann/The Dough Doctor

6023

## [\*\*Dough Clinic / Re: Egg white in pizza dough\*\*](#)

We have used up to 10% liquid egg white in formulas for hard rolls, which is very similar to a basic pizza dough formula, but we have never seen any differences in dough rheology, but the finished rolls do have an improved crust color and sheen along with a uniquely crispy outer crust. If you want a dough to open easier you can add L-cysteine (PZ-44), glutathione (dead yeast), onion and/or garlic powder, and to some extent plain milk will soften the dough too making it easier to open. This is why so many references call for the milk to be scalded/boiled before using it in baking. You could also experiment with instant meat tenderizer which typically contains papain.

Tom Lehmann/The Dough Doctor

6022

## [\*\*General Pizza Making / Re: How do you get the pizzas to slide off onto the grill?\*\*](#)

CMWR;

In addition to what is shown in my bio, I also have a very good friend here in Manhattan, Kansas. His name is Adam Peyton, Adam is the owner of AJ's New York Pizza (3rd and Poyntz Ave.). AJ's is a slice store that is based on one of my articles titled: A New Approach to Pizza by The Slice. It is a slice different from any slice you might have ever had before. I developed the process a number of years ago after sampling slices across the country and coming away totally unimpressed. I developed the process to incorporate everything most of us like in a pizza, crispy, fresh, hot, assortment of fresh toppings, and still meeting the common denominator of a slice store, relatively fast. Adam now has a total of three stores and is doing very well. He was voted best pizza in Manhattan a couple of years ago, how many slice places would qualify for that honor? And yes, as a college town, we do have a lot of pizzerias both chains and Indies (independents), but keep in mind that this competition wasn't open just to the pizzerias, it was an open competition so it included even home prepared pizzas!

If you make it here to Manhattan, Kansas be sure to look me up, my home e-mail address is <thedoughdoctor@hotmail.com> and I'll treat you to some of Adams pizza.

Tom Lehmann/The Dough Doctor

6021

## [\*\*Dough Clinic / Re: Dough climbing the dough hook\*\*](#)

Chaze;

There are three versions of the 20-quart Hobart bench top mixer, the A-200, the AS-200 and the AS-200-T The only difference is that the "S" designation is for "stir". and the "T" designation stands for "timed" as this mixer has a timer. The "S" designation mixers have a very slow (half speed) stirring speed that might be useful when making a bowl of cake batter to prevent splash out, or to prevent

dusting such as is commonly encountered when a fermented sponge is placed in the bowl followed by the remainder of the flour and dry ingredients. However, Now, I don't know if this is sanctioned by Hobart, but when I'm faced with these issues and all I've got is an A-200 I just quickly flip the switch between on and off, like switching a light switch for a few revolutions and then mix in low (#1) speed until I can go to a higher speed without dusting everything within a 5-foot radius of the mixer. Don't worry about looking for an AS-200, you already have a gem of a mixer. By the way, a slightly smaller, but equally as good of a mixer is the Hobart A-120/AS-120 mixer. This mixer is just a slightly smaller version of the A-200 having a 12-quart bowl capacity. Reverse spiral hooks are available for this mixer too as are a wide assortment of other mixing agitators, and if your mixer has the optional attachment head, you can buy a "pelican head" attachment for cutting, slicing, etc. Due to the great number of attachments available for these mixers, I have been known to refer to them as the grown man's, or woman's Barbie Doll.

Tom Lehmann/The Dough Doctor  
6020

**New York Style / Re: New York Style Pizza Not New York Pizza? Why???**

Scott seemed to hit the nail on the head. The word "style" is to mean in the way of, not specifically copying or emulating. This point was driven home a number of years ago when large commercial pizza manufacturers, making the kind pizzas you buy in the supermarket, got into a labeling issue when they identified their pizzas as stone baked when there were no stones in the oven while others referred to their pizzas as stone baked style or hearth baked style. What came out of this legal wrestling match was that if the word style was used in the name designation (stone baked or hearth baked style) the pizzas could be baked in any type of oven, but if the name designation said (stone baked or hearth baked) the oven in which the pizzas were baked had to have a stone hearth. That word "style" is indeed a mighty word. So, now for my question, would someone please tell me there the following are made: Moon Pies, Mars Bars, French Fries, French Bread, Danish Pastry, French Crullers, English Toffee, etc.

Tom Lehmann/The Dough Doctor  
6019

**Dough Clinic / Re: Dough climbing the dough hook**

Walter;

Have you looked at using a splash cover? They are not perfect, but they do reduce a lot of the splash out and to some extent they also control some of the annoying dusting that comes when making bread and pizza doughs.

There are also some little tricks that I've picked up on over the years to reduce dusting too, for example, if you make a sponge dough, rather than putting the sponge in first, and the dry ingredients on top of it, add the water first, then add the dough side ingredients and mix at low speed for a few seconds, then add the sponge and mix as normal. For pizza doughs add the water first, then add the flour and other dry ingredients, a few seconds of stir or jogging will significantly reduce dusting, especially with a splash cover.

Tom Lehmann/The Dough Doctor  
6018

**New York Style / Re: Experimented with Full Strength dough in wfo this weekend.**

Chaze;

Cold fermenting gives you a different flavor profile in the finished crust than

warm/room temperature fermentation does. This is why so many pizzas are made with a cold fermented dough. Warm fermentation seems to produce a greater amount of alcohol and gives a flavor that is more associated with white bread than artisan breads or pizza crust. Plus, warm fermented doughs are a lot more difficult to manage properly than cold fermented doughs.

Tom Lehmann/The Dough Doctor  
6017

### [\*\*Newbie Topics / Re: Basic rim forming question\*\*](#)

When I'm opening the dough to make the skin I try not to touch the edge portion unless I need to address some unwanted bubble(s), then when I'm dressing the skin I like to keep the sauce 1/4 to 1/2-inch away from the edge of the skin, this allows the dough to rise more in that portion, creating a nice raised edge on my finished pizza. You can control the size of the raised edge by adjusting how much of the edge of the skin you leave untouched, and by how close to the edge you apply the sauce. As for application of toppings I always load the skin more out toward the edges and lighter in the center section. This is for two reasons, one, the toppings will flow toward the center as the edge of the crust raises during baking and two, the lighter center loading allows the center of the pizza to get a better bake resulting in an overall crispier bottom to the pizza (helps to eliminate the droopy center or point of the slice). This puts me right in the center of the pack with the rest of the responses

Tom Lehmann/The Dough Doctor  
6016

### [\*\*Cracker Style / Re: 1st attempt at Cracker style crust\*\*](#)

Darren;  
Great "fish mouthing", those are those large football shaped holes so characteristic with a cracker type crust.  
Well done!  
Tom Lehmann/The Dough Doctor  
6015

### [\*\*Dough Clinic / Re: Dough climbing the dough hook\*\*](#)

The "J" hook is probably the poorest hook design one could come up with, with a smaller size dough the the dough would just grab onto the hook and go for a free ride without getting mixed, with a full size (large) dough the dough would get more mixing on the outer position of the hook and a lot less on the inner and top portions, plus the aggravating need to cut the dough off of the hook periodically to get a uniformly mixed dough mass. The reverse spiral mixing arm is a real sweetheart. Small size doughs are easily mixed without the dough climbing up on the hook to get a free ride, and when mixing large size doughs there is no longer any need to stop the mixer to either turn the dough over or cut it off of the hook, what a blessing!!!

The K-5-A as well as the N-50 (industrial version of the K-5-A) were originally equipped with a plain, and rather straight "J" arm type of hook which was a real bummer, but you can buy replacement reverse spiral mixing arms for these mixers too, but due to their rather smallish diameter they do not perform as well as a spiral mixing arm on any of the larger size mixers.

Tom Lehmann/The Dough Doctor  
6014

### [\*\*Dough Clinic / Re: Dough climbing the dough hook\*\*](#)

Chaze;

If he will swap you straight up that is a sweet deal. You won't be disappointed.

Tom Lehmann/The Dough Doctor

6013

### **Off-Topic Foods / Re: The mysteries of Fried Chicken**

We had a project many years ago where we looked at ways to make the coating crispier on fried chicken. We used a pressure fryer for all of our testing so I don't know if the results hold true for a regular open fryer or not. We found an almost linear relationship between the protein content of the flour used in the coating and the crispiness of the finished chicken pieces. The lower the protein content, the softer the crispy coating became. When we used a very high protein content flour, around 14% the finished coating went into the range where it was no longer rated as crispy but rather hard and vitreous, so hard that you had to grind the coating on your molars in order to eat it.

Tom Lehmann/The Dough Doctor

6012

### **Prep Equipment / Re: home use slicer - Any suggestions?**

I just recently bought a new slicer to replace my old cheapie slicer. I found one that was rated as "commercial" whatever that means at Cabela's. The list price was around \$300.00 but with their instore sale I got a \$50.00 discount on that price. The slicer appears to be well built and has a 9-inch blade. So far the only thing I've been cutting with it is partially frozen venison for making jerky, and I've only had it a few months so I can't say how well it will hold up to that kind of abuse over the long haul. My old cheapie model, also from Cabela's cost me about \$100.00 seven years ago and the gears finally gave up, and the cost to replace them was nearly the price that I paid for the slicer to begin with. Until those gears gave in, the old slicer worked just great slicing many pounds of partially frozen venison every year. With that said, slicing bread, cheese, and refrigerated meat should be a snap.

Tom Lehmann/The Dough Doctor

6011

### **Chitchat / Re: How Extreme Is Your Devotion To Pizza?**

I checked off 36 out of 80 and was rated as "Pizza Champion".

Tom Lehmann/The Dough Doctor

6010

### **Dough Clinic / Re: How do I know when Gluten Developement for pizza dough has occured?**

Mark;

There are two basic ways to tell when pizza dough is properly mixed when the dough will be managed through a cold fermentation period of at least 24-hours in the cooler/fridge.

The first, and easiest to describe is to watch the dough as it mixes, at first you will see a dark colored dough with a rough appearance. As the dough continues to mix/develop the color will change to a brighter, yellowish color and the dough will begin to take on a smoother appearance in the mixer. This is an indication that you are getting close to correct development. Continue mixing just until the dough develops a smooth skin in the mixing bowl, at this time the dough is best described as having a smooth, satiny appearance. You're now done mixing.

The other method is to take a piece of dough, about the size of a large hen's egg, and loosely form it into a ball, bring your hands together with your finger tips

curled inward. Your finger tips should now be touching, position the dough ball on your fingertips and bring your thumbs down onto the dough ball, locking it in place on your fingertips, now roll your hands apart as if trying to bring the second joint of each finger into contact with one another, the dough will stretch between your locked thumbs, check the dough to see if it tears, if it tears the dough will require additional mixing time, but if it stretches without tearing the dough is properly developed. Like I said, this is not the easiest procedure to describe, but it works well as does the first method described above.

Tom Lehmann/The Dough Doctor  
6009

**Dough Clinic / Re: How do I know when Gluten Developement for pizza dough has occured?**

Mark;

In most cases when describing kneading of the dough one is instructed to knead the dough until it have a smooth, somewhat velvety appearance, and while this is not indicative of the same level of gluten development, it works quite well as a visual indicator. With hand kneading, another method that works well for me is to just knead the dough until it all comes together in an elastic ball, divide or scale the ball into the desired size/weight pieces, and allow to cold ferment for 24-hours, then remove from the cooler/fridge and allow the dough to warm at room temperature until it reaches 50 to 55F (about 2-hours) then knead each dough ball until it has a smooth appearance, place back into the fridge until about 2-hours before you want to use the dough to make your pizza skins. Remove from fridge, allow to warm to 50 to 55F, open into pizza skins by your perferred method, dress and bake. I've found that this procedure works really well for people without the arm strength needed to thoroughly knead the dough. I teach it to a lot of the rural farm families in my area where they also use the process to make bread too.

Tom Lehmann/The Dough Doctor  
6008

**Dough Clinic / Re: How do I know when Gluten Developement for pizza dough has occured?**

Mark;

You can't undo an over mixed dough, but worry not as it is essentially impossible to do by hand mixing. It is the under mixing of the dough that contributes toward that sought after open, porous internal crumb structure that is also important in achieving the crispiest crust possible. Using a mechanical mixer, if one mixes the dough to full development or even a little beyond full development, the greatest fault you are likely to encounter along your journey to making finished pizza is a bread like internal crumb structure. You can see this type of crumb structure in many of the frozen pizzas sold at your local supermarket. This is because most of the manufacturers mix the dough and are dressing the skins in an hour or less so all of the development must come from mechanical dough development aided occasionally by the addition of L-cysteine or glutathione (dead yeast). If you were to dramatically over mix the dough using a planetary mixer, or any other type of mixer for that matter, the dough would take on a glassy appearance due to water being released from the broken down protein structure, it would be stringy, sticky and not at all pleasant to work with. As the dough would ferment the proteins will be further broken down and a portion of the starch would be hydrolyzed into sugar by the enzymes present in both the yeast and the flour. The resulting fermented dough would be even softer and stickier than it was at the mixer. In the baking industry the bakers have an expressing for this, they call it "elephant snot" because

when viewed from their perspective in a large (1,000 to 2,500-pound capacity horizontal mixer) the dough (if you want to call it that) is hanging off of the mixing agitator and the top of the bowl in long sticky threads, hence their name for it. From a home making pizza perspective I guess you could possibly over mix the dough if you were to use something like PZ-44 which is the reducing agent L-cysteine in a whey carrier at a level beyond the recommended dosage. In this case the L-cysteine would chemically cleave the protein chain to give you the same effect as a grossly over mixed dough in a matter of minutes, regardless of how the dough is mixed. If you feel adventuresome and want to see some of this yourself, you might try adding some instant meat tenderizer to the dough. The meat tenderizer should show papain as an ingredient and papain is very effective at breaking down protein, hence its use as a meat tenderizer. I did work using papain as a reducing agent in bread dough back in the 70's and I well remember ending up with doughs that could literally be poured out of the mixing bowl until I got the dosage correct.

Tom Lehmann/The Dough Doctor  
6007

**Dough Clinic / Re: How do I know when Gluten Developement for pizza dough has occured?**

Peter;

For all practical purposes, protein breakdown is somewhat similar if achieved by mechanical mixing or fermentation. Due to the effect of protease enzymes hydrolyzing proteins whereas mixing only breaks the protein chain (without destroying the integrity of the protein) at specific bonding points (which can be repaired through the addition of an oxidizer such as ascorbic acid) to the dough protein that is exposed to fermentation is actually weaker than that exposed to mixing. With that said, we commonly ferment a large portion of the flour (sponge) and add it back to the mixing bowl along with a smaller portion (25 to 40%) of flour and mix the dough to a desired level of development for bread, roll, sweet goods, and pizza production. Hence, there is no reason why if you had a dough that was mechanically overmixed you couldn't do just as you have proposed. The old ITT Continental Baking Company back in the 1970's and early 80's had a bread making process called the fatigue dough process that was very similar to this, but in addition to adding a small portion of flour back to the dough they also incorporated oxygen into the dough (remember oxidation mentioned above) by continuing to mix the dough at low speed in their horizontal mixers with the mixing bowl slightly open which caused the dough to sheet out over the agitator bars thus exposing the dough to air/oxygen, and the damage to the protein chain was repaired allowing the dough to be handled by their equipment without any problems. The reason for using this process is due to the fact that when you over mix a dough mechanically in this manner the protein can accept more water than it can when normally mixed to peak development, and this extra water is retained in the dough and finished product (bread in their case) so they got better yields in terms of loaves of bread from every 100-pounds of flour. \$\$\$ is a great motivator.

Tom Lehmann/The Dough Doctor  
6006

**Dough Clinic / Re: how to make puffy crust??**

Usually the problem can be traced to insufficient dough absorption (you want to have a soft dough), but since there are so many other factors that can be involved, baking temperature, what you are baking on, dough formulation/recipe, dough management, and how you are actually opening the dough into a pizza skin it

would really help if we could see these important aspects of how you are making your pizzas.

Tom Lehmann/The Dough Doctor  
6005

### **General Pizza Making / Re: How to hold multiple skins?**

Mark;

Rather than opening all four skins at the same time, why not just open them as you need them? As one pizza is baking you could be opening the next skin and beginning to dress it, providing you can bake multiple pizzas back to back in your oven, if you need to allow for some recovery time just don't open another skin until you're ready to bake. You won't see as big of a difference this way as you would if you opened all four at the same time and let them set and proof while the other pizzas are being baked.

Tom Lehmann/The Dough Doctor  
6004

### **Dough Clinic / Re: how to make puffy crust??**

Doing things one step at a time, I would begin with increasing the oven temperature to at least 500F or as hot as you can get it, and allow at least an hour for the stone to heat up. How thick is your stone? Where is it located in your oven?

Tom Lehmann/The Dough Doctor  
6003

### **General Pizza Making / Re: How to hold multiple skins?**

Mark;

With such a short bake time I would open two skins at a time; open, dress and bake two skins, then repeat. The other thing you can do is to fully open the first two skins for immediate dressing and baking but only partially open the other two skins, say to about 3/4 of the desired diameter, then all you will need to do is to quickly finish opening the other two for a quick repeat performance. The last working of the dough to bring the last two pieces out to full diameter will do a lot toward evening out any changes that might have occurred as a result of the dough sitting out proofing for the additional time.

Tom Lehmann/The Dough Doctor  
6002

### **Cracker Style / Re: Freezing Sheeted Dough**

Darren;

Slow or static freezing of just about any type of dough is possible if you can live with a shelf life of 10 to 15-days, and in your case it looks like you will be well within the shelf life expectancy of your dough. Just formulate and process the dough in your normal manner, then form into pizza skins and place on screens or some other flat surface and freeze until solidly frozen. I like to allow for at least 90-minutes for this. Once frozen, the skins can be packaged with pieces of parchment paper separating the individual skins and placed into a plastic bag and then into a corrugated box for delivery to the place where you will be making the pizzas. For added insurance toss in a piece of dry ice before you seal up the case and drive over. When you get to your destination you can either separate the skins and place them on pans with a little peel dust and allow them to thaw overnight in the fridge, or you can keep them frozen until shortly before (about 1.5-hours) before you anticipate using them. Remove a frozen skin from the case and place it onto a surface with some peel dust or in an oiled baking pan if you intend to use one. then

brush lightly with olive oil, tent with a piece of plastic and store at room temperature. The skins should be ready to go in about 90-minutes.

Tom Lehmann/The Dough Doctor  
6001

**Dough Clinic / Re: how to make puffy crust??**

All ovens are different, but I would start my endeavors with the stone located in a slightly lower position. This should give you stronger bottom heat while reducing the top heat which will help to control the top color of the pizza while being baked at the higher temperature.

Tom Lehmann/The Dough Doctor  
6000

**Dough Clinic / Re: Less Than \_ % Statements**

Peter;

The rule is referred to as the 2% rule in that once the amount of an ingredient falls to a level of less than 2% (based on the product formulation) it is no longer required to be shown in the order of predominance. You will see this on a loaf of bread for example, where the label will read: contains 2% or less of the following... We use this as a tool for reverse engineering a commercial product just as you have done with the Domino's product using the 1% rule. Actually, truth be known, there is a greater level of formulation secrecy using the 2% rule as opposed to the 1.5, 1, or 0.5% rule. I cannot say too much about Domino's dough as I have worked with them extensively and I'm still under a nondisclosure agreement with them. In summary, all stated ingredients shown prior to the 1% cut off are shown in order of predominance, and any ingredients at or below the 1% cut off do not need to be shown in their order of predominance.

For formulation purposes, salt is also a good indicator, if you think of an average salt level of around 2%, in this case any ingredient listed after the salt is most likely being used at a level of between 1 and 2% unless there is another ingredient between the salt and the 1% cut off.

Tom Lehmann/The Dough Doctor  
5999

**Dough Clinic / Re: Less Than \_ % Statements**

Peter;

I too was involved in that fracas. Our friendly, and good meaning Government tried to come up with a single criteria for the word "fresh". What initially came out of it was that the word "fresh" couldn't be used in the labeling of any food that had been processed in any way. Since freezing and baking were deemed to be a form of processing, fresh frozen would have been a thing of the past, as would fresh bread, infact, no bread could have been referred to as "fresh" since the evil act of baking is what stands between a piece of dough and "bread" as we know it. Thank God sensibility came to the rescue! Now we are struggling with menu labeling where those of self proclaimed intelligence think we should have to show the nutritional facts as well as the calorie count for an entire pizza, I don't think you will find too many people that will openly admit that it is their opinion that a whole 16-inch pizza is a single serving. Better to show the total for the entire pizza and then require showing the nutritionals for a single slice which can/will vary depending upon how many pieces the pizza is sliced into. Our argument is a box of cereal compared to a whole pizza, you don't show the nutritionals for the entire box, but instead just for an average (specified) serving size. Strange things happen when we ask to have something as simple as "fresh" defined by those who haven't a clue.

Thank God for the review periods before these things are cast in stone.

Tom Lehmann/The Dough Doctor

5998

### **General Pizza Making / Re: Pizza post bake**

Nate;

Believe it or not, adding more water to the dough will actually provide for a crispier finished crust if that is what you are looking for. You best post baking results will probably be had by placing the pizza onto a screen immediately upon removal from the oven. This will allow the pizza to steam off, then transfer to a cutting block (I don't like cutting pans since a cold metal pan and a hot pizza = condensation. Even corrugated cardboard pizza circles make for a pretty good cutting surface, once cut, place onto a heated plate (remember condensation) or my personal favorite is a wicker plate basket with a paper plate. The paper plate is not conducive to forming condensation, it helps to insulate the slice thus keeping it hot longer than a metal serving tray would, and clean up is a snap.

Tom Lehmann/The Dough Doctor

5997

### **General Pizza Making / Re: Pizza post bake**

Nate;

More water (higher dough absorption) will, within reason, actually allow the crust to bake faster, and the more open crumb structure will create a better thermal break between the deck and the toppings resulting in a crispier bottom crust characteristic. If you want to have a crust that is softer and more leathery you might try forming the pizza skin with the used of a rolling pin. Use of the pin will to a greater extent, degas the dough, reducing the effectiveness of the thermal break and allow more heat to pass through the bottom crust where it will be dissipated as steam when it reaches the sauce and toppings which are all roughly 90% water. This results in a more dense bottom crust that is not baked out as well, and it has a thinner actual crust formed on it which begins to absorb moisture from the more moist inner crumb portion of the crust very quickly after baking resulting in a tough, leathery eating characteristic. As for cracking of the crust, this is more common with a lower absorption dough. I don't think changing to an A.P. flour will help, but if you want to have a softer internal crumb structure and more flexible crust characteristic I would suggest increasing the fat/oil content of the dough to something in the range of 4 to 6% of the total flour weight.

Tom Lehmann/The Dough Doctor

5996

### **Cracker Style / Re: Freezing Sheeted Dough**

Dan;

The difference between slow or static freezing (0 to -10F) and blast freezing (mechanical -25 to -35F) or cryogenic (-45 to -60F) is to establish a smaller ice crystal size at the lower temperatures. The smaller ice crystal size promotes better yeast survival and also serves to protect the gluten structure to a great extent which allows these doughs to exhibit a much longer shelf life, typically 16 to 22-weeks as opposed to 10 to 15-days for the static frozen product. When an entire pizza is frozen the lower temperatures also serve to protect the integrity of the vegetable toppings as well. As for dough performance from dough that has been frozen in a static freezer (home freezer included) if the dough is used within the shelf life limitations (10 to 15-days) the performance of the dough is actually quite good, but beyond that time period the performance of the dough gets to be

somewhat "iffy" until at about 30-days you will see a dramatic loss of consistent dough performance. I have always related frozen dough performance to the old question of "how strong is a chain" with the answer "no stronger than its weakest link".

Tom Lehmann/The Dough Doctor  
5995

### **Dough Clinic / Re: Less Than % Statements**

Peter;

Again, I have to take the fifth as I'm still under contract with PJ's, but suffice it to say that among the big box store players, it might be a safe bet to say that they are all using the same dough concept (refrigerated or frozen) to provide dough to their stores. If one were to break from the pack the others would surely hold them up to ridicule in their advertising so in effect, they are locked into a dance with their competition. The smaller chains, be it national or regional, are not in this situation as they don't stand toe to toe in the ring against these big box chains, this allows them to do whatever works best for them and due to their smaller size, they seldom draw fire from anyone except maybe for a local competitor. As for the use of frozen dough, it certainly is a big market so someone is buying it, you're right, it just isn't being advertised. Personally, when it comes to a pizzeria, I'm with you as I don't think it means very much to the average consumer if the dough that the pizza crust was made from was actually made weeks or months ago or just lastnight, instead, they are more interested in the taste, flavor and texture of the crust and how they perceive it. Frozen dough really isn't all that bad, but it can be improved upon, as I've mentioned before, commercially made frozen dough is made without fermentation or with limited fermentation as in the case of pre-proofed frozen pizza skins. I can't say if the flavor profile of the pre-proofed skins can be improved upon as we haven't done any work along these lines, but since they already do have some fermentation on the dough the flavor really isn't too bad. On the other hand, we have the frozen dough balls/pucks which for the most part do not have any fermentation so one of the things that we commonly do to improve the flavor is to remove the frozen dough from the freezer and allow it to slack out/thaw in the cooler/fridge overnight, then bring it out to room temperature for about 90-minutes, then place it back into the cooler where it will now cold ferment for 24 to 36-hours prior to use. When using this dough we manage it in the same way as we do fresh made dough that has been cold fermented for 24 to 36-hours. However, since most of the commercial frozen dough is made with a reducing agent to help reduce the mixing time of the dough it really doesn't hold up well in the cooler past the 36-hour mark (dough becomes too soft and tacky).

Tom Lehmann/The Dough Doctor  
5994

### **American Style / Re: How Domino's Makes Its Dough Balls**

Peter;

That is an excellent description of their process. I'm very familiar with all of the equipment described, but I would like to add that the dough pieces are probably better described as looking more like oranges or grapefruit (depending upon their weight) than donuts which I was trying to visualize how/why there would be a hole in each dough piece when the equipment employed does not provide that added feature. The Vemag dividers operate much like that of a meat grinder without the plate installed and as the dough is extruded from the multi port manifold a guillotine type cutter is used to separate each dough piece from the continuous rope of dough being extruded. I wish there was a video of the operation to provide

the "WOW" factor. They are not the first to use this kind of equipment as there is another major box store operation that has been using it for some time now. This is a good way to put pizza in perspective, and remember, this is just one of many operations just by Domino's and when you add in the multiplier of the other big box chains it becomes even more impressive, and this doesn't even count in the commissaries for the smaller chains, the independents, or the frozen pizza manufacturers. Kinda puts pizza into perspective.

Tom Lehmann/The Dough Doctor

5993

### [\*\*Pizza News / Re: good news keeps coming\*\*](#)

Walter;

Congratulations!!!

My hat is off to anyone like you who goes the extra mile to improve someone's future.

Years ago I was involved with helping mentally disadvantaged kids learn different trades, print shop, sales, jelly shop, pet shop, restaurant work, and baking at Lamb's Farm, in Elgin, Illinois. My part was working with the kids in the bakery department where we had a fully equipped bakery and made products for sale at the outlet store (also a training opportunity for the kids) and their restaurant (The Milk Pail) also in Elgin, Illinois where the kids were trained in many different Jobs common to the restaurant industry, including waiting on tables. This was a very rewarding experience for me while I did it, had to stop though as we moved to Kansas, as someone who can do this all of the time your life must be very rewarding.

Tom Lehmann/The Dough Doctor

5992

### [\*\*Pizza News / Re: good news keeps coming\*\*](#)

Walter;

I know ALL TO WELL what you mean with all the B.S.! Have you given any thought to taking that pizza shop and using it to train kids for work in the restaurant industry, like an apprenticeship program? Have you contacted the Ohio Restaurant Association yet? Bradie Rice would be the person to talk to (use my name) since they hold the NAPICS (North American Pizza and Ice Cream Show) in Columbus each year Bradie might have an interest in your story, she might also be able to develop a conduit for your apprentices to enter into the restaurant industry. Just a thought.

Tom Lehmann/The Dough Doctor

5991

### [\*\*Pizza News / Re: good news keeps coming\*\*](#)

I know what you mean Walter, my big day is coming very soon.

You might check with the city (Reno) or state (Nevada) to see if they have any kind of resources to help support the training of disadvantaged people for occupations in the food/restaurant industry.

Tom Lehmann/The Dough Doctor

5990

### [\*\*New Forum Members / Re: Abject Alchemist\*\*](#)

Sus;

I'm a huge fan of using nothing but fully ripened tomatoes sliced about 3/16th inch thick and placed over the pizza skin. I like to brush the skin first with a little olive

oil, then add some fresh basil and sliced or diced garlic all covered with the tomato slices, then dress the pizza in your normal manner. Everyone comments on the great flavor of the tomato. During the months when you can't get your own or supermarket / farmer's market raised tomatoes I will use drained whole plum tomatoes that I tear apart and use in place of the fresh tomato.

Tom Lehmann/The Dough Doctor  
5989

### [\*\*Pizza News / Re: good news keeps coming\*\*](#)

Walter;

Needless to say, keep a file on all of the coverage so you can use it when you retire to show the different entities what you are all about and what you can provide for your students/apprentices. Presently, we are seeing all too many states cutting back on mental health care and social rehabilitation and they are beginning to realize that it was more than just a big mistake, so I look for a reversal in this attitude over the next few years and I would think that you might be well positioned to be a player in those changes. The way I see it we can either increase the number of individuals on welfare or we can train individuals in trades/jobs that they can master, thus becoming a productive member of society with the pride that comes with self sufficiency....that's how you start reducing welfare.

Tom Lehmann/The Dough Doctor  
5988

### [\*\*New Forum Members / Re: Another newbie to this great site... From USA, opening in Philippines Islands\*\*](#)

YS;

Due to the greater purchasing power of the big box chains like Greenwich you may have a difficult time matching them on price point, but like here in the States, the one place where you can effectively compete is quality and maybe toss in a dose of ambiance for good measure. I've spent a fair amount of time there over the years so I've got a little insight into the market. I would think that a store done up to look like an Italian pizzeria, with stone front, gas fired deck ovens (to give the appearance of a wood fired oven/ think Marsal and Sons Oven Company) with someone tossing the dough and doing all of the assembly by hand might be able to command a premium price (a little higher than that of the box chains) for their pizzas. I would try to keep the presentation looking more like a "gourmet" pizza than a P.H. which seems to be what everyone else is shooting for. This will allow you to use less cheese for cost control, while using nothing but fresh, local market toppings for flavor and eye appeal. Even the way the vegetables are sliced will impact the perception of the pizza. If it looks like a Greenwich pizza, it is, regardless of what you have done different to it, so pay close attention to all aspects of the dough and the assembly and baking. I haven't been there for a couple years now (worked for Greenwich and Jolly Bee (don't think that's spelled correctly) so I don't know if there are any similar concepts already in place, but I don't recall seeing any when I was there last. Be sure to try a seafood pizza made with a hand tossed crust, lightly coated with a white sauce (Alfredo) then sprinkled with dill weed and topped with any firm flesh fish cut into pieces about 1/4-inch thick X 3/4-inch wide X 2-inches long, or use an assortment of different types of seafood. Add some fresh onion slices, fresh tomato and garlic and finish with a LIGHT application cheese (I like to use Parmesan), but any white cheese will work. I wish you the best of luck!

Tom Lehmann/The Dough Doctor  
5987

## [\*\*New Forum Members / Re: How to make a hi gluten pizza\*\*](#)

Tommy;

Along the same lines that Wahoo88 said, bread type flours are quickly becoming the preferred flour for making most types of pizza with exception to N.Y. style pizzas where All Trumps flour (14+% protein) reigns supreme. You can also go to your local supermarket and buy Pillsbury "Bread" flour. This flour was designed for use by home bakers using their new fangled bread making machines. This flour comes in at about 12% protein content making it a pretty decent flour for making pizza with.

Tom Lehmann/The Dough Doctor  
5986

## [\*\*New Forum Members / Re: How to make a hi gluten pizza\*\*](#)

TRB;

You're spot on about the Bouncer flour, BUT, if the Bouncer flour is good enough to do all of your testing with, Why would you want to then go out and spend more money on the KA flour? Remember, KA does not mill their own flour, they have it contract milled for them, same for Ceresota flour. Here in the U.S. there just isn't that much of a difference in flours of a similar type. As long as they are malted or unmalted (it will say on the bag), bleached or unbleached (it will say on the bag) but who cares as it doesn't affect baking performance anyway. Enriched or unenriched (it will say on the bag) and bromated or unbromated (it will say on the bag) so it just boils down to protein content, if the protein content is similar it should perform in a similar manner for the home baker or pizza maker. I realize that there can be differences due to wheat variety too, but we normally only see those differences in large wholesale applications. I was once asked what the single best flour was for making pizza was, my response was "the one that works best for you".

Tom Lehmann/The Dough Doctor  
5985

## [\*\*Dough Clinic / Re: Hard water/soft water\*\*](#)

Mary Ann;

I wrote an article covering this very topic for PMQ Magazine <[www.pmq.com](http://www.pmq.com)> In Lehmann's Terms. It will be in the archives as I wrote it some time ago.

In a nutshell; Hard water is good for the dough due to its calcium content which has a strengthening effect upon the wheat proteins in the flour (stronger dough). Soft water will have a softening effect upon the dough consistency, lending to a softer, perhaps slightly tacky dough feel. As you are making your pizzas at home I can't say if this will be noticed or not, but it is in a traditional pizzeria or in a pizza commissary and most definitely in a wholesale bread bakery. If you want to get a glimpse of what things will be like, get a gallon of water from a friend that has a water softener near by and use that to make a couple of doughs, then decide for yourself if the difference is enough to worry about. If it is, you can buy calcium sulfate from your local pharmacy and add it to the dough formula/recipe at a rate of 0.5% of the total flour weight or about 1/2-ounce for 5-pounds of flour. The stuff is pretty cheap and also safe so there is no worry about using too much. We live out in the country on our own well and when we got our water softener installed I had all of our outside spigots plumbed to the hard water side of the softener (prior to the softener), as there is no need to water things in the summer with softened water. I also had one faucet installed at our laundry sink in the basement that was plumbed to provide only hard water too. The reason for this is because I didn't

want to have to go outside in the winter to get hard water for making my doughs.  
My wife thought that was pretty clever idea so I made a few points with her too. :)  
Tom Lehmann/The Dough Doctor  
5984

### [\*\*Dough Clinic / Re: Hard water/soft water\*\*](#)

Mary Ann;  
It is really a pretty simple thing for them to do while they are installing the water softener. All they would need to do is to install a "T" with a ball valve or faucet on the hard water (feed) side of the softener. "Pretty simple" those famous last words!  
Tom Lehmann/The Dough Doctor  
5983

### [\*\*Neapolitan Style / Re: What kind of flour to develop and feed a Sourdough starter\*\*](#)

Black Tie;  
We have always used our regular bread type flour for feeding a sour, so unless the directions provide more specific instructions I would use my regular flour.  
Tom Lehmann/The Doughy Doctor  
5982

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: kiln shelves\*\*](#)

Patrick;  
My own personal preference is to have a stone as large as possible while still providing a minimum of a 1-inch space around all sides of the stone. Square shapes also provide better utilization of space, for example, a 16-inch round only has 201-square inches of surface area while a 16-inch square provides 256-square inches. Not a big deal with round shaped pizza, but it can be a big deal with bread, allowing you to possibly bake more bread loaves at a time on the square format than on the round one.

Tom Lehmann/The Dough Doctor  
5981

### [\*\*Chitchat / Re: Repurposed McDonalds \\$1 Sausage Biscuit\*\*](#)

Phytonic;  
The only thing that I see wrong with your presentation is that there is not enough gravy LOL :-D  
After the biscuit and sausage are gone the dessert comes in the form of the remaining gravy.  
I'll have mine with lots of coarse ground black pepper too  
Lookin' Good!  
Tom Lehmann/The Dough Doctor  
5980

### [\*\*New Forum Members / Re: Running a failing business\*\*](#)

Utility;  
What was in your location prior to you moving in?  
What do you have for signage?  
What have you done to promote your opening?  
I would assume that your hours of operation are compatible with the local activities?  
What is the decor/ambiance of your store?  
What does your menu look like?

Another person you might want to think about contacting is Big Dave (Ostrander)  
Just Google "Big Dave Ostrander" for contact information, Dave is an expert in  
matters such as yours.

Tom Lehmann/The Dough Doctor  
5979

**Shop Talk / Re: keeping a big order of pizzas from getting soggy for delivery**

I did a study a number of years ago using the insulated pizza bags (hot bags) to see how well they worked at keeping pizzas hot/warm. Our cut off temperature was 140F. We used 12-inch thin crust pizzas for all of our testing and we found that a single pizza in a bag designed for a single pizza remained warm for between 25 and 30-minutes while when we put two pizzas into a double bag the time increased to approximately 40-minutes. None of this however addressed the steaming problem that the pizzas suffer from when placed into the insulated bags. When we placed boxes on top of the oven only the bottom box stayed acceptably warm while all of the others were insulated from the residual oven heat by the bottom box. What we did find to keep a number of pizzas warm for the longest period of time is a heated catering box/cabinet. We also found that the pizzas were a little less soggy out of the cabinet than when removed from an insulated bag. If you see a lot more of those big orders in your future, you might want to look into these cabinets.

Tom Lehmann/The Dough Doctor  
5978

**Dough Clinic / Re: How do certain dough ingredients affect the dough and crust?**

Ted;

I just recently discussed these very topics, but here it is in a nutshell.

Flour: As protein content goes up, the dough becomes ever more elastic which, in some cases can also impact the finished crust by making it tougher or more chewy. As the protein content goes up so does the potential for crispiness. Just the opposite is true when the protein content goes down.

Salt: Salt is multi functional, it enhances flavor, strengthens the dough, and controls the rate of fermentation.

Sugar: Provides nutrient for the yeast to feed upon, provides for a sweet taste to the finished crust, and provides additional crust color.

Eggs: Provides a level of richness to the finished crust if used at a sufficiently high level (5% of the flour weight), may improve the nutritional properties of the finished crust, imparts greater crust color.

Milk: Provides additional crust color to the crust, may improve nutritional value of the crust if used at a sufficiently high level (5% and above), can help to strengthen the dough, making it more elastic, unless buttermilk is used there is very little flavor impact from using milk.

Oil/Fat: Fat helps to provide lubrication to the dough making it more extensible, it also helps to repel the migration of moisture into the dough from the sauce/toppings, at higher levels (above 3% of the flour weight) it can have a tenderizing effect upon the crust making it more tender to eat, it can have a slight impact on finished crust color making it a little more golden in color, it can have a significant impact on flavor of the crust by both helping to retain volatile flavors released during baking and by imparting its own unique flavor. When used IN a pan such as for deep-dish pizzas oil will impart a fried characteristic to the crust while shortening or any solid fat will impart a more bread like crust characteristic, fat can also improve oven spring through both lubricating the dough and by helping to

seal the gas cells for better expansion properties, and fat can also improve the perceived richness of the finished crust (people like fat).

ADY/IDY/Compressed Yeast: These are different forms of "baker's yeast" and when used at the correct level, or substitution level they all provide essentially identical performance and flavor characteristics.

Water: Hydrates the ingredients, especially the flour where it allows for the development of gluten from the flour. It is used to adjust the viscosity of the dough to facilitate handling, baking, and finished crust characteristics. A softer dough that has a greater hydration level will expand more easily during baking resulting in a lighter, more crispy crust characteristic, a lower hydration will reduce the expansion during baking resulting in a more dense, possibly chewier finished crust characteristic.

I might have missed a couple, but those are the main ingredient functions.

Tom Lehmann/The Dough Doctor

5977

### **Sauce Ingredients / Re: sauce recipe**

Oh boy, that is a very difficult question to answer.

I'm a firm believer that simple is best.

Fresh, vine ripened tomato slices (3/16-inch thick) patted dry with a paper towel, or a first class crushed tomato (canned).

Fresh, green leaf basil (not the dried stuff).

Fresh sliced/diced garlic

Directions:

Apply a light coating of olive oil to the surface of the pizza skin, add the basil (I like to tear the leaves into pieces and spread over the surface of the dough), apply the basil and garlic to taste then apply the tomato slices as desired (I don't go for 100% coverage, but instead look for about 75% coverage so there will be spaces between the tomato slices, just make sure a tomato slice covers each piece of basil).

If you opt to use crushed tomato start out the same way with the olive oil on the dough and then add the fresh garlic, roll and French cut the basil leaves and stir into the crushed tomato, apply the crushed tomato as desired.

Add the cheese and dress the pizza as desired. I like to garnish the pizza with an "Italian Wedding Bouquet" (the top four leaf cluster of leaves from a basil stem) placed in the center of the pizza, I then place the pizza back into the oven for just a few seconds to wilt the basil and "pop" the aroma.

I don't put any salt in the sauce since there is already plenty of salt coming from the cheese. For cheese I like fresh Mozzarella or shredded if you like, along with some shaved Parmesan and a kiss of Romano. This adds depth and complexity to the cheese flavor. No, it is not like Domino's or P.H., or P.J's, but I've yet to find anyone who didn't really like it. As an added benefit, the fresh basil doesn't contribute to heart burn as dried basil and oregano do.

Tom Lehmann/The Dough Doctor

5976

### **Sauce Ingredients / Re: sauce recipe**

One of the things that I've noticed over the years is that we are using more and more dried basil and oregano on our pizzas. The flavor imparted by these dried herbs is very pungent and it detracts or over powers the flavors from the cheese and tomato product. By using the fresh form of basil or oregano the aroma is more of a bouquet that does not detract, but rather compliments the other aspects of the pizza.

Another thing to experiment with is hand crushed whole plum tomatoes. The

irregular pieces will provide texture, eye appeal and variations/interest in flavor to the pizza.

Tom Lehmann/The Dough Doctor  
5975

### [\*\*New York Style / Re: lastest pizza - its been a while\*\*](#)

Gnatto;

Those spots that you see on the dough after a couple of days in the fridge are either oxidized iron from the flour enrichment or it is due to oxidation of the bran particles in the flour. To determine which it is, try using a non-enriched flour to see if the problem goes away, if it doesn't the problem is most likely due to oxidation of the bran in the flour and there isn't much that can be done about it. When ever someone asks me where I had my last best tasting pizza I always tell them at home, it was a pizza that I made for myself and if I didn't like it I only had one person to blame. All of those pizzerias and big box stores all pretty well recognize that longer fermentation equates to a better tasting finished crust, but the problems begin to arise when you implement the process across anything from 50 to more than 2500 stores while keeping the process under control, as a result most pizzerias opt for a process that is more easily managed and gives good consistency with a minimum skill level needed and investment capital.

Tom Lehmann/The Dough Doctor  
5974

### [\*\*Off-Topic Foods / Re: bagels\*\*](#)

The part of your bagel making procedure that is missing is the part where the formed dough pieces are placed on corn meal dusted wood bagel boards (actually, you can use any metal or plastic tray that is dusted with corn meal) and placed into the cooler/fridge for 12 to 18-hours. The bagels are then ready for kettling (boiling) for about 1-minute. After kettling the dough is firm to the touch and the bagels can be placed onto a poppy seed lined tray or sesame seed lined tray for a seeded variety, and then immediately placed onto wood boards covered with a heavy layer cotton canvas (cotton belting works great) that has been thoroughly soaked in water and allowed to drain of all excess water. The formed dough pieces are allowed to bake on these cotton covered boards for about 2-minutes, they are then inverted off of the boards onto the oven hearth and allowed to finish baking on the hearth for about 20-minutes at 450F. Just like with pizza, that time in the fridge (cold fermentation) makes all the difference.

Tom Lehmann/The Dough Doctor  
5973

### [\*\*Sauce Ingredients / Re: sauce recipe\*\*](#)

Tom N;

The reason why I put a VERY LIGHT coating of olive oil on the pizza skin before adding the slices of tomato is that the fresh slices, even though patted dry will still tend to lose some moisture/weep which can result in soft or gummy spots in the finished pizza crust. The oil creates a waterproof barrier for our application. We have been doing this for a number of years now, especially at the shows which we used to attend giving baking demonstrations and so far we have never had any crust problems when using the oil even though at times we have allowed the dressed pizza skins to set for as much as 30-minutes before baking. I don't recommend this though as the character of the finished crust did change from those which were dressed and baked soon afterward. The crusts became thicker as a result of setting that long prior to baking, but they did not develop a gum line or

any sogginess.

BTW: The oil application to the pizza skin prior to dressing also works well if you need to pre-prep or if you are making take and bake pizzas.

Tom Lehmann/The Dough Doctor  
5972

### **Off-Topic Foods / Re: bagels**

Bagels are best made with little to no fermentation up front, but rather the individual pieces are fermented overnight in the cooler.

As for the addition of fruit/fruit pieces try using a product called fruit / berry nuggets, or if you are so inclined, use a dehydrator to partially dehydrate the fresh strawberry pieces and the whole blueberries. For making a cinnamon swirl, make a thick paste out of cinnamon and salad oil and then carefully blend this in at the end of the dough mixing stage. It is critical that you not blend this in more than just a little bit as the swirls will develop during the forming of the bagels. If you mix the cinnamon INTO the dough you will stop the yeast activity due to the cinnamic aldehyde in the cinnamon.

Tom Lehmann/The Dough Doctor  
5971

### **Sauce Ingredients / Re: sauce recipe**

I like to add the oil using a brush adding just enough oil so you can see a shine on the surface of the dough, anymore than that is not needed, and if you use too much oil you can create a situation where everything pulls off of the slice with the first bite. You can get a similar affect by using too much sauce too.

Tom Lehmann/The Dough Doctor  
5970

### **Sauce Ingredients / Re: Costco Pizza Sauce**

Quality is a relative term/thing, I once had a professor tell me that quality is nothing but a perception, and since perception is reality the two are one and the same. In summary, quality is what you perceive it to be. Some companies have even redefined quality as it pertains to their operations. For example, McDonald's doesn't put quality on the back of their burgers, but instead it is placed on customer impression, in this case meaning consistency. The reason why people go to McDonald's is not to get the best burger ever, but instead they go there because they know what they are going to get for their money (consistent quality food and service, in a clean environment is the name of their game). The same goes for other big box chains such as Domino's (fresh, hot, fast). While they may promote great tasting pizza (by whose standards?) it sure sounds better in an advertisement or commercial than average pizza (average by whose definition?). You see, it's an endless loop where quality is concerned, this is why the mantra in the restaurant industry is good/great food will make some of the customers happy, while good food when combined with great service will make everyone happy. Food brings them in, but it's the service that keeps them coming back.

Remember this commercial? "Folgers buys only the finest coffee beans" So, if they bought only the finest coffee beans, what was your favorite coffee made with?

Probably not the "finest" because Folgers bought all of those. Sure, everyone here loves the hearth baked style of pizza, that's why we're here, but to say that it is the only decent or "real" pizza is missing out on a lot of really good, and interesting eating with a really different take on flavors. Enjoy life for all the variations and experiences it provides.

Tom Lehmann/The Dough Doctor

5969

### **New Forum Members / Re: here i go!**

Akhwee;

Welcome to a wonderful site for learning how to make pizza at home. I am said to be the first person to introduce pizza into the Korean market in Seoul many years ago. This was well before any of the big box pizza stores ever made it to Korea and as pizza is not a part of your culture, there were not any independent operators to be found anywhere in the country. When I did my first demonstrations on making pizza I used dried squid for a topping which proved to be very popular as it gave a flavor something like anchovies, but a little more mild tasting. Since beef was quite expensive at the time we worked with seafood and chicken toppings. With the presence of the big box pizza stores most young adults have been exposed to pepperoni so I agree that it would make for a very good topping for you to experiment with. I'm not sure where you might go to find it you might be able to identify an importer. Also, be aware that there is a large food/pizza show in China (I don't remember what the scheduling is, but if you contact Mr. Steve Green at <sg@pmq.com> he will be able to direct you to someone who can provide you with the show details) the reason why I mention this is because at this show you would be exposed to many of the ingredients available for making pizzas in Asia along with many of the suppliers. I believe that Steve Green has a contact person in China that he might be able to direct you to see if she can identify any possible ingredient suppliers for you. Some of those suppliers might already in in Korea, we just need to locate them for you.

Tom Lehmann/The Dough Doctor

5968

### **Dough Clinic / Re: Producers Brand ???**

Richard;

I've not heard of that particular mix before, but keep in mind that the word "mix" would typically indicate that it is something that you would only need to add water to when preparing the mix into a dough/batter. Since pretzels are made from a dough almost identical to that which is used to make French Bread, Pizza Crust, Vienna Bread, or Bagels, I would think that you should be able to substitute any other kind of mix indicated here to achieve similar results.

Tom Lehmann/The Dough Doctor

5967

### **Newbie Topics / Re: Help**

I would get two different types of pans, one a deep pan and the other a shallow (1/2-inch deep) pan. Make sure the pans are dark colored or season them well prior to use, and always remember to NEVER soak a seasoned pan in water, if you do the seasoning will come off of the pan like a bad sunburn. This will allow you to experiment with both pan and hearth style pizzas. Hearth type pizzas are those that are baked directly on the oven hearth (stone). Don't forget to grab a good pizza wheel too, be sure to get one with a large diameter wheel. Prepare to have fun and always remember that your mistakes will taste good too.

Welcome!

Tom Lehmann/The Dough Doctor

P.S.

Send me a message and ask for my home made pizza dough recipe I'll be glad to send you a copy.

5966

## [Neapolitan Style / Re: Which Yeast?](#)

PAB:

My personal vote goes for the IDY due to its exceptionally long shelf life. I get it in 500-gram bags and unopened they are good for up to two years, once opened and stored correctly I normally try to use it up in around three months or so. Some say they can keep it much longer but since I also use the yeast for making sweet rolls and bread I need the optimum performance of the fresher yeast.

Tom Lehmann/The Dough Doctor  
5965

## [Newbie Topics / Re: Help](#)

Peter;

You're "spot on"! :)

Tom Lehmann/The Dough Doctor  
5964

## [Neapolitan Style / Re: Which Yeast?](#)

I did a study on IDY a number of years ago where I subjected bags of IDY from the same lot number to different types/conditions of abuse. This included placing bags into a south facing window for two years (rotated the bags 90 degrees after the first year) so both sides were exposed to the heat more or less equally, then stored bags at room temperature (averaging 70F), bags were also stored in the cooler at an average temperature of 38F, and in our walk in freezer at an average temperature of -5F. Like I said, we subjected the bags of yeast to these conditions for a period of two years before conduction the testing on the yeast performance using a Risograph instrument to accurately measure gas production/yeast performance. For a control we used a fresh, recently produced sample of the same IDY. We found that the yeast which was subjected to two years of Kansas window heat severely faded the colors on the bag but only reduced yeast activity by roughly 25%. The sample that was stored at room temperature lost about 15% of its activity, and those which were stored in the cooler and the freezer only lost about 5 to 8% of their activity as compared to the control sample. This speaks very well for the tolerance of IDY to adverse storage conditions, the real shocker was how well the yeast that was stored in the window performed. Based on these findings I implemented use of IDY for all of our dough testing and over a several year period, and hundreds, if not thousands of test doughs, consistently gave final proof times within +/- 60-seconds of the targeted 60-minute final proof time. Pretty amazing!

Tom Lehmann/The Dough Doctor  
5963

## [New Forum Members / Re: Gluten Free](#)

There are probably as many G.F. formulas as there are fish in the ocean, and like the fish, there are good ones and not so good ones. Some formulas/recipes are more like an ingredient house inventory list while others are pretty straight forward and easy to make, and like everything else, what one person absolutely loves, another person might question that other person's sanity. There are a number of celiac web sites that offer G.F. formulas as well as dough mixes and complete products, begin your quest to sample whatever is presented to you to find a G.F. crust that works for YOU.

Tom Lehmann/The Dough Doctor  
5962

## Neapolitan Style / Re: Which Yeast?

Peter;

I have to admit to wearing two different caps at times. In a commercial setting, be it a bakery or pizzeria failure is not an option, and neither is inconsistent yeast performance, hence my more conservative approach to many things, but when baking at home I also push the envelope beyond what is normally practiced in a more commercial setting because if the dough doesn't proof quite as fast as anticipated or as fast as past history indicates that it should, I can easily wait on it to proof to whatever height I'm looking for, and if the dough doesn't rise quite the way as it should have the person eating it didn't pay up wards of \$20.00 for a bad experience. For example, my wife just made a batch of scratch chocolate chip cookies and they got a little over baked. In a bakery they would have gone directly to the trash, do not pass "GO" do not collect \$4.00 for a package, but at home we ate the cookies and I actually liked the flavor of the slightly overbaked cookies more than I like the flavor of regularly baked chocolate chip cookies. We have all said that half of the fun of making pizza at home is in eating all of your mistakes, how true that is! We can't eat those mistakes in the cookie cutter retail world though. To the point, how long do I typically store my bags of IDY? When unopened I have been know to store them for years, OK, so the performance wasn't 100% but who cares? I just used a bit more than I would have if using fresh IDY, again, who cares? The cost for my dough was a little more expensive as I had to use more IDY, who cares? Like I said, When opening a bag of IDY I have found that I get the best results with extended storage periods if I leave the IDY in the original bag and just fold it down tightly against the yeast and secure it with a rubber band and then store it in the fridge. Before I use the yeast though I ALWAYS bring it out of the fridge the night before I want to use it to allow it to warm to room temperature. Why you ask? Because moisture is the greatest enemy of IDY and ADY for that matter. By allowing the yeast to warm to room temperature BEFORE opening it I prevent any condensation from forming inside of the bag during the few seconds that I've got the bag open to pour/measure out the yeast. If you repeat the opening and closing scenario a number of times you just add to the deterioration of the yeast, and since I'm already storing the yeast longer than the manufacturer recommends, I can't see any benefit to adding to further deterioration. By the way, I don't like to store the IDY/ADY in a plastic bowl either due to the greater headspace in the bowl which just allows for more moist humid air to enter the bowl each time I use form the yeast. A plastic bag works pretty good for storing extra yeast in if you burp the bag and fold it flat against the yeast and secure it with a rubber band. Vacuum sealing of the yeast in a bag is by far the best, but I find it a real pain to drag out the vacuum sealer each time I want to use my yeast, and those little bags aren't cheap either so it becomes a cost benefit ratio for me. Now you've seen both of my caps. :)

Tom Lehmann/The Dough Doctor

5961

## Neapolitan Style / Re: Which Yeast?

Dave;

That's the part that blew me away too! Trust me it did get hot in that window too, and in the winter it did not freeze by a long shot, but it was rather cool. The red coloring on the package had faded to a very pale pink. I worked with a couple of bakeries in Australia when I was under contract with McDonalds and all they used was IDY that was imported from Europe.

Tom Lehmann/The Dough Doctor

5960

**Focaccia Style / Re: anyone ever heard of "cure baking" steel pans?**

You might check around to see if you can locate some used souffle sheet pans. These are the pans used by bakeries when they make things like jelly rolls. The pans are of steel construction but are designed specifically to resist warping (also called "boating") this is where the two ends of the pan are higher than the center section when the pan is placed on a flat counter top. You might also contact Paul Tiffany at Lloyd Pans <ptiffany@lloydpans.com> to see if they have a sheet pan that will work for you in your application. Lloyd Pans is a custom pan manufacturer (they also make a vast assortment of pizza tools) so they have a lot of different things in their inventory, and if they don't have it they can make it at a very reasonable cost.

Tom Lehmann/The Dough Doctor  
5959

**Dough Clinic / Re: dough failure in the cooler.**

SB&G;

The most common culprit associated with an issue of this type is that of dough management. Specifically, I would be looking at the finished dough temperature (you are looking for something in the range of 75 to 80F in your case), the way you cool the dough in the cooler (do you cross stack and down stack) or like many B&Gs do you use a reach in cooler? In this case you might be better served by lightly oiling the dough balls and placing them into plastic bread bags on an open sheet pan in the cooler. You mention bringing the dough out for the "day", typically, the dough is brought out of the cooler and allowed to warm AT room temperature until it reaches 50F and from that point on it will be good to use over the next 3-hours. Of course flour protein content (12 to 14%) is important as well as dough formulation. Any additional information that you can provide on the formula and dough management procedure will greatly help in providing a more specific answer to your question.

Tom Lehmann/The Dough Doctor  
5958

**Neapolitan Style / Re: My SD starter is totally breaking down my dough!**

DB;

Two things come to mind here. One is that the starter might be getting too acid and the acid is breaking down the flour protein structure. You could probably test this with Litmus Paper. Another thing that comes to mind is protease activity. While we usually associate protease with fungals it can also be of bacterial source and since a starter is nothing more than a bucket of bacteria and yeasts living together harmoniously, there is a good possibility that some of the bacteria have changed over time (not a rare occurrence) and you are now getting a dose of bacterial protease with your starter. Protease breaks down proteins much in the same way that meat tenderizers make a tough cut of meat more tender eating. Usually the first sign of protease activity in a dough is a softer, more extensible dough, then as things progress the dough becomes tacky and ultimately sticky, it's about this time is when the protein/gluten has been damaged (hydrolyzed) to the point where it will no longer support its own weight and the dough collapses or begins falling apart (a common term for this is that the dough appears to be rotting).

Tom Lehmann/The Dough Doctor  
5957

## [New Forum Members](#) / [Re: how to make pizza hut pan pizza](#)

John;

Pizza Hut style pan pizza is not terribly difficult to make. You can use just about any type of flour that is suitable for making bread and rolls. While a high gluten/protein content flour can be used the finished crust is usually tougher than desired when this type of flour is used. Here is a pretty typical formula and procedure that I have used for many years. For this formula you will need an approximately 12-inch diameter (285mm) baking pan that is 36 to 50mm deep with a dark color.

Flour 100% (500-grams)

Salt: 1.8% (9-grams)

Sugar: 3% (15-grams)

Shortening: 2% (you could also use butter or margarine) (10-grams)

Fresh/compressed yeast: 1.5% (7.5-grams)

Water: 56% (variable) adjust the water temperature to 24C/75F (280ml/grams)

Procedure:

Mix the dough in your preferred manner. For this type of pizza you don't need to really develop much gluten during mixing as it will develop biochemically during the overnight fermentation process.

Divide the dough into two 425-gram pieces, lightly oil each dough piece and place into individual plastic bags or into individual bowls covered to prevent drying and place in the refrigerator to cold ferment overnight (18 to 48-hours). Remove dough from fridge and allow to warm at room temperature for about 90-minutes, then turn the dough out of its container onto a floured counter top/table and roll out to a diameter slightly larger than your pan diameter. Prepare the pan by applying shortening or margarine to the side of the pan and about 30ml of peanut oil to the bottom of the pan, place the rolled dough piece into the pan(s), cover with a piece of plastic to prevent drying and allow to rest for 20 to 30-minutes, then come back to the panned dough and using your fingers, carefully fit the dough to completely fit the bottom of the pan and pull the edge of the dough up the sides of the pan to a height of about 25mm. Cover and set aside again and allow to proof/rise for approximately 45-minutes. The dough is now ready to apply the sauce and desired toppings. I have had good luck baking these pizzas on the oven rack at a temperature of 425 to 450F/218 to 232C. I like to start out by placing the pizza in a lower rack position for about 10-minutes and then turning the pizza and placing it in a higher rack position for another 10-minutes. These pizzas normally bake in around 20-minutes but since every oven is different you may need to experiment a bit to find what works best in your specific oven. To cut this type of pizza use a French knife or any large knife that is not serrated.

Tom Lehmann/The Dough Doctor

5956

## [Neapolitan Style](#) / [Re: My SD starter is totally breaking down my dough!](#)

DB;

If you forgot to add the salt to the dough that could very easily explain what you were experiencing. Salt is a strengthener for the dough and it also plays a very important role in controlling fermentation activity. I have personally collapsed more than one bread dough by scaling sugar for salt. Oops!

Tom Lehmann/The Dough Doctor

If the microflora in the starter changes (the expression is that the starter has been lost) you can get a change in dough performance and/or flavor of the finished product in which it was used. In this event it is best to just start a new starter all

over again. This is why it is so highly recommended that when you have a starter that you really like that you divide it into multiple containers at different locations so if one is lost you can always use one of the other to seed/start a new starter with the same microflora.

Tom Lehmann/The Dough Doctor  
5955

**Chicago Style / Re: Malnatis (Ghee vs. Corn Oil)**

We have been showing our students those same benefits of using a "plastic" fat (Ghee, margarine, butter, Crisco, etc) in forming the dough into the pan as opposed to using oil. In fact we hold a contest where one group of students try to fit the dough into an oiled pan while the other group fits the dough into a "greased" pan. We all know which group won that contest. The biggest difference between using oil and shortening in the pan is that shortening/plastic fat gives the finished pizza a drier looking crust than the oil does. Some of our students have compared it to a bread crust/heel slice, while the oil provides a fried characteristic to the finished crust. In many cases we have used a plastic fat to coat the inside edge of the deep-dish pan and oil to cover the bottom of the pan, this way you get the best of both worlds, ease of forming the dough to the pan while still getting a fried crust characteristic, of course if you don't want that oily crust just go with all plastic fat. For a unique flavor sometime try sprinkling raw sesame seeds into the pan before you drop in the dough and begin pressing it out. The seeds bake into the bottom of the crust and provide a great toasted sesame flavor to the finished crust. This is already making me hungry!

Tom Lehmann/The Dough Doctor  
5954

**Chicago Style / Re: How would you bake a frozen Chicago thin pizza?**

To bake a Chicago style thin crust from raw frozen would be a bit of a challenge indeed. But if I had to give it a shot in a home oven here is how I would start. Have two pizza stones available to work with, place one in a lower rack position to preheat while the other one will go on a center rack position at the time the pizza is placed into the oven. Baking temperature would be 425F. Place the frozen pizza on the cold stone as this will allow the top portion of the pizza to thaw and bake without developing and bottom crust color. When the top of the pizza is hot and just beginning to bubble I would transfer the pizza to the hot stone on the lower rack position to allow the bottom of the pizza to receive some heat to hopefully get sufficient bake to the bottom crust before the top of the pizza becomes the limiting factor for bake time. When you say flash frozen do you really mean "flash" frozen? To accomplish flash/blast freezing you must employ air temperatures in the range of -20 to -38F or if cryogenically frozen we are looking at freezing temperatures in the range of -45 to -60F. The reason I bring this up is because freezing at temperatures above those cited above will be damaging to the vegetable toppings causing them to break down as they thaw and release copious amounts of water while you're trying to bake the pizza. This results in what we fondly refer to as a "swamp" pizza. Additionally, the vegetables will have all the character of a very limp pasta noodle. Baking in a commercial air impingement oven can address a good deal of the water issue but it cannot resolve the textural properties of the vegetable toppings. This is why we advise that if pizzas made at home are to be frozen in a static freezer (anything not considered to be a blast freezer) the amount of vegetable toppings be very limited, sliced thinly, and if possible blanched or better yet, use canned or IQF (individually quick frozen) vegetables for the toppings. If using IQF vegetables they should be applied immediately before the

pizza is placed into the freezer, even then it is wise to limit the amount used. Commercial frozen pizzas are typically made with a par-baked crust (exception being bake to rise pizzas which utilize a raw dough base). The vegetables most commonly use are IQF and many use moisture controlled IQF vegetable toppings to address the breakdown issues associated with freezing vegetables.

Tom Lehmann/The Dough Doctor  
5953

### **Dough Ingredients / Re: baking pizza and breads**

The only difference between bleached and unbleached (bread) flours is in the color of the flour and the fact that the bleached version will typically provide a slightly brighter crumb color in the baked product. The only thing the mill is doing is bleaching out the beta carotinoid pigments (yellow color) from the flour. There is no impact on the taste or aroma of the flour or finished product. Cake flour, on the other hand is a whole different animal, in this case the bleaching is done for a totally different reason, in addition to making the cake flour whiter in color, the bleaching process weakens the flour protein and most importantly it modifies the flour starch which allows bakers to make what we refer to as high ratio cakes. These are caked made from formulations that have more sugar than flour as opposed to low ratio cakes which are typically made at home where the sugar is equal to or less than the flour weight. Now you know why those cakes you buy at the supermarket are so sweet tasting. This is why cake flour does have a different appearance and aroma, and it makes for a really poor quality bread or pizza flour, even when blended it isn't very good. I believe in a previous post I might have given a listing of flours from different manufacturers which fall in the 12% protein content range. If I'm wrong let me know and I'll post the list for you.

Tom Lehmann/The Dough Doctor  
5952

### **Monthly Challenge / Re: Super low carb NY style pizza???**

Since I wrote that article we now have one more ingredient to work with in developing low/reduced carb products, this product is called "resistant starch" think of it as a non-digestable type of starch. It functions much like a regular starch but the human body does not produce the enzymes needed to hydrolyze it into sugar. National Starch Company would be a good supplier for this product. Additionally, if you go to some of the "diabetic friendly" web sites you might be able to find some home formulas/recipes that you can build upon.

Tom Lehmann/The Dough Doctor  
5951

### **Dough Ingredients / Re: baking pizza and breads**

Peter;  
You nailed it! :)  
The second to the last sentence is the meat that we are chewing on here.  
That's the problem when you write as much as I do, you know what you wrote but can't remember where you wrote it. Has anybody seen my car keys? :-D

Tom Lehmann/The Dough Doctor  
5950

### **Dough Clinic / Re: Need Dough Recipe for an Event**

Here's a formula and procedure that we use all the time and it performs just as you have asked.

Flour: 100% (bread flour)

Salt: 2%

Sugar: 1%

Olive oil: 2%

IDY: 0.75% (hydrate in a small amount of warm (95F) water.

Water: 58% (80F)

#### Procedure:

Put water in mixing bowl, add sugar and salt followed by the yeast suspension. Whisk together very briefly. Add the oil and whisk once again immediately followed by the flour. Stir the flour into the liquid until the flour is hydrated, this normally takes a few minutes. Turn out onto a floured bench/counter top, oil a suitably sized bowl/container. Note: A 30-gallon trash container with a food contact approved plastic liner should work well for the formula given below. In this case be sure to oil the dough before dropping it into the lined trash container as this will prevent the dough from sticking to the plastic bag when you go to remove the dough.

Place the dough into the oiled container and drape with a sheet of plastic.

Allow to ferment at room temperature for 2-hours then turn the dough out onto a floured counter top and scale into desired weight pieces.

Form each dough piece into a ball, wipe with salad oil and place into individual plastic bags.

Place all of the dough balls into the fridge to cold ferment overnight.

On the following day transport the dough in a cooler to the event site.

Remove what you will initially need and allow to warm to 50F (about 1-hour for individual size pizzas).

Open dough balls into pizza skins by hand, dress and bake to the order. The dough balls are good for up to 3-hours after they have reached 50F.

Remove remainder of dough as needed and process in the same manner.

To convert percentages into weight measures grab your calculator and follow along;

Enter the weight of flour you want to use (remember that the weight of the ingredient will be shown in the same weight units as the flour weight is expressed in)

After entering the flour weight press "X" and then enter the ingredient percent you want to find the weight for, now press the "%" key and read the weight in the display. Example: Flour weight is 7-pounds ( $7 \times 16 = 112$ -ounces) all ingredient weights will now be in ounces.

Salt: 2% ( $112 \times 2$  (press the "%" key and read 2.24-ounces in the display. Round to 2.25-ounces of salt.

#### More math fun:

Add up all of the percentages in the dough formula (163.75 for the above formula).

Divide 163.75 by 100 = 1.6375

Decide what the individual dough ball weight will be, lets say 4-ounces each.

Decide how many dough balls you want to make, lets say 60 to be safe.

You will need to make at least  $60 \times 4$ -ounces or 240-ounces of dough for this order. To find how much flour you will need to base your dough on simply divide the total dough weight (240-ounces) by 1.6375 = 146.56-ounces (round this up to the next whole unit so it now becomes 147-ounces. You will need to base your dough on a total of 147-ounces of flour.

Salt: 2% 147 X 2 (press the "%" key) read 2.94 (call it 3-ounces of salt)

Sugar: 1% 147 X 1 (press the "%" key) read 1.47 (call it 1.5-ounces of sugar)

Olive oil: 2% 147 X 2 (press the "%" key) read 2.94 (call it 3-ounces of oil)

IDY: 0.75% 147 X 0.75 (press the "%" key) and read 1.10 (call it 1-ounce of IDY)

Water: 58% 147 X 58 (press the "%" key) read 85.26 (call it 85.25-ounces of water)

or 5.33-pounds of water)

Good luck with your pizza gig!  
Tom Lehmann/The Dough Doctor  
5949

### **Dough Ingredients / Re: baking pizza and breads**

Scott/Adrian;

While bromate is not illegal to use in the U.S. some states do require a health risk warning on the label of products made with bromated flour. There was never a problem with bromate because it was thought that all of the bromate was converted to bromide during the baking process, but in the early 1970's new detection methods were developed and residual "bromate" was found to exist after baking. With the philosophy that bromate is indeed a potential carcinogen, the question was posed: Just how much of a known carcinogen do you want to consume? The answer was none. Consumers around the world were now beginning to question everything when it came to cancer so when bromate and carcinogen were mentioned in the same sentence the politicians reacted immediately by banning bromate (Europe, Canada and all other countries following their lead) while the U.S. took a more logical position of asking if the levels now being detected (parts per billion/PPB) were dangerous to ones health. I'm not aware of any specific types of cancer or health problems that have been traced directly back to consumption of bromate, if it was bromate would be gone in a flash. To be honest, I'm more concerned about air quality than I am about my potassium bromate intake. That's just my own personal take on it. Others may feel differently and if it makes them feel better or safer to avoid bromate, so be it. Due to public/consumer pressure and concerns all major fast food companies and most large food manufacturing companies have taken bromate out of their dough formulations, with that said, we now have some oxidative enzymes available to work with that are looking to be about as effective as bromate so there is a continuing shift away from bromate since there is now a good alternative that wasn't available a few years ago. I'm now working with food companies to get azodicarbonamide aka yoga mats out of their product formulations and I'm glad to say that with the alternative ingredients that we have to work with today this is proving to be a pretty easy thing to do.

Tom Lehmann/The Dough Doctor  
5948

### **Dough Ingredients / Re: baking pizza and breads**

Scott;

Not really, ascorbic acid is an excellent oxidizer in dough systems and there is essentially no limit in place regulating how much can be used. Flour millers have a maximum limit of 200 ppm but as bakers/food processors, we can add whatever we need. How safe is ascorbic? Runners have been known to take thousands of milligrams of ascorbic acid twice a day. Additionally, ascorbic acid is approved for use just about world wide. Several years ago the only two dough oxidizers that we had to work with were ada/azodicarbonamide and ascorbic acid. The problem we had at that time was that the use of ada was limited by regulation and when considering the rate of reaction, ada was just a little slower reacting than ascorbic acid, the solution was to use microcrystalline encapsulation on the ascorbic acid to delay its reaction so it would react in the dough after mixing rather than during mixing. The strong point for bromate is its timing of reaction. It reacts late in the dough processing stage and all the way into the very early baking stages where

everything else was spent within an hour or so after mixing if not in the mixer. Because of this the early bromate replacers got a less than stellar review. With regard to safety issues, it is the bromate not being 100% converted to bromide that poses the health concerns, this is well documented, not the oxidizing properties, like I said, if that were the case many of us would be dead already due to the massive doses of ascorbic acid (vitamin-c) that we have taken over extended periods of time. With all of that said, am I against bromate? Of course not, that is a personal decision that each of us must make. Does bromate work? Absolutely! Do we really need it? The answer to that depends upon who you ask, some say they can live without it, others can't so they sit back and complain about how good it was in the "good old days", while still others embrace the new bromate replacers which have demonstrated their ability to function equally as well as bromate but without the consumer stigma tied to bromate. This is why we see both bromated and non-bromated flour being sold today. My guess is that eventually the bromate replacers will become mainstream and bromated flours will no longer be available and in 50-years somebody will find something wrong with the bromate replacers and the cycle will start all over again because that is how things normally work.

Tom Lehmann/The Dough Doctor

5947

### **Shop Talk / Re: selling pizza from home kitchen**

A couple more aspects to consider are insurance and utilities. First off you might want to check with your insurance agent to make sure you are sufficiently covered in the event that something goes wrong and someone gets sick, or worse. Then you will probably want to find some small size commercial equipment, like an oven and possibly a mixer and make sure you have utilities (gas and/or electric) capable of supporting that equipment. I've been involved with a number of home conversions into pizzerias (that's how Home Run Inn Pizza got their start in Chicago) and in most cases we had to make modifications to the gas supply, but in some instances we had to have a new breaker panel installed to support the added power needed to operate an electric oven. It will depend upon how many amps are needed and how many amps you have available at your breaker box to tap into.

Tom Lehmann/The Dough Doctor

5946

### **Dough Ingredients / Re: For those who use full strength..**

Cam;

All Trumps flour comes in at a little over 14% protein content while Full Strength comes in a bit lower at 12.6% protein content. It all depends upon what you want to use the flour for. In New York City A.T. is the flour of choice because it provides the desired chewiness but if you don't want that level of chewiness F.S. might be a better choice. I've had exceptionally bad results using A.T. in thick crust and deep-dish pizzas as the finished texture was excessively tough and chewy. Things were a bit better with flours in the 12% protein range. For all of the pizza work that I've done over the past 45+ years I've used flour in the 12% protein range more often than any other. It is, in my opinion, probably the best all around protein range (12 to 12.6%) for making just about any type of pizza by just about any dough process, management procedure or opening method. Full Strength is at the top end of that protein content range. Even better, there is a good selection of flours from different manufacturers that fit into that protein range whereas it can be a bit difficult to find flour with 14+% protein in many locations. Possibly one of the most readily available flours in this protein range (12 to 12.6%) is the Pillsbury Bread Flour available at most supermarkets. This flour was packaged for retail back in the day

when bread machines were popular and consumers wanted a flour to use in their machines just like the bakers used to make white pan bread.

Tom Lehmann/The Dough Doctor  
5945

### [\*\*General Pizza Making / Re: Boston Pizza's "Pizza Cake" - How would you make it? Will it work?\*\*](#)

When I first saw pictures of this pizza I thought that I would schedule some lab time to see if I could come close to replicating it for demonstration at our annual pizza seminar, but alas, things change and that won't be happening, but here are my thoughts that I was going to base my work on.

- 1) The individual crust layers appear to be fully baked as you can see the porosity of the crust in each layer.
- 2) The outer crust is a solid, continuous crust indicating that it was baked all at one time.
- 3) The toppings on top of the pizza do not appear to be overly baked. The pepperoni is cupped but what appears to be ham is not overly baked.

To address these observations I was thinking about using a 3-inch deep removable bottom cake pan. I would use a deeper pan but this is as deep as we have. To make the layer crusts I planned to bake several thin crusts in the pan. Lightly sauce the dough to control bubbling and give it a full bake as opposed to a par-bake.

The assembly I was contemplating went like this:

- a) Prepare a regular pizza dough suitable for use in making a deep-dish pizza.
- b) Prepare the baking pan by greasing it with shortening or Crisco.
- c) Roll the dough out so it is at least 8-inches larger in diameter than the diameter of the baking pan.
- d) Fit the dough into the pan and up the edges leaving the surplus hang over the top edge of the pan.
- e) Add toppings (fillings) to the bottom of the pan using precooked meats and sauteed vegetables. Nuke them so they are hot when assembling the pizza.
- f) Add one of the pre-baked thin crusts on top of the filling and add more filling. Repeat this until the pan is filled to within 1/2-inch of the top.
- g) Using a rolling pin or pie pin crimp cut the excess dough from the top edge of the pan.
- h) Apply desired toppings to the top crust.
- i) Tent with foil to protect the top of the pizza from oven heat and bake at 375F until the center reaches 165F.
- j) Remove tenting foil and bake at 450F until top of pizza is done.
- k) Remove from pan for cutting and serving (this is where the removable bottom pan comes into play)

The other approach was to simply bake a number of thin crust pizzas. Line the pan with dough as described above and begin layering the pizzas into the pan. The top crust would be prepared only with some sauce on it to control bubbling. Crimp cut the dough from the top edge of the pan, dress the top of the pizza and bake at 400F until the crust is browned and the center of the pizza has reached at least 165F.

Note: The individual layer crusts may need to be trimmed a little to fit back into the pan which is now lined with dough. As the dough expands during baking it will lock onto the layering crusts to give the pizza structure.

If anyone tries this I would sure like to see pictures and know how they made it. This looks like another fun journey in the world of pizza making.

Tom Lehmann/The Dough Doctor  
5944

**General Pizza Making / Re: Boston Pizza's "Pizza Cake" - How would you make it? Will it work?**

I realize that photoshop does wonders at product enhancement and sometimes it is even used to develop products that don't actually exist at all and that could well be the case here, but just think of the WOW factor when someone actually makes one of those things!

Remember, it ain't the destination that counts, but instead it is the journey. Can it be done? I don't know, but I'd sure like to be able to give it a try. We might learn something from the journey and get to eat some interesting pizza too. :)

Tom Lehmann/The Dough Doctor  
5943

**American Style / Re: Pizza Hut RGM willing to answer questions**

JB;

Our local supermarket carries a number of different flavored oils in spray cans and they are reasonably priced too.

Pizza Hut has been a big user of Leprino cheese.

Tom Lehmann/The Dough Doctor  
5942

**Sauce Ingredients / Re: My thoughts on 6 in 1 Tomatoes**

Those bits of skin contain what is called the "velvet" the portion immediately under the skin, and the reason why they are present is because of the flavor they bring to the product. If I am working with a client that doesn't want the skin in the sauce I commonly use Tomato Magic (ground whole peeled tomatoes) from Stanislaus.

Tom Lehmann/The Dough Doctor  
5941

**Dough Clinic / Re: KAAP VS KABF**

JVP;

You made reference to two flours but only made mention to KABF what is the other flour? In very general terms the higher the protein content the greater the potential for crispiness (if you have the correct dough absorption and the pizza is baked correctly) at the same time the higher protein will contribute to the potential for a more chewy/tough eating characteristic in the finished crust. There are just so many different things that can influence these characteristics such as forming method, formulation, dough management, and baking that you cannot draw a parallel but in general terms the above is correct. If you want to have a crust that has a more tender eating characteristic going to a lower protein content flour or blending a strong flour like bread flour with all purpose flour will give you the ability to produce a crust with a more tended eating characteristic.

Tom Lehmann/The Dough Doctor  
5940

**Dough Clinic / Re: KAAP VS KABF**

Hey guys, please excuse me for a minute while I wipe the egg off of my face. Lots of things going on right now and my attention isn't what it should be. With the KAAP having the power protein content of the two flours the effect of protein still remains the same, but with the lower protein content of the AP flour you would need to use less dough absorption and you might find the dough to be

somewhat problematic with long time cold fermentation due to excessive weakening of the already lower protein level. If you are into hand slapping or tossing the dough you might also find the AP flour to give you a dough that could be too soft/extensible for good handling properties. The good news is that for the most part you can blend AP and bread flours together to make a custom blend specific to your needs.

Tom Lehmann/The Dough Doctor  
5939

### [\*\*Dough Clinic / Re: White kamut flour formulation\*\*](#)

Jonas;

Since Kamut is an ancient relative to modern day wheat and somewhat like Durham wheat it can be used to replace wheat in many formulas/recipes that are not highly dependant upon gluten for strength, flat breads, pitas, pancakes, cookies and of course pizza all come to mind. Due to its higher fat content you probably won't need to add much oil/fat to the dough formula, and in some formulas you might get away without adding any fat at all. The only thing you will need to do is to experiment with the absorption to find what works best for you using your dough formula. I would think that a good formula might be as follows:

Kamut: 100%

Salt: 2.5%

Olive oil: 1% (optional)

Sugar: 2% (optional)

IDY: 0.5%

Water: (80F) To be determined

Procedure:

Put water in bowl followed by the remainder of ingredients, mix to a cohesive dough/mass.

Set aside and allow to hydrate for 1-hour, then scrape from bowl onto a Kamut flour dusted surface and knead several minutes.

Lightly oil the bowl and place the dough back into the bowl, lightly oil the top of the dough, cover with a sheet of plastic and allow to ferment for 1-hour. Turn dough out of bowl and divide into desired size/weight pieces, form into balls, lightly oil the dough balls and place into plastic bread bags and allow to cold ferment in the fridge for 24-hours, remove from fridge on the following day, allow the dough to warm to about 50F and turn out onto a Kamut flour dusted counter top. Open the dough to desired diameter. I like to use about 14-ounces of dough for a 12-inch crust (Dough loading factor of 0.1239). Since this will be a slightly more dense crust you will need to experiment with baking time and temperature for your oven.

Tom Lehmann/The Dough Doctor  
5938

### [\*\*Prep Equipment / Re: Need help restoring an old mixer.\*\*](#)

Those traces of coating are most likely tin plating. We see this on a lot of the older Hobart mixing bowls too. As for coating the inside of the bowl and the hook with something to prevent rust, unless it is going to be used as a museum display piece don't use anything except a food grade oil. If you have concerns about the oil developing rancidity I would recommend using white mineral oil.

Tom Lehmann/The Dough Doctor  
5937

### [\*\*Dough Clinic / Re: KAAP VS KABF\*\*](#)

JVP;

When you add VWG to any flour you will increase the protein/gluten content by 0.6% for each percent that you add based on the total flour weight, so if you were to add 5% VWG the protein/gluten in the VWG/flour blend would increase by 3% (5 X 0.6 = 3). When adding VWG remember to increase the water by approximately 1.75 times the weight of VWG added. A commonly used flour in New York for making N.Y. pizzas is All Trumps which comes in at 14+% protein content. One of the reasons why N.Y. pizza is so chewy.

Tom Lehmann/The Dough Doctor  
5936

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

JVP;  
GAB hit the nail on the head. It is easier to cool a smaller dough piece than a larger one (individual dough ball v/s bulk fermenting the entire dough) so ultimately it all depends upon what you want in flavor. Since a dough will increase slightly in temperature as it ferments, within a given period of time, you will get more fermentation taking place with bulk fermentation than you will with dough that is being fermented as a dough ball.

Tom Lehmann/The Dough Doctor  
5935

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

And to that we might also add that there is improved dough consistency at the retail (pizzeria) level when the dough is fermented as dough balls as opposed to bulk fermented as a whole dough in a large container. The reason for this is because the dough that is in direct contact with the walls of the container will be colder than the dough in the middle of the dough mass. This difference in temperature will impact the rate of fermentation, and it can be sufficiently significant to produce a fermented dough mass that has a higher residual sugar level and higher pH around the edges than it does in the center of the dough mass. The result is that when pizzas are made from this dough the crust is not evenly browned and in some cases a good deal of a pizza might have portions of both areas of the dough resulting in a very mottled appearing finished crust. This is not a big thing for home pizza makers, but it can be a problem for pizzeria operators. Dough balls with their smaller size tend to cool down much faster and with greater uniformity, hence the popularity of using dough balls as opposed to bulk fermentation at many pizzerias.

Tom Lehmann/The Dough Doctor  
5934

### **Chicago Style / Re: Malnatis (Ghee vs. Corn Oil)**

One of the main reasons for using fat/oil in a deep-dish pan is to achieve a fried characteristic to the baked crust. Oil is very good at providing this characteristic while shortening on the other hand gives a finished crust that is more like that of white pan bread. The shortening also provides for some grip to help hold the dough in place while trying to press the dough out into the pan with oil can be an exercise in futility unless the dough is REALLY soft and relaxed..

Tom Lehmann/The Dough Doctor  
5933

### **Off-Topic Foods / Re: Corn tortilla recipe - please share**

Masa flour/Maseca is the only way to go. Corn flour just doesn't cut it flavor wise. If

you have a few tortillas left over you can also fry them to make your own corn chips. If you are into Tex-Mex and want to make a great tasting Tex-Mex pizza try adding some masa flour to your regular pizza dough formula/recipe. We add 25% masa flour (based on the total wheat flour weight) with the absorption adjusted to compensate for the drying effect of the masa flour and then process the dough in your normal manner. I like to use picante sauce to replace the pizza sauce and then finish as an open face taco. Allow the baked pizza to cool for a couple minutes and add some lettuce, fresh tomato and a sprinkling of cheddar or jack cheese and serve warm. This sure beats what P.H. used to offer as a taco pizza.

Tom Lehmann/The Dough Doctor  
5932

### **Newbie Topics / Re: pros and cons of a dough with higher hydration**

Higher absorption doughs are easier to mix, are easier to open into pizza skins, exhibit better oven spring resulting in greater porosity across the entire crust, this is especially true in the area of the outer edge of the pizza. The improved porosity of the dough while it is baking actually contributes to a crispier finished crust eating characteristic. This is why we have always suggested that the dough absorption be increased when a crispier crust is targeted. In an indirect way the increased absorption can also influence the flavor of the finished crust. The softer dough exhibits greater rise in the oven which can lead to some bubble formation within the dough, these bubbles typically receive more bake than the rest of the crust as there is nothing under the bubble to sink heat away from it, this results in more color development of the bubble (aka dark spots/leoparding) which in turn contribute to the finished flavor profile of the finished crust. You see a lot of this with English muffins where there are dark or moderately charred points on the crumb surface which contribute to the flavor of the muffin.

Tom Lehmann/The Dough Doctor  
5931

### **Newbie Topics / Re: pros and cons of a dough with higher hydration**

Peter;  
In response to #1 in your above post. I have just retired from my position at the American Institute of Baking with the effective date of August 20, 2014. Jeff has also retired from his position effective in a couple of weeks. Jeff has taken a position with a company that will allow him to utilize his vast experience dough extrusion, sheeting and laminating technology. I will continue to work out of my home office writing for both PMQ and Pizza Today as well as contributing to pizza websites and participation in pizza shows. I will join the ranks of Big Dave (Ostrander) as an independent consultant to both the wholesale and retail pizza industries, as well as providing assistance to the baking industry at large.

Tom Lehmann/The Dough Doctor :)  
5930

### **Dough Clinic / Re: vera napoletana %'s**

The way to change a formula from weight measures to bakers percent is to divide the weight of each ingredient by the weight of the wheat flour and multiply by 100.  
Flour: Is always equal to 100% 1.7 kg.

Water: 1.0 divided by 1.7 X 100 = 58.8% (all shown in Kg.)

Salt: 50 divided by 1700 X 100 = 2.9% (all shown in grams)

Yeast: 3 divided by 1700 X 100 = 0.176% (all shown in grams)

Using your handy calculator:

65% absorption would be 1.7 X 65 (press the "%" key and read 1,105 Kg. water (since the flour weight was shown in Kg. (1.7) the answer will also be shown in Kg.)

Note that the ingredient and flour weights must always be shown in the same weight measures.

I hope this helps,  
Tom Lehmann/The Dough Doctor  
5929

**Off-Topic Foods / Re: Corn tortilla recipe - please share**

With reference to lard, correct, corn tortillas do not contain any added fat but flour tortillas do, typically anywhere from 8 to 20% with most commercial tortillas coming in at around 8 to 10%. As for lard, due to its lower melting point it is better than shortening which can leave a waxy feel in the mouth, but when it comes to flavor, there isn't as much difference between lard and shortening as there used to be. The reason for this is told on the packaging where it says "deodorized", yup, that's the good flavor typical of lard that has been pretty well removed through steam distillation by the processor. If you live in an area there you can get fresh lard or imported lard from Mexico you're in luck as the imported lard is still the real thing.

Tom Lehmann/The Dough Doctor  
5928

**Newbie Topics / Re: pros and cons of a dough with higher hydration**

Peter;  
The only difference retirement will make in my life is that I will be able to "cherry pick" assignments and regarding the time that I spend on various web sites and writing articles, that will most likely increase. As for a book, I've already got it templated so now I will need to just sit down and begin writing. I'm looking forward to doing it this winter.

Norma;  
I totally agree with you that pizza is a lot more complex than it first appears to be. I discovered that some 47-years ago when I set out to learn the ins and outs (technology) of making pizza, and here it is, 47-years later and I'm still putting the pieces together. Boy! Speak of an underestimation of needed effort!!! But not to sound too contrary, you're never too old to learn. I keep learning new things about pizza every day and everyone who participates both here and at the PMQ Think Tank have been instrumental in contributing to that new found knowledge, not just for me but for anyone taking the time to partake in these great resources.

Tom Lehmann/The Dough Doctor  
5927

**Newbie Topics / Re: pros and cons of a dough with higher hydration**

Norma;  
In answer to your question as referenced in Peter's post above, As you know, there are exceptions to every rule and I think your case is qualifying as one of those exceptions for a couple of reasons, (1) At your lower oven temperature you can't force enough oven spring to achieve the benefits associated with the higher dough absorption. (2) There is also a chance that with your low yeast level could be inhibiting the potential for enhanced oven spring. (3) In some cases the dough might have been exposed to too much fermentation thus weakening the dough or

depleting the nutrient supply from the yeast to such a point as to lessen the ability of the yeast to generate carbon dioxide fast enough to participate in oven spring. (4) While this doesn't pertain to you we have seen that when the dough is opened by sheeting, so much of the dough has been degassed that it just cannot respond to oven spring as it should even with the increased absorption. (5) Another one that doesn't pertain to you is a condition where the dough is so over fermented that it lacks the ability to hold up under the rapid expansion during oven spring and either collapses or loses its ability to retain the leavening gas to create the desired oven spring.

When faced with any of these situations the default is to reduce dough absorption as this firms up the dough making it less prone to collapse, and if baked sufficiently long it will form sufficient crust to provide a crispy texture. The only down side to this is when the absorption is reduced so low as to inhibit complete hydration of the flour, then the dough becomes difficult to open unless a sheeter/dough roller is used such as is the case with most cracker type crust renditions which will typically use absorption values as low as about 36/38% to as high as 45 to 48%. In these situations a VERY crispy crust can be made but they do require special handling and generally longer than normal baking times, plus a raised edge on the pizza is generally not much more than a wish, but it is crispy, actually, more cracker like than crispy.

I hope this has answered your question.

Tom Lehmann/The Dough Doctor  
5926

### **Chitchat / Re: Tom Lehmann's Retirement from the AIB**

Walter;

I won't be leaving the pizza industry in any way in the foreseeable future, and I'll still be just as active if not more so on both PMQ and Pizza Making.Com web sites, the only difference is that like many of you I will be able to communicate by e-mail while wearing my pajamas, typing with one hand and eating my breakfast or lunch with the other.

Thank you to everybody for all of your very kind words and good wishes, I'm really looking forward to this new chapter in my life and career.

Tom Lehmann/The Dough Doctor  
5925

### **Dough Clinic / Re: is this a good dough**

Norma;

I think there is a position open for you here at AIB. I couldn't have said it better myself! :)

Tom Lehmann/The Dough Doctor  
5924

### **Off-Topic Foods / Re: Corn tortilla recipe - please share**

Gag;

Both types of tortillas are from Mexico. The wheat flour tortillas are from the northern regions of Mexico and the corn tortillas are from central and southern Mexico. It reminds me of the time I was conducting a seminar for wheat millers in Mexico close to Monterey and that night as dinner was being brought to the table pandemonium broke out among the millers. At first I didn't realize what the problem was but I soon discovered what all the fuss was about. It seems that we were being served corn tortillas rather than wheat flour tortillas. By the time the chatter had died down the corn tortillas had been sent back to the kitchen with

instructions to come back with only wheat flour tortillas! A short time later we were all enjoying wheat flour tortillas.

Tom Lehmann/The Dough Doctor  
5923

### **Neapolitan Style / Re: Pizza Peel Failure**

Type;

Since it only happens a couple of times and all of the other dough pieces are just fine, I'd tend to look at technique above anything else. If you stretch the dough with any thin spots two things can happen, (1) the thin spot represents a weak spot from where the dough will tear. (2) at the thin spot there is a greater probability that moisture from the sauce will penetrate through the dough causing it to stick to the counter top surface, this can be especially problematic if you are dressing a number of pies all at one time. Doughs that tend to be on the weak side due to slightly high absorption or long fermentation times tend to exhibit this characteristic more than doughs that are made with a slightly lower absorption or shorter fermentation time. You could test this by reducing the dough absorption by a couple percent to see if that helps. Remember, flour is not a constant, it is possibly the most variable ingredient we work with so it is not unusual for doughs to require different levels of absorption as we go from one milling lot to another, or from one bag to another. If that doesn't help then I would suggest reducing the fermentation time by 25% and see if that helps.

Tom Lehmann/The Dough Doctor  
5922

### **Dough Clinic / Re: Sodium in dough**

GFG;

Be aware that there is a "new kid on the block" when it comes to low sodium salt substitutes. Gone are the days of that metallic taste, we now have a new product that we looked at over a year ago, that by trained sensory panel, could not distinguish it from the real thing. The best part was that it still retained the full salt flavor and had the same impact upon bread flavor. The product is called New Tech Salt, and it is now available from Walmart. If you can't find it please send an e-mail to Tom McCurry at <t.mccurry@cainfood.com> and ask him about availability in your area as well as a product specification sheet. I used to give out samples of it but I'm all out of them now. You can use the New Tech Salt just as you would any other salt and still get the sodium reduction.

Tom Lehmann/The Dough Doctor  
5921

### **Dough Clinic / Re: Blah Blah Blah pizza dough and crust**

Frank;

Aside from using your bread maker, how did you manage the dough once you made it. The dough management procedure that you employ has a greater bearing on the attributes of the finished crust than the dough formula.

Without knowing what you did, you might give this a try to see if you get better results

Mix dough

Divide into desired size/weight pieces and place into individual plastic bags or bowls.

Refrigerate the dough for at least 24 to 48-hours.

Turn the fermented dough out of the bowl or bag into some dusting flour  
Using your hands only, no rolling pin, open each dough ball to the desired size.

I'm guessing that you might be baking on a pan? Hopefully a dark colored pan? Place the dough into a lightly greased (think Crisco, butter or margarine) pan  
Brush surface of dough VERY LIGHTLY with olive oil  
Apply sauce and desired toppings  
Not knowing how you bake, I'll assume you are not using a stone or steel. Place the pizza into a preheated oven at 500F about 1/3 of the way up from the bottom for 10-minutes, then move to a higher rack position, about two spaces Down from the top position, rotate the pizza and bake for about 8-minutes or until the cheese is bubbly and is beginning to brown slightly.  
You might need to make some adjustments but this should get you started in the right direction. Check other posts to get more information on baking techniques.  
Tom Lehmann/The Dough Doctor  
5920

### [\*\*Dough Clinic / Re: Am I Over Fermenting?\*\*](#)

Slam Man;  
Since many home made pizza doughs have a finished temperature in the high 80's or low 90's, some times even in the low 100's I think that 48-hours at room temperature is too long for the type of flour that you are using. For starters, you might begin allowing the dough to ferment for 1-hour at room temperature before taking it to the fridge and see if that helps, if it does, allow the dough to ferment at room temperature for progressively longer periods of time, 2-hours, 3-hours, etc. before taking it to the fridge. At some point you will probably want to leave the dough ferment for an hour or so at room temperature and then experiment with the length of time you allow the dough to cold ferment in the fridge (1-day, 2-days, 3-days, etc.) as there is a difference in crust flavor with the different types of fermentation. Experiment to find what works best for you and provides the flavor and characteristics you're looking for. Remember, it is the journey, not the destination that counts, and failures can taste almost as good as successes when it comes to making pizzas.

Tom Lehmann/The Dough Doctor  
5919

### [\*\*Dough Clinic / Re: A few questions\*\*](#)

Norma;  
To a point, increasing the dough absorption will always result in increased dough mobility resulting in increased oven spring. I say "to a point" because the dough must still retain sufficient strength to support the weight of the added water and expand while retaining gas. If the dough fails to do this it will exhibit collapse either before baking, during baking, or shortly after baking (resulting in translucent spots in the crust that look like oil spots but instead are only localized places of dough collapse). Regarding fat in the dough, if you can toss the fat into a bowl of flour and take it back out again in the same shape, it will exhibit lubrication and improved gas retention properties in the dough. You can also add this fat directly to the dough along with the other dry ingredients. On the other hand, if you were to melt this fat and drop it into the flour it would be a different story as the fat would be absorbed into the flour but it would soon recrystallize back into a solid (plastic like) fat. This means that the melted fat would perform better if it were added by the delayed fat addition mixing method, BUT it would exhibit functional properties in the dough the same as it would if added as a plastic fat. As for oil, it will be absorbed into the oil and it will not crystallize after addition so it should be added by the delayed oil addition method. Its function in the dough will be to lubricate the dough for ease of mobility, it will coat the gas cells for improved

gas retention (there are the same properties that lard would exhibit) but it will also soften the dough in much the same way that water does, BUT it will not participate in the hydration of the flour proteins giving rise to gluten development. This can be easily seen when we add copious amounts of water to a dough and it becomes very soft, but if we allow the dough to rest the proteins will continue to hydrate resulting in an easier to handle dough (does this sound familiar?) whereas the addition of high oil levels will give a softer dough, it will not dry up as well and it will remain very soft. This approach is used pretty extensively by the large wholesale pizza manufacturers as it is common to find total fat levels in the dough (as oil) in the 16% range. In this case the high oil contributes to a very soft and easy to handle/machine dough but without the stickiness associated with water (due to the fact that they do not allow time for hydration of the flour protein). As for flavor, some fats have a characteristic flavor such as butter, margarine, non-deodorized lard, etc. which are infused into the dough, while bland tasting fats and oils entrap and hold flavors released from baking the pizza for an improved flavor profile in the finished pizza. As for water and flavor, the greater mobility of the dough with increased water provides for a better bake out of the dough (if you don't believe this is important just taste the dough before and after baking LOL), and then there is the case for crust color and char contributing to the overall flavor profile. If you have ever tasted a brown and serve roll before and after baking you will see the difference in flavor that just crust color provides, and when we add some char to the picture we add yet another dimension of flavor to the finished crust. The way char is formed in pizza crusts is through bubble formation. The bubble is a skin of dough that is separated from the main body of dough with an insulating layer of gas and water vapor inside the void. The oven heat is applied pretty evenly to the entire top and bottom of the dough during baking and much of this heat is absorbed into the dough through conduction, but where there is a bubble present, the heat cannot be absorbed into the dough so it quickly comes up to a higher temperature than the surrounding (non bubbled) dough, as soon as the dough temperature reaches about 350F it begins to brown and it continues to brown until the pizza is removed from the oven. This is how char is formed in the oven on a pizza crust, or any other oven baked product for that matter.

One other thing I might add about lard, as opposed to constructed fats, like shortening, lard has a lower melting point and slip point meaning that it will have a cleaner mouthfeel (more like that of butter) without the waxiness of many shortenings. But when it comes to flavor contribution, commercial deodorized lard cannot hold a candle to the non deodorized version. With reference to using high fat levels (above 8%) since fat of any kind can/will interfere with gluten development, it is always best to add it quite a bit later in the dough mixing stage, even later than it would be added by the delayed oil addition mixing method. In this case it is recommended to mix the dough to just short of the level of gluten development you are looking for, the fat is then added and the dough mixed until the fat is thoroughly incorporated (a few minutes). This can be easily done by home bakers by mixing the dough, allowing it to ferment or hydrate for about 30-minutes, adding the fat and kneading it in or putting the dough back into a mixer with the fat to incorporate it.

Next Question?

Tom Lehmann/The Dough Doctor  
5918

### **Dough Clinic / Re: sbarro**

JS;

Based on your dough formula you should be able to go for a minimum of 3-days in

the fridge and it wouldn't surprise me if you could push that out to a week or so.

A lot will depend upon your dough management procedure.

Tom Lehmann/The Dough Doctor

5917

**[Dough Clinic / Re: I just can't make good dough... It's been like 10 years.](#)**

Pizza-Dude;

That last folding, just prior to opening the dough is what is killing you. Try this, just turn that orange size dough ball out of the bowl onto a floured surface and begin opening it into a pizza skin. I think you will find things a lot easier going. What I might suggest is to divide the dough into desired size/weight pieces when you put the dough into the fridge, lightly oil each dough ball and place into individual plastic containers or plastic bread bags, when you are ready to use the dough just remove from the fridge, allow the dough to warm to at least 50F, then turn it out of the container into a pan with some dusting flour and begin opening the dough into pizza skins. This process works great for me.

Tom Lehmann/The Dough Doctor

5916

**[Dough Clinic / Re: A few questions](#)**

Norma;

To give your brain a little rest, how has your garden been doing this year? We are already picking and dehydrating cherry tomatoes, and using banana peppers from our garden. Bell peppers are set as are the eggplant (lots of them). All of the other tomatoes are just waiting to ripen. This is the earliest that we have EVER had a crop like this. I took a chance and with our warm spring I planted early and didn't get wiped out by a late frost. Sometimes you win a hand with Mother Nature, and this was our year. We are really looking forward to making some great pizzas this summer with a garden to table time of an hour or less. I haven't planted low acid yellow tomatoes for a good number of years now, but I got to wondering how they would work on a pizza so I put in a couple of plants (Golden Boy) to see how they would do. They should be ripe in a couple of weeks if not sooner. Yellow sauce anyone? Has anyone ever done any experimenting with yellow tomatoes? If these work out I plan to try some yellow cherry tomatoes next year, if nothing else they will add some color to my pizzas.

Tom Lehmann/The Dough Doctor

5915

**[Pizza Ovens / Re: rotating oven vs stone tunnel oven](#)**

KD;

Do you mean the Picard ovens?

Tom Lehmann/The Dough Doctor

5914

**[Off-Topic Foods / Re: Corn tortilla recipe - please share](#)**

Gab;

When Taco Bell first went to Mexico (go figure!) and people saw burritos on the menu they couldn't understand why people would eat baby burros akaburritos. I guess they had some splainin' to do. Ain't nothin' finer than sitting in a Mexican restaurant (in Mexico of course) eating queso frito (fried cheese) wrapped in a fresh, hot wheat flour tortilla with a squeeze of limon while sipping on a cold Modelo Negra cervesa.

Tom Lehmann/The Dough Doctor

### [\*\*Dough Clinic / Re: A few questions\*\*](#)

Norma;

Our basil is ready for picking tonight. Susan and I will make it into a pesto base as we always do (just basil and olive oil) we add the pine nuts and Parmesan later, when we want to make the pesto. We have had problems with long term frozen storage and rancidity when we made it as a complete pesto, but as we do it we can keep the pesto base, as we call it, in the freezer for well over a year without any issues. We lost most of our oregano over the winter, but there are a few sprigs of it still growing so I'm nurturing it back into a plant that we can harvest from once again.

Tom Lehmann/The Dough Doctor

5912

### [\*\*Dough Clinic / Re: A few questions\*\*](#)

Norma;

Since your lard was added in a semi-plastic form as opposed to being melted first, you were correct in adding it right up front with the other dry ingredients. Anytime you improve the lubricity of the dough it will feel softer, but when plastic fats (lard, shortening, etc.) are used in their crystalline form, the resulting softness will not be as great as it would if you had added an equal amount of oil to the dough.

Most commercially made pizzas are made on a crust from a dough that has received very little fermentation so in many cases the flavor of the finished crust is pretty bland. I have found ways aside from fermentation to address that problem, but still, for most the approach is to add high levels of fat to the dough formula. In addition to improving the automated processing characteristics of the dough the increased fat level also appeals to the consumer's "fat gene". This is a proverbial gene that we all have as a carryover from the time when man had to survive by eating a much more meager diet than he does today, and those who ate calorie dense fat survived while those who didn't were never able to pass on their genes.

This is one reason why the fat free movement never gained any real momentum. As a side story to that, the most popular fat free product of its time was the fat free pound cake made by a huge, east coast baking company. Why was the product so well received you ask? Well, first of all you have to consider the definition of a fat, any fat is defined as a triglyceride. Those very popular fat free cakes were found to be made using very high levels of monoglycerides and diglycerides, which are not fats by the true definition. They are used as emulsifiers and anti-staling agents, but they have a waxy feel to them, melt like a fat, and as stearates, they are not as healthy for you as a fat is, so my response to this was that if you took the sum of a monoglyceride and a diglyceride you got "3" or a triglyceride. If it has feathers like a duck, and feet like a duck, and a bill like a duck and quacks like a duck, you would probably be pretty safe in calling it a "duck", and that is what the Feds did when they found out how the cakes were being formulated, Oops!

We saw some of the same thing happen with the trans-free (trans fat free) craze of a few years ago. Formulators began using trans-free lard to replace trans-fat laden shortenings, yup, it worked, BUT there was one "smidgen" (where have I heard that word used before?) of a problem in doing this, from a healthful standpoint, lard is actually worse for you than the hydrogenated fats. As you can see there is a lot science and chemistry behind fats and oils, which is why we have fats and oils chemists, so what might look like a pretty simple ingredient, is actually quite complex. This is why it took us so long to study the ingredients used in pizza production and figure out just what they did and how they would interact with

other ingredients in different processing scenarios.

By the way, the basil pesto base turned out great last night and as is usual when we process our pesto base the whole house had a wonderful aroma. I sure wish someone would bottle that smell!

Tom Lehmann/The Dough Doctor  
5911

### **Newbie Topics / Re: Why use a pizza screen?**

A couple of things to keep in mind about screens, they must be seasoned prior to their first use to prevent the dough from sticking to the screen, and once seasoned, it is not adviseable to soak the screens for cleaning because if you do the seasoning will begin to peel off like a bad sunburn and we all know where it will end up. If you are getting a lot of "gunk" in the screen openings you probably shouldn't be using screens, but instead use Hex Disks from Lloyd Pans <[www.lloydspans.com](http://www.lloydspans.com)> they're pricey, but then so is everything else as compared to the cost of screens, but you will never need to replace it, and clean up is a snap as all you need to do is to wipe them with a clean towel. These disks are anodized with a proprietary coating that is much more than durable and it will last forever, unlike other nonstick coatings. You can also wash these disks without any problem. If you get a little debris in your screens the recommended way to get it out is to put the screen in your oven for 30-minutes, or so and then tap it on a hard surface when you remove it from the oven. If you still have too much crud in the screen openings just replace the screen as this is a lot easier than the effort needed to clean it.

Tom Lehmann/The Dough Doctor  
5910

### **New Forum Members / Re: Pizza Flour**

A good way to source some unmalted flour is to check your local grocery store to see if they carry an organic bread flour. Most of these are coming in at around 12.5% protein content which would make it suitable for most types of pizza production.

Tom Lehmann/The Dough Doctor  
5909

### **Dough Clinic / Re: A few questions**

The trans-fat thing is still with us even after the latest research reports showing that trans may not be as bad for us as once thought, but there is long term evidence to show that lard does contribute to cholesterol and rather significantly. Part of the latest research showed that when people went away from fats they indeed did turn to sugar for which we also have in our DNA as sugar loving gene, for what reason I do not know, but we do crave sweetness. A study was done several years ago with new born infants and it showed that babies, with no prior exposure to sugar exhibited a preference and consumed more milk that was laced with 0.5% sugar. So right now the question to be asked is which is better of two evils, fat or sugar? Do you want to play the cardio game or the diabetes game? Like I said, you can enjoy both if you exercise a little control and enjoy both (fat and sugar) in moderation, ditto for salt. The problem with salt is that we are exposed to it from so many different sources that we may not even know how much sodium we are consuming. I made a decision over 25-years ago to never add salt or sodium (monosodium glutamate) to any of my foods again. I've been true to my conviction and I still enjoy good health after 70-years. I also eat fried foods and trust me, there are fewer joys greater than eating a fresh, hot donut and icing makes it all the better, BUT again in moderation. I might treat myself to a donut

once or twice a month and at that rate I don't think the acrylamide will lead me to an early grave. Ain't food great?

Tom Lehmann/The Dough Doctor  
5908

### [\*\*Dough Clinic / Re: "Dough ball" loses shape during fermentation?\*\*](#)

Jeff;

Your dough looks pretty normal to me too. As for those dough balls that you see being used by pizzerias, they have been mixed to a much greater level of gluten development than is possible to accomplish at home with most mixers, or by hand mixing/kneading, plus the absorption used to make the dough is somewhat lower, generally around 56 to 58%. This allows the dough balls to be placed into those dough boxes with the maximum dough ball count without the dough balls all growing together by the time they are ready to use. It is also at least partially responsible for the fact that almost all box store and to a great extent, pizzeria crusts, regardless of who made the pizza, have a distressingly similar look. This doesn't make their pizzas right or wrong or their crusts good or bad, when you're trying to run a million dollar business you can't always do what you might like to do so you have to do the best with what you have to work with.

Tom Lehmann/The Dough Doctor  
5907

### [\*\*Newbie Topics / Re: Why use a pizza screen?\*\*](#)

c0mp;

Not really, but My preference is like yours for the oil only method. The only problem I have with seasoned pans, aside from the seasoning process, is that the pans/screens cannot be washed without fear of damaging the seasoned coating, it's a real bummer when that happens. There is also a problem with seasoned pans if you don't use them regularly as the seasoning has a tendency to turn rancid over a short time, and here's one for anyone interested in healthy eating, carbon has been proclaimed to be a carcinogen by some states, I haven't researched it lately, but the two states on that band wagon were Massachusetts and California. At one time both banned the use of seasoned pans/screens, this is what lead to the rapid growth and popularity of the anodized pans and most recently disks. The original finish on many pans was Teflon but it proved to be much less than ideal and was soon replaced by an anodized finish which worked OK, but now we have some really great proprietary anodized finishes that are super tough (hardness rating of 9, a diamond is 10) that defy being damaged unless the base metal (aluminum) is damaged. These finishes are also nonstick so all they need is a washing and a light seasoning only once when first used. After that, you can burn cheese or tomato sauce on them and just wipe it off with a paper towel, if you're so inclined you can also toss them into a sink of hot, soapy water to soak (why I don't know) and then rinse and dry without any damage to the pan/disk or finish. We have a good number of these that we have been testing for several years now and so far we have not have a single problem with any of the pans or disks.

Tom Lehmann/The Dough Doctor  
5906

### [\*\*Dough Clinic / Re: A few questions\*\*](#)

Norma;

Find out if it is deodorized or steam distilled. That will give you an idea of the flavor impact to expect from it. More if non-deodorized, less if deodorized or steam distilled.

Tom Lehmann/The Dough Doctor  
5905

**[Off-Topic Foods / Re: Corn tortilla recipe - please share](#)**

Craig;

Someplace out there there is an article on big box store slogans and how they translated when they went to different countries.

Chevrolet (Latin America): Nova = doesn't go "doesn't work"

KFC: (China) Finger Lickin' Good = So Good You Will Want To Eat Your Fingers and then of course the Taco Bell episode.

Those are just a few of them that I remember. Like you said, it's amazing how little research these big companies put into their advertising when they develop a presence in a foreign country.

Back in the 1970's There was a lot of criticism of Japan for not buying U.S. made cars while we were gobbling their cars up like a kid at a candy store. When pressured for an answer as to why? They responded that U.S. cars were so big that they had a hard time navigating the narrow streets and parking was all but impossible. Duh! Houston, I think we have the answer.

Tom Lehmann/The Dough Doctor  
5904

**[Stones/tiles/steel, Pans & Accessories / Re: Looking for an 18" pizza slice/topping outline](#)**

There are two nifty gadgets that are commonly used to give equally sized slices from each pizza, every time. This has gone from just important to critical for some stores as they are providing sliced pizza to local schools where each slice MUST be the same as the others. The first thing is called "The Equalizer" from Lloyd Pans. This is something like a large round rocker knife that is pushed down into the pizza to cut it into equally sized portions. The other one is a composite board with different size circles on it and lines that intersect in the middle of the board. You place the pizza in the correct size circle and just cut with your pizza wheel using the correct intersecting lines as a guide to get the number of slices needed from the pizza. I've used both and they work as advertised.

Tom Lehmann/The Dough Doctor  
5903

**[Dough Clinic / Re: A few questions](#)**

Norma;

Another thing responsible for the latest resurgence in lard is our growing hispanic population. This is also responsible for the increase in popularity of maseca. This is also reflected by the bilingual labeling. There was once a time, back in the 50's when margarine couldn't be colored (consumers might be duped into thinking it was butter) so it was a common practice to put a little packet of coloring with the margarine allowing it to be colored by the consumer if so desired. Some of the key factors that lead to shifts in food and ingredients are population diversity, demographics, and current trends (think low carb, fat free, gluten free, low sodium, organic, natural) and add to that mix the scare monger lady who now finds everything wrong with pizza. Watching her on Fox News yesterday I couldn't help but laugh when she criticized the big box chains for the meats they were using and suggested as an alternative that people who want meat on their pizza should instead visit local pizzerias.....Wait!!! They use the same type of meat products and from the same suppliers too! One thing she was very critical of was the use of the antioxidants BHA/BHT. I guess she really likes the flavor of rancid fat. Ditto for

nitrates where they help to keep the pepperoni a more attractive red color but gray colored pepperoni tastes pretty good too. I'm not a big fan of highly processed foods, but some things just don't fit into my life style without being processed in some way. Over the weekend I was out in our garden harvesting vegetables and when I came in with tomatoes, onions, peppers, radishes, apricots and some basil for our dinner my wife asked if there weren't any snow peas, I had to fess up, I ate them all as I was picking them, natural and organic they tasted great, my wife said didn't you wash them first? Of course not, that's part of the organic experience.

Tom Lehmann/The Dough Doctor  
5902

**Sicilian Style / Re: Made my first Sicilian type Pizza. Middle was a little doughy. How do I fix that**

Neibs;

Did you put any oil or shortening in the pan? This can sometimes help the crust to bake better as it improves the heat transfer properties between the dough and the pan. Was your pan dark colored or was it a bright aluminum color? Bright (shiny) pans reflect heat away from the dough which lessens the quality of bake within any given period of time. What was the baking position in the oven?

When I bake deep-dish pizzas at home, one of my favorites, I allow the dough to rise for about 75-minutes in the pan, I then dress the dough with sauce, cheese and toppings and bake at 450F beginning on a lower rack position in the oven as this allows the dough to bake without contributing excessively to the color of the cheese or scorching the toppings. After about 8 to 10-minutes, I move the pizza to a higher rack position to finish baking and developing the level of cheese browning that I'm looking for. Note: It really helps a lot if you have a pan that is 1.5 to 2-inches deep. The deeper pan traps the cool, moisture laden air over the top of the pizza protecting it from excessive bake until you place it in a higher rack position.

Tom Lehmann/The Dough Doctor  
5901

**Dough Clinic / Re: dough kneading**

Dulce;

You mention "mix" and also knead, if you are using a mixer what kind are you using. Also it would help if you could provide more information such as the type of flour, dough formulation, and dough management process that you are presently using.

Tom Lehmann/The Dough Doctor  
5900

**Sicilian Style / Re: Made my first Sicilian type Pizza. Middle was a little doughy. How do I fix that**

Neibs;

I am a fond lover of roasted red and green peppers, but I typically use them as an added topping ingredient, that is I normally use my toppings unroasted if they will get properly cooked during the baking of the pizza, and I add the roasted vegetables only in limited amounts as another topping ingredient rather than the main topping ingredient. My reason for doing this is because I like to have some texture in the toppings rather than the toppings being too soft and mushy. If you don't mind the texture, there is nothing wrong with adding the roasted vegetable toppings at the beginning of the bake. When I have done this though, I will try to use a deeper pan which holds a protective cooling layer of moist air over the top of the pizza thus protecting the toppings from scorching. You could also watch the

pizzas during baking and when you think the toppings have had enough heat just place a small piece of aluminum foil over the top of the pizza. No need to crimp or anything, just lay it over the top and it will do the rest. If your bake time is limited by the color of the top of the pizza this will also help you to extend the baking time to achieve a better crust bake.

Tom Lehmann/The Dough Doctor  
5899

### [\*\*Pizza News / Re: Next up: Silicone Dough\*\*](#)

Amy;  
It's already here!

It's sold under the name "Throw Dough".

It is used as a teaching tool to help novices learn how to through/spin the dough without going through hundreds of dough balls, it is also used as a practice tool by those who practice pizza acrobatics.

Kinda chewy though. ;D

Tom Lehmann/The Dough Doctor  
5898

### [\*\*Chicago Style / Re: Tonight's Lou. Butter flavored crisco in the pan is night and day vs oil\*\*](#)

Shortening is used for Chicago style deep-dish pizzas while oil is used for Pizza Hut style pizzas. The biggest benefit to using a solid fat in the pan such as margarine, butter, shortening (Crisco/Butter Flavored Crisco, my personal favorite too) is that the dough really clings to the stuff making it a snap to pull the dough up the sides of the pan without the need to continually chase the dough pulling it back up after it slides back down into the bottom of the pan. Texturally, oil in the pan gives the finished crust an oily/fried appearance and feel while the solid fats impart a dry appearance to the crust , much like what we normally see on the sides and bottom of a loaf of store bought white pan bread. To apply the solid fat to the pan you can either brush or wipe it in using a paper towel or you can melt it and brush it in for a more uniform application. In a commercial setting we almost always melt or at least soften the fat and then brush it into the pans, but when I make deep-dish pizzas at home I always apply it right from the can using a piece of paper towel to wipe it around in the pan, makes clean up a little easier, just toss the paper towel in the trash, no need to wash the fat out of a pastry brush.

By the way, that is one VERY GOOD looking pizza!

Tom Lehmann/The Dough Doctor  
5897

### [\*\*Newbie Topics / Re: Soggy Crust\*\*](#)

V;  
The Golden Fleece of the pizza industry is how to keep a pizza from getting soft after baking, great just out of the oven and for a few minutes, but then it begins to get soft but only soggy if it is boxed, bagged and allowed to sweat for 20 to 30-minutes while a pizza delivery driver looks for your home address. If soggy is the problem, it might be due to any of the following:

- 1) Insufficient baking of the pizza (need to bake longer).
- 2) Overly thin or watery sauce.
- 3) Saucing the crust and allowing it to sit for several minutes before dressing and baking (sauce, dress and bake the pizza as quickly as possible)
- 4) Sauce or moisture migration into the dough/crust during baking (apply a light coating of oil the the surface of the pizza skin before applying the sauce)

- 5) Excessive application of vegetable toppings (use a lesser amount of toppings)
- 6) Use of a bright/shiny colored pan (pizzas are best baked using a seasoned or dark colored pan)
- 7) Failure to allow the dough to rise/proof in the pan prior to dressing and baking a thick crust/deep-dish pizza.
- 8) Too much sugar, milk or eggs, if used, in the dough formula which results in the crust browning to quickly and never getting sufficient bake to remain firm or crispy (reduce or eliminate sugar, milk or eggs from the dough formula)
- 9) Sometimes, especially with thin crust pizzas, if the dough is rolled or stretched too thin there is insufficient baked crust under the pizza to remain crispy for more than a minute or so after baking (increase dough weight for the size of pizza you're making)

This might give you something to work with to address the problem.

Tom Lehmann/The Dough Doctor

5896

### **Newbie Topics / Re: Cheese Choices for First Blackstone cook!**

Grande is also another very good cheese producer to take a look at. This is the brand that a lot of the New York pizzerias go with.

My favorite is their whole milk Mozzarella, especially when it is their Fleur de Latte 4-ounce cheese balls in brine pack. I like to rinse and pat the cheese balls dry and peel it like an orange placing the pieces randomly over the surface of the pizza.

Tom Lehmann/The Dough Doctor

5895

### **Dough Clinic / Re: dough kneading**

Ditto with Ryan.

You might want to take that B.S. bag of flour and subdivide it into smaller bags that you can store in the fridge or better yet in a freezer. If you leave it sitting out too long at room temperature you might find it necessary to sift the larvae and/or flour beetles out of it. Additionally, as the flour ages in a warm location it continues to oxidize, making the flour stronger, like adding bromate to it, or more bromate if the flour is already bromated. This can result in unexpected or increased dough memory/snapback making forming the dough into a pizza skin more difficult.

Refrigerating or freezing the flour can effectively prevent this from happening for up to two years.

Tom Lehmann/The Dough Doctor

5894

### **Dough Clinic / Re: Dough Balll not holding its shape**

Additional information on how you are managing the dough would be helpful, but from what is provided, the adsorption at 65% is a bit higher than we normally use with "00" flour. You might try reducing the absorption to 55 to 58% (275 to 290-grams/ml).

Tom Lehmann/The Dough Doctor

5893

### **Dough Clinic / Re: I took a picture of my dough today**

If the dough has a finished temperature in the 80F range, and if you ball it and put it into the fridge for at least 24-hours you would see a lot more gluten development due to biochemical gluten development. Some level of mechanical gluten development has a benefit in at the pizzeria level as it helps the dough balls to

retain their shape in the large dough boxes that are commonly used, it also allows the dough to be processed into dough balls faster and easier, all of which really are not needed in home pizza production, additionally, it is also much more difficult to mix a dough to the level of gluten development using the mixers we normally have available to us at home, this includes most mixers up to about 12-quart bowl capacity. We are getting ready to gear up for our annual pizza seminar at AIB and one of the things that we always show our students is how we cannot stretch the dough to form a window after mixing, but on the following day after the dough has been balled and cold fermented for about 24-hours we can get 3 to 4 people together and stretch those same dough balls out to nearly 36-inches in diameter. The flour that we use in making all of our dough is just what is termed as a strong bread flour having 12.2 to 12.6% protein content.

Tom Lehmann/The Dough Doctor  
5892

### **Dough Clinic / Re: Cold vs. Room Temp Dough**

CZ;  
When you first take the dough out of the fridge/cooler it is at approximately 36 to 40F. At that temperature the dough is somewhat difficult to open into a pizza skin without a lot of undue effort. When we allow the dough to temper AT room temperature for 2 to 3-hours, or until it reaches an internal temperature of 50F, the dough is much easier to open into a pizza skin, especially if you are opening the dough by hand. Additionally, since the dough is warmer it will tend to bake faster than it would at a lower temperature. In your case this should not be a problem as you allow the dough to rest for an hour at room temperature after opening it into a pizza skin. I don't know what type of crust you are trying to make, but if you are making a thicker type of crust as evidenced by the fact that you are resting/proofing the dough after forming, you will still get better results if you allow the dough balls to warm to 50F prior to opening.

Tom Lehmann/The Dough Doctor  
5891

### **Newbie Topics / Re: How to cook the perfect pizza in an oven at home**

Nick;  
A couple of things jumped out at me. 1) You mention that you had to add a little extra water to get the dough to bind. This might indicate that your dough absorption is still too low for optimum results. Additional water will give you a softer dough that is easier to open into pizza skins, but more importantly, it will allow the dough to spring during baking, creating a lighter textured crust with open/large holes which will help the dough to brown during baking. 2) your dough doesn't seem to be getting very much fermentation. To keep things simple you might just try allowing the dough to ferment for an hour or so after mixing, then portioning it for each crust, form each dough portion into a ball, lightly oil the dough ball and drop into individual plastic bags, no need to seal tight, just twist the open end to close and tuck under the dough ball and place into the fridge to cold ferment for a minimum of 24-hours, but you might find that 48 or more hours is better. To make your pizzas from the refrigerated dough balls, remove from the fridge and allow to temper at room temperature for about 2-hours, then open into pizza skins, dress and bake as you normally do. I just made several pizzas last week while on vacation following this procedure and the pizzas all came out great, good color, crispy, and great flavor.

Tom Lehmann/The Dough Doctor  
5890

## [\*\*Dough Clinic / Re: How do certain dough ingredients affect the dough and crust?\*\*](#)

CK;

Sifted flour is exactly the same as unsifted flour with the exception of the density of the flour. A cup (or any volumetric portion) of sifted flour will weigh less than the same volume/portion of unsifted flour due to the difference in density resulting from sifting. In some applications, especially in making cakes, sifted flour is called for to prevent development of lumps of flour in the batter, in angel food cakes it is almost mandatory due to the fact that the flour is just folded into the whipped egg whites so there is no mixing to smooth out any flour clumps. In making bread and pizza doughs it doesn't make any difference so long as the flour is weighed, but do keep in mind if you are using a "recipe" that calls for X number of cups of sifted flour you should use sifted flour or the weight of flour that you are adding will be incorrect, same for unsifted.

Tom Lehmann/The Dough Doctor  
5889

## [\*\*New York Style / Re: Is air under the crust causing my bottom to cook uneven?\*\*](#)

Nate;

That bottom crust looks pretty typical for a deck baked pizza. Leavening gas from the yeast forces small portions of the crust up off of the deck to create the white mottling that you see. To achieve a uniformly brown bottom crust color try baking your pizzas on a screen or perforated disk, but be aware that you will not get the same quality of bake even though the crust is uniformly browned.

Tom Lehmann/The Dough Doctor  
5888

## [\*\*Dough Clinic / Re: Looking for advice in moving to bulk fermenting\*\*](#)

Brad;

If you change over to a bulk ferment process you will get a different finished flavor profile since bulk fermenting doesn't give you the same temperature control/control over the fermentation process that fermenting the dough in individual balls does. There are lots of ways that you can make dough by the bulk fermentation process, but matching your present flavor profile, while potentially, would take a lot of experimentation to achieve. The variables would include, finished dough temperature (you will need to be very precise on this), the temperature of your refrigerator (remember, opening and closing the fridge will allow for uncontrolled temperature variations over the storage/fermentation period, yeast level, size of the dough, shape of the fermentation container, material that the fermentation is made from as this will impact heat conductivity hence rate of fermentation. If this is something that you will be doing on a fairly regular basis, You might look into purchasing a low cost refrigerator (no freezer compartment) and storing your dough ball in there as you are presently doing, if nothing else, this will buy you the time needed to conduct the experimentation needed to do the bulk ferment process while retaining a similar finished flavor.

Tom Lehmann/The Dough Doctor  
5887

## [\*\*Dough Clinic / Re: Recipe using 00 flour\*\*](#)

MTT;

Were the recipes/formulas shown in percentages or in weights? Hopefully they

were not shown in volumetric measures. If shown in percentages use your calculator and enter the weight of flour that you will want to use. In your case I suggest working in grams (28.4-grams to the ounce/454-grams to the pound). I would suggest using 1000-grams of flour. This will give you enough dough to make any kind of pizza you want (thin, thick or deep-dish) and any dough left over can be used to make a few bread sticks to go with those pizzas. Enter 1000 in the calculator, then press "X" followed by the percent shown for the first ingredient, then press the "%" key and read the weight of that ingredient, in grams, in the display window. Repeat this for each ingredient and you're ready to begin scaling ingredients. As for weighing ingredients in small amounts such as grams or fractions of an ounce there are a number of very good and reasonably priced (about \$30.00) scale available on the internet. My scale is a KD-8000 and we use it all the time for weighing ingredients not just for making pizza, but for making preserves, jerky, and anything else where I need to weight something.

If the recipe/formula is only shown in weight measures, you will first need to change it into percentages. Here is how you do that, it's really quite easy; First enter the weight of the first ingredient then divide it by the weight of the flour and multiply by 100 and read the percent of that ingredient in the display window. Do this for each ingredient. Flour is always shown as 100%. Now you can follow the above procedure to make a dough based on any flour weight you wish to use.

Tom Lehmann/The Dough Doctor

5886

### **Dough Clinic / Re: Cold ferment and water temp**

SLC;

Do you have any specific reason for using "hot" water when making your dough? Dough that is to be cold fermented is usually better when made with water at about 75 to 80F as this will yield a finished dough temperature between 80 and 90F. This is important as yeast performance becomes difficult to control once the dough temperature rises above 90F. While this may not result in a bad product, it can result in inconsistent results after the cold fermentation period, for example, at times the dough may seem to be softer than at other times (this is a result of excessive fermentation resulting from the high dough temperature), or the crust might have an inconsistent flavor due to the possible variations if fermentation, and possibly one of the biggest problems is in getting the crust to color up as it should. When the dough receives excessive fermentation it also contains more acid, which can impart a sour taste, but more commonly the acid build up in the dough inhibits the crust from developing color during baking. This is why sourdough products are always have such a light crust color. Lastly, high dough temperatures can promote the growth of other bacteria/yeasts/molds already present which may adversely impact the flavor of the finished crust.

If you opt to reduce the finished dough temperature you might experiment with adding an additional day of cold fermentation to retain the strong fermentation flavor you are looking for. Also, keep in mind that different acids and amounts are formed during cold fermentation as opposed to warm fermentation. At the elevated water temperature you are using there is sure to be a significant amount of warm fermentation taking place before the dough is sufficiently cooled for cold fermentation to take place, for this reason there might be a slight flavor shift with the lower dough temperature and cold fermentation, typically, the shift is toward a less acid/sharp flavor, which many describe as a more mellow, flavorful fermentation flavor.

Tom Lehmann/The Dough Doctor

5885

## [\*\*Dough Clinic / Re: Softer than usual crust...why?\*\*](#)

JPB;

The more a dough rises, be it due to higher adsorption or more yeast the poorer the heat transfer properties and the greater the potential for a crispy/crispier finished crust. You can see this rather dramatically if you open the dough up into a pizza skin using a rolling pin/pie pin and then immediately dress and bake the pizza as opposed to another dough ball that is opened by hand and finished in the same manner.

Tom Lehmann/The Dough Doctor  
5884

## [\*\*Dough Clinic / Re: Softer than usual crust...why?\*\*](#)

That might be a way to do it. It's hard to tell anything about dough formulation unless ingredients are given in weight measures or in bakers percent, so for now, I think I might just try increasing the yeast a bit to see if that does the trick for you.

Tom Lehmann/The Dough Doctor  
5883

## [\*\*Neapolitan Style / Re: The crust is always tough, no chars - I think pizza stone never works\*\*](#)

Keep in mind that Mohal is using SAY (instant dry yeast) which is concentrated about 3-times over that of compressed yeast, so on a compressed yeast level he is at about 4.5 to 5% compressed yeast, much too high for the type of fermentation he is giving the dough. There is a possibility that the dough is so over fermented that it is becoming slightly acid which inhibits crust color formation (just like it does in sourdough crust production) making it even more important to have the high temperature. With a lower yeast level (about 0.25% IDY) he may find that he can develop at least some crust color and an overall better bake.

Tom Lehmann/The Dough Doctor  
5882

## [\*\*Dough Ingredients / Re: fresh yeast\*\*](#)

Aspendos;

Your yeast level calculates out to 0.525% which I think is a bit on the high side. I normally use 0.25 to 0.4% compressed yeast when baking at home for use after two or more days in the cooler. You say that the dough is wet on the bottom, what dough management technique are you using (how do you handle the dough from the mixer to the fridge?) Putting the dough into a tightly sealed container can result in a wet, sticky dough. My own preference is to remove the dough from the mixer, scale it into desired weight pieces, form into balls, lightly oil the dough balls and place into individual plastic bags, like bread bags. Twist the open end of the bag to close and tuck the pony tail under the dough ball as you place it into the fridge. When you are ready to use the dough ball, remove from the fridge and allow to temper AT room temperature for about 2-hours, then turn the dough ball out of the bag into a bowl of dusting flour and open into a pizza skin in your normal manner, immediately dress and bake.

Tom Lehmann/The Dough Doctor  
5881

## [\*\*Dough Clinic / Re: Kneading All Trumps Flour\*\*](#)

CZ;

Under kneading is definitely the best way to go, especially with All Trumps flour

(about 14% protein content). Even when we use a large commercial mixer, under mixing is still the preferred way to go. This allows for what is commonly referred to as biochemical gluten development. By this method all you need to do is to mix/knead the dough enough to make a smooth dough, then allow the dough to ferment which will allow time for biochemical gluten development to take place. With biochemical gluten development you develop flavor through fermentation while developing the gluten but rather than ending up with a very tough, elastic dough as you would through mechanical gluten development, you get a very relaxed, extensible dough with a beautifully developed gluten structure, and with very little work on your part I might add.

Tom Lehmann/The Dough Doctor  
5880

### **Dough Clinic / Re: Kneading All Trumps Flour**

Marty;

Both methods will provide essentially full gluten development, the main difference is that with mechanical gluten development you end up with a very tough and elastic dough at full development, while with biochemical gluten development you end up with a very soft, relaxed and extensible gluten structure. We demonstrate this all the time to the students attending our annual pizza seminar by taking a 16-ounce dough ball that has been given biochemical gluten development, and with 3 to 4-people forming a circle we open the dough ball up into a skin that is roughly 30-inches in diameter, not sticky, and is clear enough to see details in your skin through. This is all but impossible to do with a mechanically developed dough as it tends to be too sticky to and tough to handle.

Tom Lehmann/The Dough Doctor  
5879

### **General Pizza Making / Re: Inexpensive, but delicious pizza**

I sure have. You have to buy the tomato sauce from Kroger, but when I make pizzas at home I always use nothing but slices of fresh, ripe tomato right from my garden, its a real treat during the summer and early fall months when I can go out and pick my sauce right from the vine and have it on the pizza skin in less than 5-minutes. My surplus tomatoes are either dried or scalded and peeled then processed through the food processor and frozen (seeds and all, and if you leave a little skin on the tomatoes all the better, that's where the flavor is at). When I make my pizzas this way the only change I make to my dough skin is to brush it VERY LIGHTLY with olive oil, then add my garden fresh basil and maybe a few oregano leaves, and chopped fresh garlic, then cover with the tomato slices (about 3/16-inch thick) then proceed with dressing the pizza in your normal manner. When using light amounts of cheese I find it beneficial to incorporate just a little Parmesan or Romano cheese for added depth and intensity of cheese flavor. You can also make a starter and keep it fed in the fridge so you don't even need to buy yeast if you don't want to. One other thing, did you know that you can grow basil as a house plant during the winter months so you can have fresh basil all year around? We put out surplus basil in the food processor with a little olive oil and mix it into a puree which we then place into plastic tubs and freeze, during the winter months we just scoop out some of the basil puree and thaw it for use as we would fresh basil, or you can blend it with some Parmesan cheese and either pine nuts or walnuts to make a pesto for use on pasta. It's amazing how well you can eat from your own garden, and it really doesn't need to be a very large one either, we have turned to growing everything in recycled containers lined up along one side of our drive way (tomatoes, peppers, egg plant, basil, and onions makes for an attractive drive way edging, the oregano

and garlic is planted in a raised bed behind the house. We almost lost the oregano due to drought and cold weather last year, but it has recovered nicely this year). Norma also does a lot of home gardening and might be able to add something too.  
Tom Lehmann/ The Dough Doctor  
5878

**Shop Talk / Re: For those who run a pizza business. How do you manage your inventory of dough? +**

Pizzeoli:

You should also be paying close attention to the finished (mixed) dough temperature. To keep track of the dough inventory for FIFO rotation, many operators use different colored bough boxes, or you can just use a grease pencil to mark the date on the end/side of each box. If you will e-mail me at <thedoughdoctor@hotmail.com> I will be glad to send you a copy of a dough management procedure that works very well either as is or with some modifications in many retail store operations. In your case consistency is the name of the game and this dough management procedure is designed to provide you with the greatest level of dough consistency.

Also, be aware that the American Institute of Baking is once again offering its annual pizza seminar during the week of October 27th. To get more information on this course please go to the AIB web site at <[www.aibonline.org](http://www.aibonline.org)> This year the direction of the course is "back to basics". A complete agenda is shown on their web site. This is a great course for any operator, but especially newer operators who want to learn more about pizza production and formulation.

Tom Lehmann/The Dough Doctor  
5877

**Pizzeria/Restaurant Recommendations / Re: Pizza in St. Louis?**

Be sure to have an Imo's Pizza, they are to St. Louis as Ray's is to New York.  
Tom Lehmann/The Dough Doctor  
5876

**General Pizza Making / Re: Getting Dough Ball Out Of Container - Comparison of Release Agents**

Mitch;

We have done a lot of experimenting over the years with different types of release agents. We found that you also have to take characteristics of the dough into account too. For example, a low absorption dough will release quite nicely using nothing but flour, but the same flour with a high absorption dough is disaster. The amount of mixing can also have an impact upon the performance of the release agent being used, for example, a very under mixed dough will not release as well with flour as a more developed dough. Things that don't hydrate well (stay dry) like rice flour, corn flour, bran, etc. are all pretty decent release materials but they do show up on the surface of the finished crust unless you orient the dough ball so the bottom of the dough ball containing the release agent becomes the bottom of the crust. Plain old salad oil works as you indicated, but with time it is absorbed into the dough thus negating the release properties. Lecithin is added to the oil in commercial pan release oils to improve the cling of the oil to the vertical sides of the pan, without the lecithin the oil will just pool at the bottom of the pan. For me, when making pizza at home, or even in a small shop, I like to use bread type bags for storing the dough. Just lightly oil the dough ball, and drop it into bread type bag, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it onto a sheet pan that will be stored in the cooler. This

eliminates the need to cross stack and down stack the plastic dough boxes. To use the dough, just remove from the cooler, allow it to warm at room temperature for about 90-minutes, or until the dough reaches 50F, then just invert the bag and the dough ball plops out. I like to "plop" it out into a bowl of dusting flour that I will use to help open the dough up into a pizza skin with.

Tom Lehmann/The Dough Doctor  
5875

### [\*\*General Pizza Making / Re: Getting Dough Ball Out Of Container - Comparison of Release Agents\*\*](#)

Mitch;

The bags work so well because when you invert the dough piece out of the bag you are inverting (turning the bag inside out) so gravity pulls the dough down as the bag is being pulled away from the dough. 63F for 2-days is an awful lot of fermentation and might very well be over fermenting the dough leading to break down of the gluten structure, when this happens the dough becomes quite sticky and difficult to handle or shape. In the early stages of break down the dough becomes what is called "bucky" in this case the dough has excessive memory/snap back and can be a real problem to open into a pizza skin, as the break down continues the dough becomes increasingly sticky but opens very well, so well that many people will complain that the dough tears while opening it into a pizza skin. Doughs that are fermented at high temperatures need to have very low yeast levels to help prevent over fermenting the dough, but the finished dough temperature can then be critical to the overall fermentation of the dough, just a few degrees too warm and you get excessive fermentation and if your dough is a little colder than normal the dough doesn't get sufficient fermentation. Cold fermentation is a great buffer to variances in finished dough temperature and as such it results in better dough consistency, performance and finished crust quality over time. One of the problems that I commonly see when very low yeast levels are used is where the center of the pizza doesn't rise well during baking, making for a dense center section that lacks the desired crispiness and is usually accompanied by undesired toughness due to the poor bake quality of the center section. The reason for this is because the heat from the deck is transferred right through the dough/crust to the sauce/toppings where it is dissipated as steam. This results in the bottom never getting as hot as necessary to achieve the best bake quality.

Tom Lehmann/The Dough Doctor  
5874

### [\*\*Dough Clinic / Re: In search of the perfect thin crust pizza that is both crisp and chewy\*\*](#)

DDG;

The most important elements in making a great thin crust are probably going to be flour, water and fermentation. Normally, a strong bread flour with 12 to 13% protein content will work just fine, when it comes to water, sufficient dough absorption to give a soft, extensible and pliable dough are key elements, and then there is fermentation which is responsible for the development of the gluten in the flour, development of extensibility, as well as flavor and aroma in the finished crust. The water and fermentation combine to provide the open cell structure in the finished crust that promotes crispiness and tender eating properties.

When say a "steel" are you referring to baking on a steel deck surface as opposed to baking on a baking platform (pan)? If that is the case, a deck oven with a steel hearth is not as good as a stone hearth as the stone hearth will hold much more latent heat and provide a better overall bake. Use of a pan provides just that much

more material that needs to be heated before the pizza can begin to bake. Baking platforms come into their own when using air impingement ovens (wire mesh belt). Some people like to mitigate the mess of dusting flour in the oven by baking on a screen/disk/pan for a portion of the bake and then remove the pizza to finish baking the last couple of minutes on the deck. This is referred to as "decking" the pizza and it works quite well. If you are using instant dry yeast (IDY) you can add it directly from the package to the flour in the mixing bowl, no need to hydrate/activate it, but if you are using active dry yeast (ADY) for best yeast performance you should pre-hydrate it in a small portion of warm (100F) water with just a pinch of sugar, no salt. Allow the yeast to hydrate for about 10-minutes or until it begins to bubble then stir well and add it to the mixer. It can be added to the dough water, or added right on top of the flour, either way works well. Cake flour is a lower protein type of flour that is also made from soft white wheat varieties rather than from hard red or white wheat varieties, this means cake flour will not be as strong of produce as much gluten as a typical bread flour. There is also a high ratio cake flour that in addition to what has already been said about cake flour has been chlorinated to further weaken the gluten, brighten the color of the flour, and modify the gelatinization properties of the starch in the flour, additionally, the pH of the flour is also adjusted to approximately 5.2 to 5.4. This is all done to a high ratio cake flour so it can be used to produce high ratio (cakes with more sugar than flour) cakes like you would buy from your local supermarket or bakery. Now you know why those cakes are so tender, light, and sweet tasting. All purpose flour is just as its name implies, it is made for all purpose applications, it has a lower protein content than bread type flours but higher than cake type flours. All purpose type flours are also more brand specific than cake and bread type flours, for example bread can cake type flours seem to fall in a narrow specification range regardless of the manufacturer, but with all purpose flours I have seen them as low as 9% protein from one manufacturer to as high as 11%+ from another, this is why I tend to shy away from the all purpose flours unless I'm making cookies, biscuits, pastry or low ratio cakes (formulas where the sugar is equal to or less than the flour weight, think pound cake).

Tom Lehmann/The Dough Doctor

5873

### **General Pizza Making / Re: Any good whole wheat pizza dough recipes?**

Whole-wheat doughs are actually pretty easy to make once you know the trick. The trick is in using a soaker, here is how it's done:

Use any whole wheat flour, but whole white wheat flour works the best from a flavor point of view.

Weigh 10-ounces of the flour into a suitable container, add 7-ounces of water and stir until it comes to the consistency of wet oatmeal, let this rest at room temperature for 30-minutes, then check to see if it has firmed up and taken on something of a dry appearance and feel, if it has, add another ounce of water and stir in, wait another 30-minutes before checking. If the dough feels tacky you are done with this part, if it feels dry, add another ounce and continue until you see the tacky dough we're looking for.

Divide the water weight by the flour weight and multiply by 100. Lets say 8-ounces of water resulted in the sticky dough we were looking for, 8 divided by 10 X 100 = 80%. Subtract 5% from this and you get 75% which is the correct absorption for your specific flour at hand.

Into your mixing bowl weigh out the amount of flour you want to use and then add 75% absorption to the flour, stir together at low speed to thoroughly wet the flour, cover and set aside to hydrate for 60-minutes, then add the remainder of your

ingredient for your dough and mix just until the dough begins to take on a smooth appearance. Take the dough immediately to the bench for scaling and balling, cold ferment for 24 to 36-hours, remove from the cooler, allow to warm to 50F and open into pizza skins as you would any other dough. That's the only way you can make a decent whole-wheat pizza, or any other type of product from whole wheat flour. If you just add water and mix in the usual manner the dough will be under absorbed with poor handling properties and even poorer eating characteristics after baking. Don't worry if the whole-wheat dough feels a little tacky, this is normal for a whole-wheat dough, we go so far as to tell our students that if the dough isn't a little tacky the dough absorption is probably a little low and finished product quality will suffer.

Tom Lehmann/The Dough Doctor  
5872

**Dough Clinic / Re: cooking on lloyds pans**

Sonny;

Pizza show in Las Vegas in October? I'm not aware of any in L.V. at that time, but we are holding our annual pizza seminar at AIB in Manhattan, Kansas over the period of October 27 to 30, 2014, maybe that's the one you are thinking of? To get information on the course, go to the AIB web site at <[www.aibonline.org](http://www.aibonline.org)> and click on the seminar options. We have been holding this class for well over 30-years now. This year, due to the number of new players entering the retail pizza industry the emphasis is on "back to the basics", and yes, Lloyd Pans will be there. The Las Vegas pizza show is Pizza Expo and the dates for that show are March 23 to 26, 2015.

Tom Lehmann/The Dough Doctor  
5871

**Dough Clinic / Re: I'm cooking 24 pizzas Saturday in my Blackstone Patio Oven**

Dan;

I know that there are a lot of different ways to prepare/dress pizza skins and peel them into the oven, but for me, I like to table stretch the skins out in my dusting flour and then pick up the formed skin and transfer it to a lightly dusted wood prep peel (I reserve my metal peels for removing the finished pizzas from the oven) where I can make one last size/shape adjustment. I then dress the skin and peel it into the oven. Tip: After applying the sauce shake the dough skin on the peel to make sure it is sliding freely, then finish dressing the skin, and give it another shake just to make sure, you're now ready to peel the dressed skin into the oven. Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
5870

**General Pizza Making / Re: Dough slightly bland, advice please**

It looks like you have plenty of fermentation time, so look at the salt level. Insufficient salt = bland flavor. the amount of salt to add to your dough is about 8-grams but anything between 8 and 10-grams should work well.

Tom Lehmann/The Dough Doctor  
5869

**Dough Clinic / Re: The blob...**

Was the dough rounded into a dough ball with a smooth skin after it was mixed and cold retarded?

If the properly rounded into a ball, then I would say that the dough is over fermented as it appears to be tearing itself apart. In some circles this is referred to as a "rotten" dough due to its appearance. This could have resulted from a number of things, dough temperature too high/hot after mixing, dough placed into a tightly covered container for cold fermenting, The "old" dough that you added might have been too old, or too much yeast was added to the dough.

More information would help.

Tom Lehmann/The Dough Doctor

5868

### **Dough Clinic / Re: In search of the perfect chewy crust**

RDY\$TRYL;

Without knowing a lot more about your dough formula and dough management and baking it is hard to say what you will need to do, but here is something to start with;

1) Use a stronger flour, like General Mills All Trumps (14+% protein content).

2) Delete and oil from the dough formula.

3) Start with a dough absorption of 65% and increase if necessary.

4) Don't worry about dough mixing, just get it mixed so it is fairly smooth, with a temperature of around 80F (Use 85F water if mixing by hand), then portion, ball, oil the dough ball and drop it into a plastic bag (twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the fridge), allow the dough to cold ferment for at least 36 to 48-hours, remove from fridge, allow to temper at room temperature to 50F, then open into pizza skins, dress and bake.

Tom Lehmann/The Dough Doctor

5867

### **Dough Clinic / Re: The blob...**

David makes a very good point about starting with a sourdough (if that is what you are looking for) formula and procedure that has a known track record, then once you have mastered that, you can begin to experiment and do all of the fun things with your pizza. As for your existing starter, I can't say anything about how much to use as that will vary with the age/acidity/microflora of the starter. Those characteristics of the starter are all controlled by the way you manage, feed and store your starter. I might suggest that you reduce the amount of starter to about 1/4-cup and see if that makes a difference, if the dough holds together at that level, begin increasing it until you see something that you don't like, then settle on a level for that specific starter, keeping in mind that different starters may work differently at different levels.

As for putting the dough into sealed containers, I personally, have never had good success doing that, the dough cools too slowly, condensation forms on the top surface of the dough, and it seems to be generally more sticky to work with when opening the dough into a pizza skin, instead, I like to use the bread bag technique as described.

Tom Lehmann/The Dough Doctor

5866

### **Dough Clinic / Re: In search of the perfect chewy crust**

Chaz;

The way to do it is to form the dough ball, lightly oil it, and then drop it into a plastic bread bag, situating the dough ball at the bottom end of the bag, then twist the open end to close the bag (I do this very easily and quickly by grasping the bag slightly above the dough ball and giving the dough ball a good spin with the other

hand. This forms the open end of the bag into a twisted pony tail. The dough ball is actually laid upon the twisted pony tail as it is placed into the fridge. This method allows the bag to expand a little to accommodate the increase in size of the dough ball without blowing out the bag. Some time ago I provided a reader here with a number of commercial bread bags to use in making their dough (if that person is reading this you might possibly weigh in). I like to store my used bags in a plastic bowl (actually a soft spread tub) that I keep in the fridge and I reuse the bags more times than I care to admit to.

Tom Lehmann/The Dough Doctor  
5865

### **Dough Clinic / Re: Too much yeast???**

Jim;

Do you ball the dough prior to putting it in the container?

We have found that in some cases if the dough is tightly covered immediately when placing the dough in the fridge we get the bubbles, but if you lightly oil the dough ball and place it in the container but DO NOT cover it until it has been in the fridge for 2.5 to 3-hours the bubbles do not develop. You might give this a try to see if it helps.

Tom Lehmann/The Dough Doctor  
5864

### **Dough Clinic / Re: HELP**

What you are looking for is the Emergency Dough Formula and Procedure.

If you cannot find it, try this.

Using your regular dough formula:

Double the yeast amount.

Delete any added sugar from the dough formula.

Increase the temperature of the dough water by 15F.

Mix the dough just until it looks smooth.

Immediately scale and form into balls.

Place the dough balls into your dough boxes and lightly oil the top of each dough ball.

Stack the dough boxes nesting one box atop the other to seal closed.

Dough balls will be ready to use in about 3-hours and they will have a shelf life of about 1-hour, maybe a little more.

Tip: As dough balls begin to over age, open them into pizza skins and place on pizza screens, store on tree racks in the cooler (cover with a plastic bag to prevent excessive drying)

To use the pre-opened skins, allow to warm at room temperature for 20 to 30-minutes, dock well and use as you do your regular pizza skins.

I know, it's a pain, and it ain't the same as your regular pizzas, but it sure beats the alternative.

Tom Lehmann/The Dough Doctor  
5863

### **Chitchat / Re: QUIZ: How Well Do You Know Pizza?**

It's a quiz on a television program, not a "pizza test/quiz". It's like a test on Cuban culture by asking questions answered on the I Love Lucy show! Sorry if I dated myself there.

Tom Lehmann/The Dough Doctor  
5862

## [\*\*Newbie Topics / Re: Flour\*\*](#)

Mcease;

Yes you can freeze your dough but it should not be frozen for more than two weeks at most. Freezing it for more than two weeks can/will result in a high probability of inconsistent dough performance after you defrost it and get ready to make your pizzas.

Just manage your dough as you normally do, but when you get to the point where you are ready to open the dough up into a pizza skin, re-ball it, wipe it with salad oil and drop it into a bread bag, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it into the freezer. To slack-out (thaw) the dough transfer it to the fridge for about 24-hours, then bring it out to room temperature and allow it to temper to 50F/10C, then invert the bag allowing the dough ball to drop out onto a floured surface or a bowl of dusting flour, then open the dough ball up into a pizza skin by your preferred method.

Tom Lehmann/The Dough Doctor  
5861

## [\*\*Dough Clinic / Re: Need a No-Knead Dough Recipe for Half-Baked Pizzas\*\*](#)

I agree, 6% salt?? The taste of the crust should be pretty salty.

To achieve a softer crumb structure after the second bake you might try adding 2% dehydrated potato flakes (instant mashed potatoes) to the dough along with 5% additional water. If you like the results, adjust the amount of dehy and water to give you the finished crust characteristics you're looking for after the second/recon bake.

Tom Lehmann/The Dough Doctor  
5860

## [\*\*Dough Clinic / Re: new to using a mixer\*\*](#)

Since a 65% absorption dough is not an especially high absorption dough, you should be able to put the water in the bowl first, then add the salt to the water (no need to stir it in) then add the flour, yeast (if it's IDY) and start mixing at low speed until all of the water has been absorbed into the dough (you can't see any dry flour in the bowl) then add the oil and mix at low speed for 1 to 2-minutes, then, if possible, go to second speed to complete the dough mixing which should take about 8 to 10-minutes at medium speed or about 15-minutes at low speed. Don't try to overly develop the gluten as it isn't necessary since pizza dough is best under mixed at the mixer, allowing biochemical gluten development during the cold ferment process to do the work for you. This will also make it a lot easier on your mixer too.

Tom Lehmann/The Dough Doctor  
5859

## [\*\*Dough Clinic / Re: Dough won't open after fermenting\*\*](#)

CZ;

At 0.23% IDY you might be a little bit on the low side for optimal fermentation, depending upon your dough management procedure. I normally use 0.375% IDY in all of my doughs with great success after 18 to 24-hours in the cooler (they will keep for up to 3-days if necessary). We just completed our annual pizza class this afternoon and one of our demonstration doughs that the students worked with was made with a 12.8% protein content flour, 58% absorption, 1.75% salt, 0.375% IDY and 2% oil. The dough was mixed for 8-minutes at medium speed and came off of the mixer at 78F, it was immediately scaled and balled, then placed into dough boxes, cross stacked in the cooler for 2-hours, then lidded and left to cold ferment

for 18-hours. On the following day the dough boxes were removed from the cooler and allowed to temper AT room temperature for 3-hours before the students began opening the dough balls into pizza skins. The dough balls all opened beautifully and two of them were opened to about 40-inches in diameter (16-ounce dough ball weight) by the students to demonstrate the effects of biochemical gluten development. Pizzas were all great by the way. If your dough balls are normally too elastic to open easily you probably don't have sufficient fermentation on the dough. To correct this you can do any of the following: Ferment the dough longer before opening into pizza skins; increase the finished dough temperature; or increase the yeast level.

Tom Lehmann/The Dough Doctor  
5858

**[Dough Clinic / Re: Need a No-Knead Dough Recipe for Half-Baked Pizzas](#)**

If you can't find the dehydrated mashed potato flakes you can also use grated potato. Just fine grate raw potato and add it at about 5% of the flour weight, the only thing you can do to your formula/ingredients is to increase the fat/oil content to about 10% of the flour weight. You can go as high as 15 to 20% if need be, but start at 10% and see if you like what you see. Keep in mind that increasing the fat content will also give you a more tender (bread like) eating characteristic.

Tom Lehmann/The Dough Doctor  
5857

**[Newbie Topics / Re: Why two rises?](#)**

I mix, scale/divide, ball, oil, place in bread bags, immediately place in refrigerator, allow to cold ferment 24 to 72-hours, some times more, then remove from the fridge, allow to warm AT room temperature for about 3-hours or until the dough reaches 50F, then turn the dough ball out of the bag into a bowl of dusting flour and proceed to immediately open the dough ball up into a pizza skin. My preferred method for opening the dough ball is to roll it out to about 10-inches in diameter, then bench stretch the flattened dough ball to full diameter (usually 14-inches).

This method gives me all of the desired characteristics of a hand stretched skin but without the troublesome thin spots in the center.

Tom Lehmann/The Dough Doctor  
5856

**[Off-Topic Foods / Re: Deep frying: oil use, storage & disposal](#)**

An old baker's trick to clean up the flavor of the frying fat is to fry some potatoes in the fat after every few uses. If you can find a fat that is designed specifically for frying it will keep longer than other types of fat. The thing to look for is rancidity. Control the frying temperature of the fat to 365F to get the longest life from it.

Tom Lehmann/The Dough Doctor  
5855

**[Newbie Topics / Re: Why two rises?](#)**

Mitch;  
Yes. The only time it doesn't work very well is when I'm working with a very high absorption dough, then it's just easier to do it entirely by hand.

Tom Lehmann/The Dough Doctor  
5854

**[New Forum Members / Re: Dough Crisis... Someone please help!!!](#)**

Brooklyn;

The actual temperature of the water is only the means to the end, the end being the desired finished (Mixed) dough temperature. Most pizzerias work with a finished dough temperature of 80 to 85F when they have a walk in cooler or 70 to 75F if they have only a reach in cooler. Depending upon the weight of the dough balls, 1-hour cross stack time is very short, more typically it is between 2 and 3-hours.

If you want to e-mail me at <thedoughdoctor@hotmail.com> and ask me for a copy of the Dough Management Procedure I will be glad to send you a copy.

Tom Lehmann/The Dough Doctor  
5853

**Dough Clinic / Re: Tom, Does my mixer compare to yours**

Mark;

The mixer that we used during our pizza seminar was a Hobart Legacy model with an 80-quart bowl and a reverse spiral dough arm. We mixed our doughs just until they had a smooth appearance which allowed us to round the scaled dough pieces without tearing the skin (this makes rounding faster and easier to accomplish which is important when you're rounding 80+ pounds of dough into dough balls weighing between 10 and 16-ounces). All of the doughs came off of the mixer between 80 and 82F, we had all of the dough balls ready to go into the cooler within 20-minutes of coming off of the mixer. Dough boxes were cross stacked for 2-hours, then down stacked and covered. The dough was ready to use on the following day after about 22-hours in the cooler. To use the dough balls we brought them out of the cooler and allowed them to temper at room temperature for 2.5 to 3-hours before beginning to open them into pizza skins. We had absolutely no problem opening randomly selected dough balls up to about 40-inches in diameter, in fact the students had fun doing it. Pizzas from these doughs came out great.

Note: we opened the dough balls up to 40-inches just to demonstrate biochemical gluten development. The correct amount of mixing for a pizza dough is just until the dough begins to take on a smooth, creamy appearance in the mixing bowl.

I hope this helps.

Tom Lehmann/The Dough Doctor  
5852

**Dough Clinic / Re: Tom, Does my mixer compare to yours**

Mark;

I forgot to add, if you find that your dough is too tight to open easily by hand tossing, just begin increasing the dough absorption gradually until the dough is sufficiently soft to open easily, if you get the absorption too high you will find yourself putting your hand/fingers through the dough, so a little experimenting might be in order.

Tom Lehmann/TDD  
5851

**Dough Clinic / Re: Dough won't open after fermenting**

The dough appears to be very weak, quite possibly due to the very low level of IDY being used. I have posted a formula and procedure for an emergency dough designed specifically to be used within a couple of hours after mixing, but does not hold up well in the cooler for more than the day it is made on. By increasing the IDY level to at least 0.375% or preferably 0.5% of the flour weight I think you might get better biochemical gluten development within the abbreviated fermentation time. I'd suggest looking for a finished dough temperature of about 90F, then immediately scale and ball the dough, lightly oil the dough balls and

place into plastic bags or plastic containers (but do not lid the containers, instead, just drape a piece of plastic over them. Allow the dough balls to ferment at room temperature for a minimum of 2.5-hours, more if you can before you begin opening the dough balls into pizza skins. Be sure to just turn the dough balls out of the bags or plastic containers without further working of the dough ball. I like to invert the container over a bowl with dusting flour, then make sure the entire dough ball is dusted before I begin opening it into a pizza skin. Let me know if this procedure gives better results than you have been getting.

Tom Lehmann/The Dough Doctor  
5850

**General Pizza Making / Re: Pizza boxes, tupperware, or transporting ideas?**

Boxed pizza, aka delivery/carry out pizza is never as good as fresh made pizza. The problem is that the box becomes a sauna and the crust gets steamed creating a soft and usually somewhat soggy presentation. You will also want to hold the pizza up off of the bottom of the box to allow some steam to escape from the bottom of the pizza, for this you will need to use ripple sheets, Crust Savers or Dri-Pie mats. You should be able to Google any of these to find a potential source.

Tom Lehmann/The Dough Doctor  
5849

**Dough Clinic / Re: Dough won't open after fermenting**

There is no way that you can transition from the K5-A to an 80-quart Hobart mixer with a "C" hook. It is a little bit better using the reverse spiral dough arm but then you must limit your batch size to not much more than 500-grams of flour weight. The A-120 or A-200 Hobart mixers can pretty well replicate the mixing performance of the 60 and 80-quart models if you use the reverse spiral dough arm and limit your batch size to 1000 and 1,500-grams of flour respectively. Anything bigger than that may stall the mixer or cause it to overheat, and that is never good for a mixer. My thoughts on the pictures, the dough ball and the dough skin really show signs of under development, or a very tough, bucky dough. The under mixed condition, as previously noted could be due to the lack of yeast, or conversely, a bucky dough is typically the result of excessive fermentation. The appearance of the dough in the containers looks to be under fermented to me. I would suggest doing a couple of simple experiments (that's the real fun part of making pizzas) to see if you can get a better performing dough specific to your unique circumstances. Keep us posted on what your discoveries are.

Tom Lehmann/The Dough Doctor  
5848

**Dough Clinic / Re: new to using a mixer**

Chaze;

Using AT flour, and assuming a walk in cooler, target a finished dough temperature of 80 to 85F. When making the dough put the water in the bowl first, then add the flour, salt, and sugar (if used) DO NOT add the oil. Mix for 2 to 2.5-minutes at low speed, then pour in the oil and mix for another minute at low speed. Change to #2 speed and mix for 8 to 10-minutes. The resulting dough should have a smooth, creamy appearance. Take directly to the bench for scaling and balling, then place into dough boxes, lightly oil the top of the dough balls, and take to the cooler, cross stack for 2.5-hours (variable) then cover, after 18-hours the dough will be ready to use, but will keep for up to 72-hours in the cooler. To use the dough, remove from cooler, keeping covered, allow the dough to temper AT room temperature for 3-hours, or until the dough reaches 50F, then begin opening into skins by your

preferred method (if you will be forming the dough skins by pressing you will most likely need to add something like PZ-44 to control dough memory, and in fact, a lower protein flour would be better suited to a press formed dough.

Tom Lehmann/The Dough Doctor  
5847

**[Dough Clinic / Re: Dough won't open after fermenting](#)**

H8;  
I don't mind doing my pizza testing all by myself, or with immediate family members, it just leaves that much more pizza for me to enjoy as I can eat my mistakes and no one will be the wiser.

Tom Lehmann/The Dough Doctor  
5846

**[Shop Talk / Re: Looking for Training to be Pizza maker](#)**

Wow, if only you could have attended our annual pizza seminar last month, it was focused on exactly what you are seeking to learn, in fact, we had a person from India in attendance. Aside from looking at an Individualized Training option on pizza at the American Institute of Baking (AIB), my employer for nearly the last 50 years, I am not aware of any hands on training for the types of pizza you mention aside of that offered by the AIB. If you think you might be interested in looking at this option further, please feel free to contact me directly at

<thedoughdoctor@hotmail.com>  
Tom Lehmann/The Dough Doctor  
5845

**[Dough Clinic / Re: Ideal water temp for making pizza dough](#)**

Insta;  
For a low hydration cracker type crust you should, ideally, have your water at a temperature that will give you a finished (mixed) dough temperature in the 80 to 85F range. It's impossible to say what that temperature is without knowing room temperature, flour temperature, and friction factor of your mixer, and if that isn't enough, keep in mind that as your room and flour temperature change so will you need to adjust the water temperature. The friction factor is a number that is calculated for each mixer that is used to take into account the gain in dough temperature as a result of friction during the mixing process. Once you have established a friction factor you need to remember that any change in dough formulation, mixing speed, mixing time or dough size can/will require you to recalculate the friction factor. The formula for calculating friction factor (FF) is as follows: 3 times the actual (final/mixed) dough temperature minus the sum of the flour, room and water temperature = FF.

For most people at this website a little experimenting will give you a good idea of what the water temperature needs to be, and if during your experimenting you end up with a dough or two that is colder or warmer than desired, don't sweat it, adjust the water temperature for your next dough and enjoy eating your mistakes. :)  
By the way, if you're still not glassy eyed, the formula for calculating desired water temperature for a specific dough temperature is as follows: 3 times the desired dough temperature (DDT) minus the sum of flour temperature (FT), room temperature (RT) and friction factor (FF).

Tom Lehmann/The Dough Doctor  
5844

**[Dough Clinic / Re: new to using a mixer](#)**

Chaze;

It all depends upon your dough size. When I mix pizza doughs in a Hobart A-200 series mixer (using a reverse spiral dough arm) I put the water in the bowl first, then add the salt to the water followed by the flour, mix at low speed for about 2-minutes, or until you don't see any dry flour in the bowl, then add the oil and mix for another minute at low speed. If your dough is sized with 1,000 grams of flour you can then mix at 2nd. speed for about 8 to 10-minutes to finish the dough (gluten is nowhere fully developed) BUT if you sized your dough on 1500 grams of flour or more, the advice to mix only at first speed was good advice. If you are mixing at 1st. speed, you should mix for roughly 15-minutes, again, this is nowhere full gluten development.

Tom Lehmann/The Dough Doctor  
5843

### **Dough Clinic / Re: new to using a mixer**

Chaze;

It looks like you are using about 6-pounds of flour, with that flour weight in an A-200 mixer, I would not mix at anything but 1st. speed, and 15-minutes would be about right. As for adding the yeast, it all depends upon the type of yeast that you are using.

ADY: hydrate in a small amount of 100F water, allow to hydrate about 10-minutes and add to the water in the mixing bowl.

IDY: add it dry directly on top of the flour.

Compressed yeast: crumble it right on top of the flour just before you begin mixing.

Note: When you see me mixing a dough you will normally see me standing with my hand resting on top of the mixer, this is so I can monitor the temperature of the motor. If the motor begins getting hot, the dough is too big for your mixer, ditto if the mixer momentarily stalls during operation. If you allow the mixer to continue mixing until the thermal overload switch trips out the switch will get soft and begin tripping out at the slightest provocation, leading to a visit by your friendly mixer repair person.

When assessing the status of the dough during mixing, just look for that creamy color and the development of a smooth skin over the surface of the dough, they go hand in hand, this is your first indication that the dough has probably been sufficiently mixed.

Tom Lehmann/The Dough Doctor  
5842

### **Dough Clinic / Re: new to using a mixer**

A good many home bakers and some pizzeria operators report that the weather impacts the amount of water that they must add to their doughs, but research has shown that the weather, aside from temperature, has essentially no impact upon the dough absorption so we studied these claims and when we put the water and oil in the bowl together the oil almost immediately separated and floated to the top of the water, then when the flour was added it came into direct contact with the oil and the oil was absorbed into a portion of the flour thus negating that portion of the flour from producing gluten resulting in a difference in the feel of the dough which has been interpreted as a difference in dough absorption properties. In our testing we were able to reproduce the observations being reported, and when we developed an ingredient staging procedure to correct the problem we got consistent dough performance. This procedure which we call the delayed oil addition method is gaining wide acceptance in both the retail (pizzeria) and wholesale (commissary and frozen pizza) pizza industries.

When I'm teaching a class I ask how much gluten does flour contain? Answer: None. Flour contains proteins which when agitated in the presence of water forms what we call "gluten".

When flour is agitated in the presence of oil/fat it makes a rue used in making a smooth gravy because the fat or oil inhibits the ability of those proteins to form gluten, hence you get a thick gravy without stringiness. Something to keep in mind for later this month.

Tom Lehmann/The Dough Doctor  
5841

**Dough Clinic / Re: new to using a mixer**

By the way, great micrograph showing yeast cells. If you look carefully you can see individual cells and also budding cells as well as cells with daughter cells. The budding cells have what appears to be a small bump on it and the cells with a daughter cell have a more developed cell (still attached) that is called the daughter cell. With dough fermentation the budded cells will develop into daughter cells and then split off, but they will not bud to reproduce.

Tom Lehmann/The Dough Doctor  
5840

**Dough Clinic / Re: Dough acting strange.**

When you say the dough is lifting off of the deck during baking, is it lifting up around the edges or more as large white colored pockets throughout the center of the baked pizza? Many times if you are developing bubbles under the dough skin during the early stages of baking the pressure lifts a portion of the dough up off of the deck and with the air gap between the deck surface and the dough it doesn't get properly baked in that specific location. Normally though with this condition there is also a bubble evident on the top of the pizza too. If these bubbles are not present then we need to look at something else and in that case I would guess that the problem might be coming from inconsistent incorporation of the fermented portion of the dough (poolish). Since the poolish is heavily fermented it has a fairly high acid content and little or no sugars present. Combined, high acid and no sugar contribute to poor crust color development. Can you send a photograph of the bottom and top of your pizza so we can get a better idea?

Thanks,  
Tom Lehmann/The Dough Doctor  
5839

**Dough Clinic / Re: (re-post from wrong category) Extreme Inconsistent Levain Results**

JPB;  
It's really hard to say what might have gone wrong when working natural ferments as you are. But the lack of extensibility would tend to indicate that there was a lack of fermentation, or possibly too much acid formation in the preferment. The excess acid content would greatly weaken the gluten structure allowing it to rip and tear easily during the shaping process. A lack of fermentation would create a dough that had limited extensibility and any attempt to open it much beyond 1/4-inch in thickness would cause it to tear.

Tom Lehmann/The Dough Doctor  
5838

**Dough Clinic / Re: new to using a mixer**

Using any type of mixer that we might use for mixing our doughs we cannot form a

stable emulsion without the use of an emulsifier. As soon as the agitation stops the oil immediately begins to separate from the water and float to the top of the water where it comes into direct contact with the water, soaking into it with the earlier stated results. In order for yeast to propagate it needs a specific balance of nutrient (molasses is commercially used) and oxygen which is bubbled into the fermentation vats. I don't know if yeast cells can have multiple daughter cells at the same time, but I do know that in a dough system a bud can grow into a daughter cell and split, but it will not reproduce (bud) from that point on.

Tom Lehmann/The Dough Doctor

5837

### **Dough Clinic / Re: New Kitchen Aid Pro mixer**

According to Hobart's recommendations the maximum dough size for their N-50 (an industrial version of the K-5-A with 1/6 horse power) is 2 Kg. or roughly 4.5-pounds of total dough weight at 60% dough absorption. This is about equal to a dough based on 2.75-pounds of flour weight.

Tom Lehmann/The Dough Doctor

5836

### **Sauce Ingredients / Re: Cooked vs Uncooked pizza sauce....**

Michael;

A good or great sauce doesn't need to be complicated at all. When I make a true sauce I use nothing more than the best crushed tomatoes that I can find locally. Before I apply the sauce I lightly brush the dough skin with olive oil, then apply some crushed or diced garlic, add a few fresh basil leaves and then add the crushed tomatoes. Great flavor, fresh taste!

My all time favorite is to prepare the dough skin in the same manner but instead of using crushed tomato I like to use sliced of ripe, garden fresh tomato and just lay them over the dough, no need to try to get full coverage, 60 to 70% coverage is about right. In the winter when I can't get ripe tomatoes my go to is Stanislaus 74/40 Tomato Filets, and if I can't snag a can of those, my next best option is to use canned whole plum tomatoes which I tear apart with my fingers, lightly drain, and use in place of the fresh tomato slices. This approach gives you both the texture of the tomato and in my opinion, more importantly, it gives you a burst of fresh tomato flavor as you bite into those thicker pieces of tomato which you just can't get from a typical sauce.

When it comes to cooking a sauce, I am a firm believer in never cooking a pizza sauce, pasta sauce yes, but pizza sauce, never. All of those great aromas you smell when the sauce is cooking are gone forever, you will never taste them on your pizza. I do believe in making my sauce on the day prior to use to allow the flavors to release and meld, but the sauce will get all the cooking it needs when the pizza is baked. Very few pizzerias cook their sauce due to potential food safety issues as well as issues with the health department and the 4-hour rule (states that a product can remain at a temperature capable of supporting microbial growth for a maximum accumulated time of 4-hours (40 to 160F). This means that a sauce would need to be cooked to above 160 and then cooled to 40F or below all within a total accumulated time of 4-hours.

Tom Lehmann/The Dough Doctor

5835

### **Dough Clinic / Re: How important is a smooth skin?**

Jeff;

Over the years we have studied just how much pizza dough should be mixed for

optimum dough performance and finished crust quality characteristics. All of our tests have shown that pizza dough should be under mixed. Determining how much mixing the dough should receive is difficult to ascertain when you don't have a reference point in gluten development such as full development and then some as is the case with bread dough. What we have found is that if you mix pizza dough just to the point where it doesn't tear when you are rounding it you have sufficiently developed the gluten for most pizza applications. There is a method for assessing this level of gluten development and I demonstrate it in the AIB pizza class each year but it is too difficult to explain in text (but not difficult to do). I just returned from a visit at PMQ Magazine where we did a number of pizza videos and interviews. We did not get into all of the intricacies of mixing pizza dough due to time constraints but we are already planning on another video session in the near future and assessment of proper gluten development (dough mixing) is one of the topics at the top of the list. In short, if you are achieving just enough gluten development so the dough doesn't tear during the rounding procedure, your gluten development is probably about right.

Tom Lehmann/The Dough Doctor  
5834

### **Dough Clinic / Re: Dough machine All Trumps**

Some things to keep in mind about high protein flours like All Trumps (14+%) is that there is more protein available to be developed into gluten, so by mixing this flour for a longer time, at a mixing speed capable of developing gluten, you have the potential for making a stronger, tougher, more elastic handling dough than you would if using a lower protein flour such as King Wheat (about 11% protein content). When using a higher dough absorption with any flour you will effectively create a more fluid dough consistency which decreases the work being put into the dough by the mixer agitator so with all things equal, such as mixing/agitator speed, the higher absorption dough will not receive as much gluten development within any given time as the same dough made with a lower dough absorption. To some extent this can be overcome by increasing the energy put into the dough (increasing the mixing/agitator speed). Hence, if you were to mix a dough for 10-minutes having a dough absorption of 58% you would achieve a certain amount of gluten development, now if you were to increase the dough absorption to 68% and mix for the same length of time, at the same mixing speed you would achieve a lesser amount of gluten development, and then, if you were to mix that 68% absorption dough at a higher/faster mixing speed for the same length of time you would achieve a greater level of gluten development.

When using a mixer such as a Hobart 20-quart mixer (A-200/AS-200/AS-200-T) the mixing time will be dependent upon a number of factors, including flour protein strength/content, dough absorption, agitator design and dough size. When using either a 12-quart (A-120) or one of the 20-quart mixers I like to size my dough so I can mix it at 1st. speed for two minutes (+/-) add the oil, mix it two more minutes at 1st. speed, then finish the mixing at 2nd. speed which usually takes about 8 to 10-minutes. If you need greater dough capacity than this mixing procedure will allow for you will need to do all of your mixing at low/1st. speed which typically means that your total mixing time will be around 15-minutes. How much flour should you use in one of these mixers? That is impossible to say for anything but a factory new mixer as some older mixers which have had a tough life may not handle 2nd. speed mixing chores well at all, and if the thermal overload switch has been tripped many times it may trip out at the mere suggestion of mixing a dough at 2nd. speed. I've even seen them so bad that unless the dough was sized on not much more than 2.5-pounds of flour it would not mix a dough for 15-minutes

without tripping out the overload switch. As you can see, every mixer is a law unto itself.

These same issues also apply to every other size of mixer, and when you add the fact that some mixers are 3-speed and others are 4-speed, which is further clouded by the fact that some mixers are rated as heavy duty while others are rated as medium or light duty (all at the same bowl capacity) you can see why there is so much confusion over the amount of flour to use in sizing a dough for any mixer. The best advice I can give to anyone with a mechanical mixer is to not use a dough larger than YOUR mixer is capable of easily handling throughout the entire mixing cycle at whatever mixing speed you opt to use.

Tom Lehmann/The Dough Doctor  
5833

### **Dough Clinic / Re: Flour Question**

And, if you can take it to the next step and freeze the flour for a minimum of 30-days you will find that the flour will remain bug free almost indefinitely when stored in a suitable container at room temperature, but that does not preclude the flour from oxidizing and the fat in the flour from turning rancid (a major problem with whole-wheat flour), which can have an influence on both dough performance and finished crust flavor. To get around this problem refrigerated storage of the flour is recommended after it has been subjected to frozen storage. When I was actively engaged in baking research we used to store the flour in the freezer for 45-days and then transfer it to the cooler for long term storage where we worked from the flour in our long term testing (sometimes over a year or more) without any observed variations in the performance of the flour. I agree, refrigerated storage of the flour doesn't hurt in the least bit.

Tom Lehmann/The Dough Doctor  
5832

### **Pizza Cheese / Re: Grande Whole Milk Mozzarella loaf really salty**

If you find that the cheese is indeed too salty you can also try blending it with another Mozzarella cheese. That being the case, I'd try a 50/50 blend to start with and if it is still too salty then go to a lower use level as suggested.

Tom Lehmann/The Dough Doctor  
5831

### **Pizza Cheese / Re: Grande Whole Milk Mozzarella loaf really salty**

A 50/50 blend of your Mozzarella (too salty) and Provolone would work just fine. Some pizzerias use 100% Provolone cheese on their pizzas and blends of Mozzarella and Provolone are commercially available.

Tom Lehmann/The Dough Doctor  
5830

### **General Pizza Making / Re: How long to bulk ferment**

We have found that it is much easier to effectively manage the dough and get consistent performance from the dough if it is taken directly from the mixer to the bench for scaling, rounding and then directly into the fridge. If you want to have more fermentation after your cold ferment period all you need to do is to increase the dough temperature off of the mixer by 3 to 5F increments until you get the amount of fermentation you want, and if you are getting too much fermentation, or the dough blows, just reduce the dough temperature in 3 to 5F increments until the desired results are achieved.

Tom Lehmann/The Dough Doctor

5829

**New York Style / Re: How long out of the fridge before you bake?**

Peter;

Our research has shown that 50F should be the lowest temperature that the dough is opened into pizza skins at. The reason for using 50F is that it allows for the longest time to work with the dough that you have removed from the cooler. For example, when a pizzeria removes dough from the cooler it may remove several dozen or more dough balls at a time and when the 50F dough temperature is used the window of opportunity to use those dough balls is typically around 3-hours. If they were to use a higher temperature, say 75F the window of opportunity to use those dough balls, depending upon room temperature, might only be an hour or so, making dough projection a nightmare for the pizzeria. In a home setting where we are dealing with only a couple or a few dough balls at most, theoretically, just about any temperature could be used so long as you can handle the dough. If you are planning on a pizza party where you will be making quite a number of pizzas over a period of time, beginning to open the dough balls at a lower temperature might have some practical value.

Tom Lehmann/The Dough Doctor

5828

**New Forum Members / Re: Hi! What is a W Rating for Flour?**

The term comes from the use of the Alveograph, a laboratory instrument that essentially blows the dough into a bubble to the point of bursting. The "W" factor is much like the volume of the bubble formed (simplified). So, essentially, the greater the "W" number, the stronger the flour. While the Alveograph has been used for assessing the strength/quality characteristics of hard wheat flours, it was designed specifically for soft wheat (pastry) type flours. There is a long running battle over how significant the Alveograph results are when applied to hard wheat flours. Dr. Carl Hosney (Kansas State University) conducted a rather thorough study about 20-years ago looking at the Alveograph as it pertains to hard wheat flours.

Tom Lehmann/The Dough Doctor

5827

**New York Style / Re: How long out of the fridge before you bake?**

Brian;

One way to think of a pizzeria is as a continual pizza party where the guests are paying good money for their pizza, and it is our number one objective to provide each guest with a consistent and favorable dining experience. This is why the refrigerated dough management procedure was developed and why so much research has been conducted to develop effective dough management parameters. A good and fast way to measure the dough temperature is with a non-contact infrared thermometer which are now available for around \$25.00 whereas a good dial/stem type thermometer might cost as much as \$20 to \$25.00 so it is really a toss up, but for convenience and speed, it is awfully hard to beat the infrared thermometer, which requires that you just point, shoot and read the temperature. Peter brings up a good point about the temperature of the home refrigerator, we have a new one and it holds right at 36F, but then there are only two of us, I'm sure the temperature would be different if our boys were young and still at home periodically taking inventory of the fridge. Commercial coolers or retarders as they are sometimes called, are required by law to operate at 34 to 40F, this is why you might see plastic strip curtains over the door of a commercial walk in cooler since it improves the operating efficiency of the cooler by about 10% as they help to

provide a constant seal even when the door is opened. Commercial reach in coolers are not as efficient as the walk in coolers and this is why we suggest using a lower finished dough temperature for pizzerias using reach in coolers. Another good point to remember is that if you do not cross stack (ventilate/leave the lid off) the dough containers for at least a couple of hours after putting it in the fridge, the dough will continue to ferment rather vigorously. As the dough ferments it also generates heat (heat of fermentation) at the rate of about 1F per hour, so, depending upon how long the dough has been in the fridge, where it was at in the fridge (top or bottom shelf), the actual temperature of the fridge, and a bunch of other factors, as Peter correctly stated, the temperature of the dough as you remove it from the fridge can be variable which will affect the dough tempering time between when it is removed from the fridge and when it is ready to be opened into pizza skins, and how long you might have to open any additional dough balls that will not be immediately opened.

As you can see, there are a lot of factors at play here.

Tom Lehmann/The Dough Doctor  
5826

### [\*\*General Pizza Making / Re: How long to bulk ferment\*\*](#)

Jeff;

Yes, you adjust the temperature of the dough as it comes off of the mixer by manipulation of the temperature of the water added to the dough. If your dough looks to be ready to use on Wednesday but you want to use it on Saturday, in all probability your dough temperature is too high so you would use colder water when making the dough. Also, if you are covering the dough by placing it into a tightly closed container when placing it into the fridge, leaving it uncovered (cross stacked) for a couple of hours before sealing it closed will also help to slow down the rate of fermentation. Can you freeze the dough? The answer is both yes and no, yes in that you can freeze the dough but it will take overnight in the fridge to slack it out (thaw it) and another several hours to allow the dough to warm sufficiently for shaping into a pizza skin and baking. Due to the damage to yeast cells during the freezing process you might find that the dough is a little softer and more extensible (not always a bad thing) after freezing and slackening out. No in that it probably isn't necessary if we're only looking a freezing it for a day or two, I think it is easier to just manage the dough for the longer cold ferment time. With all of that said, if while the dough is in the fridge you find that the dough looks to be ready to go sooner than you anticipated, there should be no problem in putting the dough into the freezer to either freeze it, or to super cool it. To super cool the dough place it into the freezer for about two hours (uncovered or open) and then transfer it back into the fridge until you're ready to use it then just manage the dough as you would any dough that you're taking out of the fridge, no special handling needed.

Tom Lehmann/The Dough Doctor  
5825

### [\*\*New York Style / Re: How long out of the fridge before you bake?\*\*](#)

Brian;

You will be able to achieve more consistent results if you leave the lid off of the container(s) for at least an hour or so. One of the things that I've found is that when the dough is not properly managed the dough exhibits a pronounced tendency to over ferment so the knee jerk reaction is to reduce the yeast level until the fermentation is under control, but by doing this you can impact the flavor of the finished crust, crispiness, and porosity. Additionally there is also a tendency for the

dough to not rise in the center producing a finished pizza with a thin or possibly soft center section, sometimes the complaint is that the pizza is crispy when it first comes out of the oven but quickly becomes soft or soggy, these characteristics have all been traced back to insufficient yeast level. If you are experiencing any of these issues, this might provide some insight, but if all is good, revert back to the old adage, "if it ain't broke, don't fix it"

Remember, there is no right or wrong way to manage a dough, there are just some ways that are more effective and create fewer problems along the way than others. By the way, I just saw that Harbor Freight has their infrared thermometers on a special sale at less than \$20.00, what a deal!

Tom Lehmann/The Dough Doctor  
5824

### [\*\*Dough Clinic / Re: Taking over a pizza place\*\*](#)

I think BRADTRI has a good, workable solution. Continue to offer the existing crust/pizza since that is what the customers have come to expect, then also offer a "Manager's Special" which is your concept of a pizza. Track the pizza sales and let your customers decide what they like, remember, if you are not personally buying as much pizza as your customers are you don't have a vote in what they like or don't like. That's always a tough one for new operators to swallow.

Tom Lehmann/The Dough Doctor  
5823

### [\*\*Off-Topic Foods / Re: Deep frying: oil use, storage & disposal\*\*](#)

Don;  
If you maintain your fat temperature at 365F during frying you will get a longer life from it (more uses) before it begins to break down or rancidify due to oxidation which is accelerated at high frying temperatures.

Tom Lehmann/The Dough Doctor  
5822

### [\*\*Dough Clinic / Re: My soggy dough\*\*](#)

Jeff;  
Three things come to mind here, 1) What color is your deep-dish pan? Many of the CM pans that I see are just bright metal that do not bake very well. The pan should have a dark colored finish both inside and out. If your pan is bright metal you will need to season it before you can get a decent bake from it. 2) Your formula contains approximately 16-ounces of flour and 9-ounces of water plus roughly 4-ounces of oil. Possibly reducing the oil to 2-ounces might help a bit, or if you want to stay with the high fat content, try using melted or softened margarine as they do in Chicago. In either case, try adding the fat about half way through your mixing procedure rather than right up front as is commonly done. This delayed fat addition method works better when high fat levels are employed. 3) What is your total baking time? In Chicago these pizzas are baked at 500F for approximately 45-minutes. If you are baking on a stone this might result in an excessively dark bottom crust color, if that is the case, try placing a screen under the deep-dish pan during baking to create an air gap between the pan and the stone which will allow for the longer baking time without developing excessive bottom crust color.

Tom Lehmann/The Dough Doctor  
5821

### [\*\*Neapolitan Style / Re: tips to avoid GUMLINE w/ neapolitan dough?\*\*](#)

A gum line is a layer of pasta like dough situated immediately below the sauce,

typically about 1/8-inch thick. While there is ALWAYS a layer of pasta like dough under the sauce, it isn't this thick, and more importantly, when you tear the dough apart it cleaves cleanly, like tearing a slice of bread apart, when you have a gum line the crust "feathers" as you pull it apart. By this I mean it stretches as it is pulled apart before finally breaking/tearing. We call it the "dreaded" gum line because there are so many different causes for it, and until you correct the right cause it will haunt you forever. There is also what we call a false gum line, this occurs when you slice the pizza in the conventional manner and look at the cut edge you will see what at first appears to be a gum line but instead this is only compressed crust formed by the cutter as it passes through the dough. The correct way to check a pizza for a gum line is to either tear it apart, or tear a slice apart looking for the feathering as described above, but also for the appearance of baked crust all the way up to the sauce layer where you will see just a VERY THIN gray colored line immediately beneath the sauce, this is perfectly normal and not to be confused with a gum line. The other way to check for a gum line is to invert a pizza or slice and carefully cut it in half lengthwise (crust edge to tip) using a scalpel, or single edge razor blade (I use a special tool called a Scaritech #GR2002 from <[www.scaritech.com](http://www.scaritech.com)> or you can find a similar tool from any supply house providing baking tools for artisan bakers. In this case you simply cut the inverted pizza/slice through the crust and then fold the pizza in half so the two topped sections are facing each other, this will allow you to inspect the crust for the presence of a gum line (this is the method employed by the big pizza chains). To learn more about the dreaded gum line and its many causes and corrections go to PMQ.com and look for the article that I wrote on the subject in my column "In Lehmann's Terms".

Tom Lehmann/The Dough Doctor  
5820

### **Dough Clinic / Re: Hydration levels impact on rise rate**

Not a problem.

The higher the dough absorption the softer and more fluid the dough becomes. Being softer/more fluid means that the dough will expand more readily during the fermentation process creating a larger dough ball with all things being equal. Like all things, it can be taken to an extreme where the dough will begin to lose the ability to retain gas or it will flow outward excessively (flatten). Going the other way, an extreme reduction in dough absorption will tighten the dough to an extent where it will exhibit sufficient resistance to expansion (we call this lack of extensibility) to inhibit the expansion of the dough due to internal gas pressure, hence we may no longer see as much expansion at low absorption levels. Any ingredient that impacts the dough extensibility will also affect the size of the dough balls after fermentation, for example, PZ-44 softens/weakens the dough allowing it to expand or stretch more easily, hence the judicious use of PZ-44 can result in a greater dough ball size due to internal gas pressure resulting from fermentation, conversely, any ingredient that will tighten the dough (reduce extensibility) such as oxidants (ascorbic acid, azodicarbonamide/ADA, bromate) can reduce the dough ball size by strengthening the dough to the point where it resists expansion due to the effects of the internal gas pressure. While increased absorption does impact the rate of fermentation with higher absorption values resulting in a faster fermentation rate, the impact is not so great to result in what you are observing, instead, it is just the effect of having a softer, more extensible dough that is expanding more readily due to the forces of internal gas pressure resulting from fermentation.

Tom Lehmann/The Dough Doctor

5819

**Neapolitan Style / Re: tips to avoid GUMLINE w/ neapolitan dough?**

Because it impacts the way the crust eats and it has a huge impact upon the crust in a DELCO operation where it contributes to a tough, chewy eating characteristic, then too its an indicator of other problems which might be present. Is a gum line something to be concerned about in a home baking scenario? I can't answer that unless your crust gets soft/soggy soon after baking, isn't as crisp as we might like it to be, has an objectionably tough or chewy eating characteristic, then there might be a concern.

Tom Lehmann/The Dough Doctor  
5818

**Dough Clinic / Re: PIZZA DOUGH ROLLER**

MARS86;

If you will send me an e-mail at <thedoughdoctor@hotmail.com> I will be glad to send you a copy of a Dough Management Procedure that can be used as given or modified to fit your specific requirements.

Tom Lehmann/The Dough Doctor  
5817

**Cracker Style / Re: Getting a crispier crust?**

BYAMIT;

It appears that you are trying to make a cracker type crust. Try this: After balling the dough, very lightly oil the dough ball and drop it into a bread bag, twist the open end into a pony tail to close and tuck it under the dough ball as you place it into the fridge for about 24-hours. Remove the dough ball from the fridge and allow it to temper AT room temperature for about 2.5-hours, then turn the dough ball out of the bag onto a floured counter top and roll the dough out as you are presently doing. The fermentation should add a better crisp to the crust than you are presently getting. Another option is to continue as you are doing, apply about 1/2 of the normal sauce to the pizza skin and par-bake for about 2-minutes (time will be variable depending upon your oven) then remove from oven, apply the remainder of the sauce and dress as desired and place back into the oven to finish baking. Both methods should improve the crispiness but the first procedure will also improve the bite and the flavor of the finished crust.

Tom Lehmann/The Dough Doctor  
5816

**Dough Clinic / Re: Extra puffy cornicione**

Can you share with us how you are forming your pizza skin? A lot of times the problem you are experiencing can be traced back to the forming technique used.

Tom Lehmann/The Dough Doctor  
5815

**Cracker Style / Re: Getting a crispier crust?**

Chicago Bob;

You NAILED IT!

Couldn't have said it better myself.

When we par-bake crusts, especially thin crusts they have more than a passing tendency to want to cross the line from pizza to pita. By putting about half of the sauce on the dough/pizza skin you accomplish a lot in terms of preventing this from happening.

Really enjoying retirement and keeping busy consulting and writing articles for  
Pizza Today and PMQ magazines. :)  
Tom Lehmann/The Dough Doctor  
5814

### **Dough Clinic / Re: Extra puffy cornicione**

Mac;  
Chicago Bob is "spot on".

When hand stretching these low absorption doughs there is a tendency to stretch them too thin in the center section leaving the dough thicker around the edges. After you have pretty well opened the dough try using a rolling pin to finish opening it as this will give you a more even dough thickness across the entire skin, then as Bob has said, spread the sauce out to within a quarter inch, or so, of the edge and finish dressing in the normal manner. This should help to control the crust dimension and thickness.

Thanks Bob, :)  
Tom Lehmann/The Dough Doctor  
5813

### **New York Style / Re: My dough less extensible more elastic over time**

The progression in handling properties of a normally formulated yeast leavened bread or pizza dough goes something like this;

Tight and very elastic with insufficient fermentation  
Extensible and slightly elastic with normal fermentation for the flour and dough formulation (this is the sweet spot)  
Moderately tight but very elastic when the dough receives excessive fermentation for the flour and formulation (in baking lingo we call this "bucky")  
As fermentation proceeds beyond this point the dough becomes increasingly soft but this can be overcome by reworking (re balling) the dough. When we make product from frozen dough that is beyond its useful (formulated) life we can get another shot at making a pretty decent product from it by reworking the dough. The mechanism at play here is oxidation of the dough, as it is reworked we expose the dough to more oxygen which repairs some of the damage done to the gluten bonds resulting from excessive fermentation, all you need to do then is to wait for the dough to relax once again and have another go at it. This is even done in some pizzerias as a means of salvaging dough that has gotten long in the tooth.

Tom Lehmann/The Dough Doctor  
5812

### **New Forum Members / Re: Making Pies**

Mel;  
If you will go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> and go to the RECIPE BANK search for pizza dough and look for my hand made dough "recipe" which might serve as a starting point for you.

Welcome!  
Tom Lehmann/The Dough Doctor  
5811

### **Dough Clinic / Re: Extra puffy cornicione**

You are trying to make a thick crust pizza right? The dough looks to be quite gassy, maybe it was left to temper at room temperature too long before you opened it into a pizza skin. At the time when you're opening the dough ball into a pizza skin it should be about 50F. Also it looks like it might be a bit too elastic/bucky at the time

of opening possibly due to excessive fermentation. You might try heavily docking just the center portion of the dough (where you don't want it to rise as much) as this will control the rise in that part of the dough giving you a better defined crust edge. If it is not a thick crust that you are after, reduce the scaling weight to between 9 and 12-ounces for a 12-inch pizza.

Tom Lehmann/The Dough Doctor  
5810

**General Pizza Making / Re: Gluten free in a cutter pan - your thoughts on how to cook it**

Why not par-bake in the pan, dress and place back into the oven to finish baking in the pan? There might be a point where you will be able to remove the pizza from the pan to allow decking it for a minute or so.

Tom Lehmann/The Dough Doctor  
5809

**Dough Clinic / Re: pizza crust**

Yep, a whole lot more top heat.

Tom Lehmann/The Dough Doctor  
5808

**Gluten Free / Re: What if a pizza isn't gluten?**

If it were me, I'd come clean and take my lumps (which you'll probably get). Since she thought it was gluten free but still got stomach issues after eating it she most likely has a gluten intolerance problem, but I would encourage her to discuss Celiac Disease with her doctor just to rule it out. Celiac Disease can be a much greater health risk than gluten intolerance, and will need to be addressed differently to avoid complications down the road.

Tom Lehmann/The Dough Doctor  
5807

**Dough Clinic / Re: what does a dough ball supposed to look like.**

Joe;

When using GM All Trumps flour you should be able to use any where between 58 and 65% dough absorption without any problem. Actually, from the picture you provided, the dough ball looks pretty typical for 24-hours cold ferment. I see you are using the smaller size dough boxes, are you wiping the dough balls lightly with oil and leaving the box uncovered for at least 3-hours in the fridge before covering the box? What is your finished dough temperature? We normally like to see the temperature around 80F with dough management that looks like this: mix; scale; ball; place in box; wipe with oil; allow to remain uncovered in the fridge for at least 3-hours; cover and cold ferment for 1 to 3-days. To use the dough, remove from fridge, allow to remain in the box (covered) for 3-hours or until the dough reaches 50 to 55F, then flour the dough ball(s) and begin opening into pizza skins.

Regarding your Chicago type pizza, did you use oil rather than shortening in the pan (oil will provide a crispier finished crust). Did you remove it from the pan immediately after baking (leaving it in the pan causes the crust to become soggy). Did you bake the pizza for 35 to 45-minutes?

Tom Lehmann/The Dough Doctor  
5806

**Dough Clinic / Re: What are we doing wrong?**

Or worse yet, are you dressing all of the pizza skins at the same time before you

begin baking? This could lead to the skins adhering to the bench/counter top if just flour is used under them. Moisture from the dough and or the sauce can penetrate into the dusting flour under the dough to cause it to stick. My own personal way of addressing this problem is to dress each pizza on its own prep peel using a blend of equal parts of flour/semolina flour/and fine corn meal as a dusting flour between the wood prep peel and the dough. If you don't want to go this route, try this dusting flour blend under the dough on your bench/counter top as opposed to your regular dusting flour to see if it gives you a better release. As Mitch indicated, information on your dough and dough management technique would greatly help as high absorption doughs are more prone to this problem than low absorption doughs. Doughs that are fermented for very long periods of time or those that are cold fermented in a covered container without being left open for the first 2 to 3-hours after going into the fridge can also pose problems due to their stickier nature.

Tom Lehmann/The Dough Doctor  
5805

**Dough Clinic / Re: Dough too extensible after the mix - I feel like I know less today than ever!**

Mitch;  
With a 20-degree lintner malt powder the normal dosage is only about 0.25% of the total flour weight. Excessive malt can/will make the dough sticky and difficult to work with. The acid content of your starter might also be at least partially responsible too. If the acid content is high in the starter the acid will degrade the flour protein (gluten) to the point where it is extremely soft and overly extensible, and if taken to the next level it will also contribute to a sticky dough consistency due to the break down of the proteins. With your starter you might not even need to use any malt, so I might suggest that your next test be made without any added malt, diastatic or non-diastatic to see if there is any improvement. After that, I would look at using a dough absorption of around 60% with the amount of starter reduced to maybe 1%, and the dough mixed just until the dough begins to pull off of the sides of the mixing bowl, this is recommended because depending upon the micro-flora in the starter you may not achieve the level of biochemical gluten development that you would normally achieve using yeast to leaven the dough.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
5804

**Dough Clinic / Re: Dough Flavor and Proof Technique**

Thank You;  
24-hours fermentation at room temperature is a heap of fermentation so we can most likely say that is not the problem here, so I'm going to go with a lack of salt in the dough formula. For optimum flavor characteristics in the finished crust you should have between 1.75 and 2.25% salt. This is based on bakers percent. To look at your dough formula in bakers percent divide the weight of the ingredient by the weight of the total flour in the dough formula and multiply by 100.

If your salt is already within this range, we will need to have more information on your dough formula and dough management procedure.

As for the lid being popped off of the fermentation container, here are a couple of things to consider:

- 1) Adjust the water temperature used to make your dough to give you a finished dough temperature of 80 to 85F.
- 2) Immediately after mixing, scale the dough to desired weight pieces, form into

balls, wipe lightly with salad oil, and place into your fermentation containers without lids.

3) After the dough has been in the fridge for about 3-hours, place the lids on the containers and snap into place.

4) Allow the dough to cold ferment for 24 to 72-hours.

5) Remove container of dough from fridge (keeping it lidded) and allow to temper at room temperature until the dough ball reaches 50F.

6) Turn the dough ball out of the container into a bowl of dusting flour and open the dough ball into a pizza skin by your preferred method.

7) Dress and bake the pizza skin in your normal manner.

Tom Lehmann/The Dough Doctor

5803

### **Dough Clinic / Re: What are we doing wrong?**

With some of the pizzas that I make I will actually open the dough into a pizza skin and place it onto my dusted peel, then give it a little shake just to settle the dough on the peel and reassure myself that the dough isn't sticking, then I will begin dressing the skin, and depending upon how long this takes me, I might give it another shake (you would be surprised at how many times I find the dough already sticking a little at this time, I then finish dressing the dough, shake it again to make sure it's still sliding on the peel and IMMEDIATELY take it to the oven.

Tom Lehmann/The Dough Doctor

5802

### **Dough Clinic / Re: Can a short rise be a long rise?**

It appears that you are making a thick crust pizza. If it were me, I'd adjust the water temperature to give me a finished dough temperature in the 80 to 85F range, I would then divide it into desired size/weight pieces, lightly oil each dough piece, drop each piece into individual bread bags, twist the open end to close and tuck the pony tail under the dough ball as you place it in the fridge. Allow the dough to cold ferment for 24 to 72-hours, remove from the fridge and allow to temper AT room temperature until the dough reaches 50F, then press into a greased or oiled pan, allow to proof/rise for 60-minutes, dress as desired and bake on a grid oven shelf as opposed to a pizza stone which can give the finished pizza an excessively dark bottom crust.

Note:

If you use shortening, butter or margarine the dough will be a lot easier to fit to the pan.

If you use oil in the pan you will probably need to press the dough into the pan, then set it aside for 20-minutes, or so, and press it again. This may need to be repeated 2 or 3 times.

Butter/shortening/margarine: Finished crust will be more bread like and have a dry feel to it but it will not be quite as crispy as it could be with oil in the pan.

Oil: The finished crust will have an oily feel to it but it will be more crispy

Try them both to see which you like.

Tom Lehmann/The Dough Doctor

5801

### **Dough Clinic / Re: What are we doing wrong?**

It is normal for the skin to shrink a little when you shake it. It also shrinks when you peel it into the oven but you don't see it. Normal shrinkage is about 1/2-inch. If this is an issue for you the easiest way to correct it is to just make the skin about an inch larger in diameter than what you want it to finish up to be. If the shrinkage

is really excessive, like an inch or more, your dough is too elastic and may need more fermentation time or more tempering time at room temperature between removing it from the fridge and opening the dough into a pizza skin.

Tom Lehmann/The Dough Doctor  
5800

### [\*\*Dough Clinic / Re: Is adding olive oil to a recipe a good thing?\*\*](#)

LBAR;

Actually, adding oil to the dough really can dehydrate it. Allow me to explain, oil can be used like water to adjust the viscosity of the dough, for example since oil is a liquid, a dough made with 55% water/absorption and 5% oil would have similar handling properties to a dough made with 60% absorption and no oil. Since the oil is replacing the water in this case it can be said to be lowering the water content (dehydrating) the dough. BUT if you mean that the use of oil in a dough causes it to lose moisture (dehydrate) faster than a dough made without oil, that is not correct. Should a pizza dough be made with or not? It all depends upon the type of crust that you are making, as many traditional crust formulas do not call for any oil at all (how traditional do you want your crust to be?). What does oil do in a dough? It helps to lubricate the dough for slightly improved handling/stretching properties and it helps to seal the dough for improved retention of leavening gas, especially during baking. What does it do in the finished crust? It helps to retain some of those wonderful aromas released from the pizza during the baking process for a more flavorful finished pizza, it will also add a unique flavor to the finished pizza depending upon the flavor profile of the oil being used, it can also help to produce a more tender eating finished crust (fat/oil is a tenderizer) and it can also improve the overall eating properties of the crust. People like fat, no doubt about it, and the more fat you put into a dough formulation (within reason) the more people will like the resulting crust. This is one reason why those frozen pizzas you see at the supermarket enjoy such a high popularity (some will contain as much as 16% fat).

Tom Lehmann/The Dough Doctor  
5799

### [\*\*New Forum Members / Re: Newby.....\*\*](#)

Trip;

Welcome!

Here is a good starting formula in bakers percent.

Flour: (any good bread type flour) 100%

Salt: 1.75%

Sugar: (only if you need it for crust color) 2%

IDY (instant dry yeast) 0.375%

Water (70F) 65%

Olive oil: 2%

Procedure:

Add water to the mixing bowl, add the salt and sugar(if used), then add the flour and put the dry IDY on top of the flour.

Machine mix the dough just until the flour has been hydrated, just a couple of minutes, then add the oil and mix for 1-more minute.

Note: If you will not machine mix the dough hydrate the IDY in a couple ounces of warm (100F) water and let set for 10-minutes, then stir/whisk and add to the water in the mixing bowl. Be sure to reduce the amount of water in the bowl by the same amount that you hydrate the yeast in.

After adding the oil mix the dough just until it clings together and forms a ball if using a mixer. If mixing by hand, knead the dough for just a few minutes (4 to 5)

then set aside to bulk ferment for 1-hour, turn the dough out of the bowl and scale into desired weight pieces, lightly oil each dough piece and place into individual plastic bags (bread bags work great). Twist the open end of the bag into a pony tail and tuck under the dough ball as you place it in the fridge.

Allow the dough to cold ferment for 24 to 48-hours (can go longer if you want).

Remove dough from fridge and allow to warm AT room temperature until it reaches 50F.

Turn the dough ball out of the bag into a bowl of dusting flour and open into a pizza skin using your preferred method.

Dress the pizza skin and bake.

This should get you started making pizzas, once you get started and are comfortable with what you are doing you can begin experimenting with the dough formula and management procedure to achieve the finished pizza you are looking for.

Tom Lehmann/The Dough Doctor  
5798

### **Dough Ingredients / Re: Diastatic Malt--The Pizza Bible**

Here's my hat in the ring too.

Diastatic malt is the malt used by most bakers because the alpha amylase enzymes contained in it hydrolyze damaged and some native (intact) starch granules into sugar to support yeast fermentation and aide in crust color development. Think of it as a cheap source of sugar. Nondiastatic malt is not enzyme active, hence its only function is as a flavoring agent (think malted milk balls) and a source of sugar/sweetener but to achieve these goals the nondiastatic malt must be used at significantly higher levels than diastatic malt. In all of my work with Caputo and organic (unmalted) flours we have found that the dough handles better and colors up better when we have added diastatic malt to the dough. This is especially so when baking in a home type oven where we don't have the temperature potential to develop the desired crust color within a reasonable baking time.

Tom Lehmann/The Dough Doctor  
5797

### **Dough Clinic / Re: Pizza dough seems heavy and tough.**

OZ;

So as not to have you start all over, it would help us if you could provide us information such as dough formulation and dough management (dough making and handling procedure) that you are presently using. This way we might be able to make suggestions/recommendations based on what you already have. Be sure to provide us information on your oven, the baking time and temperature as well as what your baking platform is (pizza stone, pizza screen, pan, and if a pan, what is the color of the pan).

Tom Lehmann/The Dough Doctor  
5796

### **Dough Clinic / Re: Pizza dough seems heavy and tough.**

OZ;

If I might, I'd like to suggest the following as a starting point for you.

- 1) Assuming you are using ADY (active dry yeast) increase the amount to 6-grams.
- 2) Decrease the oil content to 12-grams.
- 3) I don't know what your finished dough temperature is, but I would increase the temperature of the water to around 75F/24C.
- 4) Decrease the amount of water added to the mixing bowl to 350 ml.

5) Measure out 50 ml of water at 100F/38C and place in a small bowl, add the dry yeast to this water and stir in. Let hydrate for 10-minutes, then stir again and pour into the water in the mixing bowl.

6) After stirring the dough cover it lightly with a piece of plastic or foil (not air tight) and allow to ferment for 3-hours, then turn the dough out of the bowl onto a lightly dusted surface and knead the dough for several minutes, just enough to ensure it's smooth.

7) Divide the dough into desired weight pieces, form into balls, lightly oil, and place into individual containers, drape with plastic and allow to ferment at room temperature for 2 to 3-hours before using OR place the lightly oiled dough balls into individual plastic bags (bread bags work well) and twist the open end into a pony tail, tuck the pony tail under the dough ball as you place it into the fridge. The dough will be ready to use after 24-hours but it will keep for up to 72 or more hours in the fridge.

8 ) To use the dough, remove from the fridge, and set on the counter, allowing it to warm to 50F/10C before using it.

9) Turn the dough ball out of the bag into a bowl of dusting flour and proceed to open the dough ball into a pizza skin by your preferred method.

I don't know if I'd freeze the dough balls for up to a month, but they should be good for at least two weeks.

To thaw a frozen dough ball, place it directly in the fridge from the freezer, allow to slack out/thaw at least over night but you can leave it in the fridge longer to fit your schedule. Remove dough from fridge and place on counter top and allow to temper TO 50F/10C (see #8 above) before proceeding to open the dough into pizza skins.

Let us know how this works for you. Once you begin getting a crust that looks more like what you want, you can begin experimenting with your formula and procedure/dough management procedure to further fine tune your finished crust.

Tom Lehmann/The Dough Doctor

5795

### [\*\*Pizza News / Re: Tom Lehmann \(The Dough Doctor\) featured in PMQ Pizza Magazine\*\*](#)

Thank you for all the very kind words.

It was a pleasure to have the opportunity to work with the great PMQ staff in putting all of that material together into a great cover and story. A story from behind the scenes; When I came down to Oxford, Mississippi for the photo shoot and interviews I stayed a couple of days with my friend, Tom Boyles (PMQ Australia) and we got in a couple of days of squirrel hunting before beginning the real work at the PMQ office. Oh, by the way, there was talk at the office about making a squirrel pizza.

Tom Lehmann/The Dough Doctor

5794

### [\*\*Neapolitan Style / Re: Caputo Blue Bag - Shelf Life?\*\*](#)

I totally agree with all the answers, and TX is spot on with regard to freezing the flour. We have held it for years in the freezer without significant loss of quality. Here is another trick that you can use too. Split up the flour into smaller batches, plastic containers (I just use plastic bags like gallon size Zip-Lok bags, label and date the bags for future reference) Place into the freezer for 6 to 8-weeks, if you're like us, freezer space is not all that plentiful (two chest freezers filled with frozen fruit, vegetables, cheese, and venison) go figure! Then, after the 6 to 8-week freezing period you can remove some of the bags for more immediate use (say, a

3-month supply) and store them in a convenient location at room temperature, then as you draw those down you just remove more bags of flour to replace them. Once the flour has been frozen for 6 to 8-weeks you can store it at room temperature for at least 6-months, after that the flour will generally show some signs of natural oxidation (think bromate) which might impact the way the flour performs as compared to fresh flour. The oxidation process is slowed so much under frozen storage conditions that the flour will perform as fresh for at minimum a year or more. This is based on someone not liking the performance of an oxidized (bromated) flour..... most of us will fail to see a problem here. But if it is a problem, just relegate the flour to making bread and rolls. We just pulled flour out from our freezer for Holiday baking that was dated as being just over two years old (that's why it's important to label and date each bag) and it performed flawlessly in making bread, sweet dough, calzones and pizza.

Tom Lehmann/The Dough Doctor  
5793

**Dough Clinic / Re: Pizza dough seems heavy and tough.**

To substitute IDY (instant dry yeast) for the ADY in my suggestions above, I would recommend using 4-grams of IDY and add it dry (directly to the dry flour) before you begin mixing the dough. To go up a step in protein content, to something in the 12% range you might try using Pillsbury's Bread Flour. This flour was packaged for home use specifically where bread machines were being used. It works pretty well in pizza too, and it should be pretty easy to get as it is marketed nationally through most supermarket chains.

Tom Lehmann/The Dough Doctor  
5792

**Dough Clinic / Re: Dough is great...but lacks an aftertaste.**

If you can share your best efforts to date with us (formula and complete procedure)it would help everyone in giving direction. Right now I'm thinking that if you haven't used a natural starter yet that might be a next direction for your testing.

Tom Lehmann/The Dough Doctor  
5791

**Dough Clinic / Re: Pizza Dough Snapping / Retracting Back.**

And I bet if you follow Mitch's advice the dough will stretch out ohhhh sooooo easy. Just turn the dough out of the bowl into a container of flour or a floured counter top, flip it over so both sides are floured and have at it. I make my bread and pastry dough this way too.

Tom Lehmann/The Dough Doctor  
5790

**Dough Clinic / Re: Hopefully you can help. Need a Dough Angel**

Bill;

You might try this;

After mixing the dough (use 85F water to make the dough) place it into a large oiled bowl, oil the top of the dough, cover with a piece of plastic and allow to ferment as long as possible, I like to use 6-hours as a starting point, turn the dough out of the bowl and press into the greased baking pan, cut off any excess dough. I would suggest pressing the dough to about 3/16 or 1/4-inch thickness in the pan. Then allow the dough to proof/rise in the pan for about 45 to 60-minutes, then dress the dough and proceed in your normal manner.

If you don't have a formula, try this one for starters:

Flour 100%

Salt 2%

Sugar (if called for) 2%

olive oil 5%

Compressed yeast 1%

Water (85F) 55%

To convert percentages to weight measures:

Decide how much flour you want to use.

Enter the flour weight into your calculator press X and enter the percent you want the weight for then press the "%" key and read the weight in the display window.

The ingredient weight will be expressed in the same weight measures (pounds, ounces, etc.) that you showed the flour weight in.

Example:

You want to use 2-pounds (32-ounces) of flour to make the dough.

32 X 2 press the "%" key and read 0.64-ounces

32 X 5 press the "%" key and read 1.6-ounces.

Etc.

Tom Lehmann/The Dough Doctor

5789

### [\*\*Dough Clinic / Re: Newbie looking for some help with a dough problem.\*\*](#)

Here are some changes I might suggest to your dough formula;

Flour: All Trumps

Reduce the IDY to 0.25%

Reduce the honey to not more than 5%

Reduce the oil to 1.5%

Now you should have a dough that is better suited to acrobat dough spinning.

Also, be sure to let the dough warm to about 50F after the cold fermentation period before you begin opening it into a skin.

If you just want to open the dough further and easier, stay with your existing dough formula and add 1% or a little more PZ-44, it will do wonders for helping open the dough, I would probably want to combine this with a change to All Trumps flour (14%+) to give you the desired extensibility without tearing.

Tom Lehmann/The Dough Doctor

5788

### [\*\*Dough Clinic / Re: HG vs BF Question\*\*](#)

What we found many years ago is that the higher the protein content of the flour the greater its potential for creating a crispier crust. You can get a first row seat to seeing this if you make fried chicken using flour. Make one or two pieces using a lower protein flour and the same using a high protein flour. In all of our tests we found that the high protein flour (13.2%+) resulted in a coating that was more than just crispy, it was hard and "flinty". To some extent the same thing happens in pizza crust BUT there are so many other factors that come into play that it is hard to make a definitive statement. Things that influence the crispiness of the bottom of a pizza crust: the dough ingredients (especially sugar, eggs or milk), amount of fermentation, absorption, thickness of the pizza skin, what the pizza is baked on, if

a pan pizza the color, thickness and depth of the pan as well as the use of oil or shortening in the pan, the type and thickness of the material the pizza is baked on, the baking time and temperature, change any one or more of these and you run the risk of changing the crispiness on the bottom of the crust. here aren't nearly as many variables with the chicken.

This is why there is so much confusion over crispiness, there are so many variables that we can think we are doing the exact same thing to evaluate crispiness but in reality a variable has crept in to distort our findings. Add to that the subjectivity that is used to assess crispiness and you begin to get a feeling for what we are up against. By the way, when we evaluate crispiness in the lab we use a Texture Analyzer to make the distinctions so subjectivity is off of the table as a variable.

Tom Lehmann/The Dough Doctor

5787

### **Other Types / Re: Pizza Pockets**

I make these quite frequently at the request of my oldest son (they're his favorite). Pizza pockets, aka calzones are super easy to make, just roll your favorite pizza dough out to about 1/8-inch thickness, cut into circles or squares, brush the edges with a little water, add filling of creamy ricotta cheese, a little mozzarella cheese (to help bind the ricotta), followed by the fillings of your choosing. If you used a round dough piece, fold it in half over the filling and crimp the edges together first using your fingers, then follow up using a fork to get a good, solid crimp. If using a square piece of dough, fold it into a triangle over the filling and crimp as above. Using a scissors cut one or two vent slits in the top of each piece, then brush with whole egg and bake at 400 to 425F until golden brown, as soon as the pockets come out of the oven brush with garlic butter and sprinkle with powdered Parmesan cheese. You can "up the ante" a bit by sprinkling on some shredded Parmesan cheese just before placing it in the oven. We also like to add a leaf or two of fresh basil to the filling for a great flavor and aroma. These are good for a party too as you can make them ahead of time and keep them warm in the oven until you're ready to serve them.

Tom Lehmann/The Dough Doctor

5786

### **Dough Clinic / Re: HG vs BF Question**

Chicago Bob;

You bring up a very good point. The terms of endearment "high gluten", "all purpose", and "bread" flour are just that, words. There is no set standard for protein quantity of flour in any of these termed categories, hence, what might be termed as a bread flour by one manufacturer could very well have a similar protein content and strength profile to a high gluten flour made by a different manufacturer. I have seen quite a few all purpose flours that had protein and strength characteristics right up there with a lot of what I would call bread flours.

Tom Lehmann/The Dough Doctor

5785

### **Dough Clinic / Re: enhance flavor, crumb, and crust**

Your process is a good one for small scale home use but it will be difficult if not impossible into a commercial concept/process. The sponge dough approach is a good approach and I have advocated its use many times, especially when the dough will not be balled and refrigerated in the "normal" manner. Allowing the dough to bulk ferment at room temperature is problematic as the temperature of the room can change resulting in variances in fermentation, even more importantly, what are

you going to do with the dough if you experience a slow day? If you allow the dough to continue to ferment for another day at room temperature there will be a significant difference in flavor due to the difference in fermentation, and if you put it into the fridge it could take days to cool down sufficiently to slow the fermentation rate. By the way, I think you misstated the yeast amount as equal to the pre-ferment (50% of the flour + water = a lot of yeast) I'm guessing to say that you meant the dough side yeast is equal to the amount added to the sponge side? In any case, I would think that this process would be best served using a total yeast level of about 1% as compressed yeast. As for the poor performance of the dough in the fridge I think this might be due to an extremely low yeast level that would be used to control fermentation at room temperature. If you can develop your process on refrigerated dough balls you will be able to get a consistent flavor profile and the flavor might be more preferable as you get a different flavor profile from a cold fermented dough as opposed to a hot/warm fermented dough. Remember, in a commercial setting the name of the game is consistency.

A good starting point for you to pursue if you want to go to a cold ferment would be as follows:

- 1) Adjust the total yeast level to at least 1% compressed or equivalence in IDY or ADY.
  - 2) Make your sponge just as you presently are.
  - 3) Mix the sponge with the dough ingredients using cold/ice water in the dough side.
  - 4) Use the old trick of pouring a little oil down the inside of the mixing bowl just before the dough is finished mixing to help get the dough out of the bowl.
  - 5) Your target finished dough temperature should be in the 80 to 85F range.
  - 6) Take the dough directly to the bench and turn it out of the bowl onto a lightly floured bench.
  - 7) Work the dough on the bench a couple of times as you presently are to improve the handling properties of the dough.
  - 8) Using oiled hands, scale the dough into desired weight pieces, round into a ball shape, oil the dough ball and place into bread bags (works great where a soft dough is used).
  - 9) Twist the open end of the bag(s) into a pony tail and tuck it under the dough ball as you place it onto a tray (sheet pan).
  - 10) Place the sheet pan with the bagged dough balls on a rack in the cooler and allow to cold ferment for 24 to 48-hours (you will need to test to see what works best for you).
  - 11) Remove a quantity of dough balls from the cooler and allow to temper AT room temperature until the dough reaches 50F.
  - 12) Turn the dough ball out of the plastic bread bag into a bowl of dusting flour and open into a pizza skin by your normal manner.
  - 13) Place opened skin onto a dusted, wood prep-peel and dress the skin to the order, peel into a deck or stone hearth oven for baking.
- Tom Lehmann/The Dough Doctor
- 5) After mixing the dough, allow to rest for 15-minutes  
5784

### **Pizza Ovens / Re: Oven Lamps for up to 500 $^{\circ}$ C / 930 $^{\circ}$ F in Europe?**

You can also use Google or some other search engine to find a plethora of bulbs/bulb suppliers. I was just recently looking for a very specific bulb for my landscape lights and I found suppliers from Taiwan, Japan, China, USA and UK. For search words try high temperature bulbs or oven bulbs. By the way, the bulbs that I was looking for sell locally for just under \$10.00 each and I ended up buying mine

for \$1.39. Ain't the internet great? :)

Tom Lehmann/The Dough Doctor

5783

**Dough Clinic / Re: enhance flavor, crumb, and crust**

If you mean how long can you ferment the sponge for, 18 to 24-hours is about the extreme maximum. A lot will depend upon the temperature that it is fermented at, the amount of yeast used in the sponge and the strength of the flour. An example of a long sponge ferment time can be seen in what is referred to as an overnight sponge - dough process used by some retail bakeries. In this case the sponge is made using only 0.25% yeast (compressed) based on the TOTAL flour weight, after 18 to 24-hours of fermentation the fermented sponge is brought to the mixer along with the dough side ingredients (with a normal yeast level (typically 1% compressed for pizza dough or 3% for bread dough) and mixed as needed for the product being made.

Bread bags (which can be purchased from any bakery supplier) are my preferred method for storing the dough balls, especially when we have a slack dough condition. In many cases we can save the bags for reuse after turning the dough out of it. As long as it doesn't go in front of the counter you should be able to reuse them for an entire week. As we strip the dough out of the bag we just toss the bag into a clean/sanitary white plastic pail or other suitably sized container and reuse just as they are.

Tom Lehmann/The Dough Doctor

5782

**Dough Clinic / Re: Is there any difference in taste between bromated/unbromated flour?**

There is absolutely no difference in the taste of crusts made from bleached or bromated flour as opposed to unbleached and/or un-bromated flour.

The bleaching process is only to make the flour whiter in color and the bromate is used to give the flour a little more tolerance to fermentation as I understand, most bromated flours are only bromated to about 10-ppm (parts per million) of potassium bromate.

Tom Lehmann/The Dough Doctor

5781

**Dough Clinic / Re: Pan dough extremely light and puffy after cooling then baking**

Without knowing more about the dough formula and the flour used I can only take a "SWAG".

The flour was sufficiently strong, possibly even bromated, to recover during baking (oven spring) and because the dough was cold it had a lot more time to rise due to oven spring than the non-refrigerated dough. The difference in tenderness might be explained by the longer fermentation time the refrigerated dough got. Because the dough was probably at proofer temperature (100F) this was most likely pretty substantial.

Tom Lehmann/The Dough Doctor

5780

**General Pizza Making / Re: Question on shaping "stylish" Pizza**

The type of pizza referred to as "free form" seems to be gaining in popularity, but I would not refer to this as a "stylish" or novelty type/shape of crust. Free form is where the dough skin is shaped roughly into a circle or into some form of a oblong.

For a true novelty approach check out Lloyd Pans <[www.llodypans.com](http://www.llodypans.com)> as they have a bunch of different shaped pizza cutters (like giant cookie cutters) like footballs, states, etc.

Tom Lehmann/The Dough Doctor  
5779

### **Dough Clinic / Re: Pan dough extremely light and puffy after cooling then baking**

Pizza Garage;

I am unclear as to the meaning of your second paragraph, would you please explain it to me in greater detail, it seems as if something is missing there especially in the first sentence where panned dough in the fridge is removed from the proofer.....

Is the dough in the fridge already panned?

Tom Lehmann/The Dough Doctor  
5778

### **Newbie Topics / Re: Gluten question**

Actually, high absorption and low protein content as well as unknown protein quality are all ear marks of Mexican flour. The high level of damaged starch is what gives the flour its unusually high absorption properties. Then, as the dough ferments over the next two hours as stated, it becomes soft and probably rather sticky as a result of the enzymes in the yeast breaking down a portion of the damaged starch, as a result, the hydrolyzed starch releases the water it was holding and we have a soft dough that can be very difficult to work with. The things that I would do to help improve the situation are as follows:

- 1) If you can source some vital wheat gluten, add it to your flour at a level of at least 5% of the flour weight, this will result in about a 3% increase in protein content. Be sure to add 1.5-times the weight of gluten added as additional water. Add the dry gluten to the flour and stir in for just a couple of seconds.
- 2) No need to sift the flour.
- 3) Reduce the oil level in your formula to around 2%, this will help to reduce the tenderizing effect of the oil on the dough.
- 4) Put 80F water in the mixing bowl, add salt and sugar (no need to stir) add the flour and begin to mix, as the dough begins to form, add the oil gradually. As soon as the dough is formed and kneaded, divide into desired weight pieces and form each piece into a ball, wipe each dough ball with a little oil and place into a plastic bag, or place it onto a lightly floured surface (counter top) and cover with a piece of plastic to prevent drying. Allow the dough balls to proof/ferment for no more than 1-hour, then immediately begin opening the dough into pizza skins, dress and bake. This is the only way that I know of to get around the high starch damage issue.

Note:

You're kinda stuck using the high absorption, if you don't the dough will be too dry to do anything with.

Tom Lehmann/The Dough Doctor  
5777

### **Dough Clinic / Re: Pan dough extremely light and puffy after cooling then baking**

I'm guessing that the refrigerated dough is getting a bit more fermentation and as the temperature of the refrigerated dough is lower it will allow for more oven spring to take place resulting in slightly greater volume/height which translates into a more tender eating crumb structure. If you were baking both pizzas in an air

impingement oven, such as is used by many pizzerias, where both would be baked at the same temperature for the same period of time you would most likely also find that the refrigerated dough was baked to a lesser degree than the dough that was not refrigerated, of course this is assuming that the oven was set up to bake pizza made with the non-refrigerated dough, if it was set up to bake the pizza with the refrigerated dough just the opposite would be true. The way I explain this to my students is by taking two identical containers and putting the same amount (weight) of water in each, the difference being that one container is filled with 40F water and the other with 100F water, we put both into the same oven, side by side for the same time and find that the container with the 100F water is always warmer than that with the 40F water.

Tom Lehmann/The Dough Doctor  
5776

### [\*\*Focaccia Style / Re: First attempt at focaccia - no knead recipe\*\*](#)

Lookin' good!!!

Sprinkle on some shredded Parmesan cheese before baking for a great added flavor and eye appeal. I like to cut mine in half and then cut one half into strips (cross ways) about 1.5-inches wide for dippin' bread, the other half I cut in half for making two Paninni sandwiches. This gives my wife and I an appetizer and a meal all from one 12-inch focaccia.

Your's looks as good as any that I've ever made, makes me hungry. :) :) :)

Thanks for sharing.

Tom Lehmann/The Dough Doctor  
5775

### [\*\*Dough Clinic / Re: My dough balls overflow so much in the refrigerator\*\*](#)

I had a lot of the very same questions already asked so I'll wait to hear more about your exact procedure as well as times and temps. Keep in mind the time and temperature are the two factors that must be controlled for effective dough management. Do you ball the dough immediately after mixing? For use in a home fridge as opposed to a commercial walk in or reach in, you should probably be targeting a finished dough temperature of around 60F. Also, those pans look like they might store a lot of latent heat thus slowing the cooling of the dough, to correct for this you might place the pans in the fridge or even the freezer for half an hour before putting the dough ball into it. Wipe the top of the dough ball with salad oil and do not cover it when you place it in the fridge as this only serves to trap heat in the dough. After the dough reaches a temperature of 45F you can proceed with covering pans to prevent drying. I know everyone here has heard me say this many times before, but you might want to give this a try to see if it works for you. Immediately after mixing scale and ball the dough, wipe the dough balls with salad oil and drop into individual bread bags, not Zip-Lok. Twist the open end of each bag into a pony tail and tuck it under the dough ball as you place it in the fridge. Now you can just place the dough into the fridge and forget it until you are ready to use it. To use the dough, turn it out of the bag allowing it to drop into a bowl of dusting flour, turn the dough ball over to make sure it is fully dusted, then proceed to open the dough ball in your normal manner.

Tom Lehmann/The Dough Doctor  
5774

### [\*\*Dough Clinic / Re: Problems with Toms PMQ NP dough\*\*](#)

Also, keep in mind that when using a type of flour with unknown quality attributes you may have to experiment with your dough (under your specific kitchen

conditions) to find the fermentation time that works best for you. Back when I used to do a lot of new crop flour testing we would occasionally come across a flour made from a wheat variety that had extremely poor tolerance to fermentation. This resulted in a dough that looked good right up until it was fermented, then after as little as 3 or 4-hours fermentation (80F) the dough would show signs of collapse and would not recover.

Don't be afraid to experiment, and unless something goes catastrophically wrong you can always eat those failures and no one will be any the wiser, it's the success stories (pizzas) that we all like to share with others. I think it would be very safe to say that we have all eaten our fair share of less than stellar pizzas in search of the perfect pizza.

Tom Lehmann/The Dough Doctor  
5773

### **Dough Clinic / Re: Dough is too dense and chewy.**

It would help if you had your dough recipe given if weight measures or in bakers percent as that would allow us to determine if your dough is in correct balance. Also, with the way you are adding the yeast, I assume it is IDY (instant dry yeast) as opposed to ADY (active dry yeast, which needs to be hydrated before use) With that said, I think all your dough needs is more fermentation. As long as your dough is mixed to a smooth consistency if has sufficient mixing. Remove the dough from your bread machine as you presently are, form it into a ball and place it into a suitably sized container that has been lightly oiled. Lightly drape the bowl with a sheet of plastic to prevent drying, and set aside to ferment for 2.5-hours. Turn the dough out of the bowl, cut into the desired number of pieces, reform each piece into a ball and place on a lightly oiled counter top or sheet pan to proof for about an hour, or until the dough can be easily opened into a pizza skin. Open by hand and not with the use of a rolling pin as this will give you a much better finished crust. Dress as desired, bake until lightly browned.

Let me know if this helps.

Tom Lehmann/The Dough Doctor  
5772

### **General Pizza Making / Re: Ingredients**

When it comes to ingredients you really don't need very much, and that which you do need is readily available at most supermarkets, or if you make a run to a club store you can get 6-months to a years supply to work with.

The ingredients that you will need are:

Flour: Buy some different flours at first to see what works best for you. All purpose and bread flours are the most commonly used, but if you need a high protein flour to work with most restaurant suppliers will sell you a 50# bag, or just look for Pillsbury Bread Flour (about 12.2% protein content) at your local supermarket.

Salt: Sea salt, Kosher salt, non iodized table salt (the choice is up to you).

Sugar: Only if you really need it (table sugar, raw sugar, honey, molasses, non-diastatic malt powder or syrup) your call.

Yeast: Most of us like to use instant dry yeast (IDY) but many use active dry yeast (ADY) or compressed yeast (CY). Again, your call, use the one that is most readily available to you.

Water: I think it would be safe to say that most use just plain tap water, but if bottled water makes you feel better, go for it. Just try to stay away from distilled/deionized water as they don't contain the minerals necessary to making really great dough.

Olive oil: I normally use just plain old Pomice oil, but any run of the mill olive oil

will work just fine (save the really good stuff for use as a dipping oil). If you can't get olive oil Canola oil or any vegetable based salad oil will also work.

While you're at it, snag a small bag of semolina flour from the supermarket too (you can use it to make a flour blend consisting of 25 to 50% semolina flour with the remainder your regular flour to make some truly great pizzas)

Remember, it isn't so much the ingredients that you use, but rather how you combine them to make your dough and how you end up baking your new creations. Above all else, enjoy experimenting!

Tom Lehmann/The Dough Doctor  
5771

### [\*\*Newbie Topics / Re: Problem with pie \(flour, oven?\)\*\*](#)

Angus;

You might also be blessed (not in a good way) with flour having a high level of starch damage. When a dough is made using a high starch damage flour the absorption is initially high, but upon fermenting/resting the dough just continually gets softer and more sticky. To determine if this is the case, reduce your total dough absorption to 56% (177.48-grams) and mix the dough as you are presently mixing it. The dough should be slightly dry and easier to handle, then place the dough into a lightly oiled container, drape it with a piece of plastic to prevent drying and allow it to ferment for 90-minutes, turn the dough out onto a lightly floured surface and see if the dough continues to handle well or if it has become softer and much more sticky (this indicates that you have a high starch damage flour). If this is the case you will need to use a lower dough absorption and limit your total fermentation time (mixing to oven) to not more than 60-minutes. If the dough does not become appreciably softer and stickier, try this:

- 1) Mix the dough just until it comes together.
- 2) Place the "mixed" dough into an oiled container and allow it to ferment for 60 to 90-minutes, then turn the dough out of the container onto a floured surface and knead the dough just until it becomes smooth.
- 3) Divide the dough into desired size/weight pieces and place each piece into an oiled container or oil each piece and place into individual plastic bags, twist the open end to close the bag and tuck the pony tail under the dough ball as you now place it into the fridge to cold ferment.
- 4) Remove a dough ball from the fridge after 24-hours, allow it to warm at room temperature to about 50F/10C and open into a pizza skin.
- 5) Dress the skin and bake.

Repeat this for several days if the dough remains fairly easy to handle. This will give you a good idea of how long you will be able to hold your dough in the fridge to further develop flavor.

Tom Lehmann/The Dough Doctor  
5770

### [\*\*General Pizza Making / Re: Ingredients\*\*](#)

Hummm, meats and tomatoes. For meats just let your imagination guide you (beef, pork, chicken) for processed meats like pepperoni you will need to search out one that you like (people seem to be all over the board with pepperoni). Ditto for tomato, but one of my personal go to's is a can of whole plum tomatoes, drain the juice off or save it for your next pasta sauce, using your hands, tear the tomatoes apart into medium size pieces, place these pieces of tomato on the skin instead of a traditional sauce (do not go for 100% coverage) I find that when I do this I can get a crispier pizza than I do with a traditional sauce. When tomatoes are in season locally, get some vine ripened tomatoes, slice about 3/16-inch thick and place on

sheets of paper towel or any absorbent towel to remove excess moisture, place the slices on the pizza skin instead of sauce. If you want to add any flavoring such as garlic and basil, put diced or crushed garlic on the skin and then add a few fresh basil leaves followed by the tomatoes, this is a hard to beat base for a great pizza.  
Tom Lehmann/The Dough Doctor  
5769

### [\*\*Chitchat / Re: Pizza = healthy Food?\*\*](#)

Hi Norma;

If you look at a formula (like the chocolate chip cookie formula mentioned) in true percent as opposed to bakers percent you can easily see what happens to the sugar level when you reduce or eliminate the fat from the formula. The biggest problem experienced with pizza is the fact that we just eat too much of it (portion wise). If we would just limit ourselves to just one, or two slices at the most of a 10 or 12-inch pizza (cut into 8-slices) there would be very few health concern about pizza in general. Before my retirement we were working on developing a more healthy pizza presentation that would appeal to the masses. This pizza was based on a multi-grain crust that was made with 35% of a multi-grain blend (flour, multi-grain blend, Salt for Life (70% less sodium than regular salt), olive oil, yeast, and water. The crust was made on a very thin format. The toppings for a 12-inch pizza included 1.5 fresh tomatoes sliced 3/16-inch thick and placed over the pizza skin, a few fresh basil leaves, and only 3.5-ounces of fresh Mozzarella cheese (torn/pealed like an orange). For additional toppings we were working with some vegan meats (Tim Smith at <tsmith@beyondmeat.com> you've got to try their product to believe it, as well as various poultry toppings and of course, vegetables. I was just recently working for a pizza chain that specializes in a "healthy" pizza presentation, we couldn't get a multi-grain blend while I was there so we made our own from various grains that we found at the local supermarket, after soaking, they were added to the dough about half way through the mixing time to preserve the integrity of the grains. Finished crusts were higher in fiber, lower in carbs and had a great flavor and appearance.

Tom Lehmann/The Dough Doctor

5768

### [\*\*Chitchat / Re: Pizza = healthy Food?\*\*](#)

Noirma;

The very thin format is just another way of saying a very thin crust of no particular type. In the work that we were doing the dough was sheeted to about 9-inches in diameter and then hand stretched the rest of the way out to 12-inches. The dough weight that we were working with was 7-ounces but our goal was to see if we could get that down to 6-ounces and still be able to produce it in a typical pizzeria. Yep, the Salt for Life is the one that you can get at Walmart. It is still my "go to" salt when I'm trying to achieve a significant reduction in sodium content while still maintaining a decent flavor profile in the finished product.

Tom Lehmann/The Dough Doctor

5767

### [\*\*Hearth Ovens / Re: metal chimney decaying / fragmenting on the inside\*\*](#)

Jamieg;

The acids mentioned are the by-products of yeast fermentation which are generated and released during the baking of the pizza. Additionally alcohol is also released which is also corrosive to metal. As there are different types of stainless steel I would suggest that you discuss the best type to use with an engineer that is

familiar with working with commercial oven stacks. You might try contacting R.T. Bundy in Urbana, Ohio to see if you can talk to one of their engineers. You might even be able to buy a length of whatever is recommended from them, or they might be able to direct you to a supplier. The advice to fully insulate the stack pipe is spot on, by insulating the stack you will be able to prevent much of the condensation which concentrates the acids and alcohol which is the real culprit here. Just be sure to use an insulation that is approved for use in high heat applications.

Tom Lehmann/The Dough Doctor

5766

### **Dough Clinic / Re: dough issue**

Most likely what you are looking at are lumps of un-hydrated flour or possibly even oil soaked flour. This is a common experience with dough that is mixed by hand, especially when it is minimally mixed. To get around the problem I normally just mix/stir the dough a little longer, and to prevent the flour from getting oil soaked I like to hold the oil back until after I have the flour and water well incorporated, then add the oil and continue mixing a few more minutes to incorporate the oil.

Tom Lehmann/The Dough Doctor

5765

### **Dough Ingredients / Re: Ginger Ale in Dough?**

Peter;

One way we have looked at using various liquids in dough (wine, beer, soda, etc.) is to look at the total solids content of the liquid in question and divide the weight of those solids by the total weight of the liquid portion then multiply by 100, this gives us the percent (true) of solids, with this number we can adjust the liquid to provide any amount of liquid or solids needed for the dough. In this case, looking at sugar we have 12-ounces X 28.4 = 340-ml/grams (close enough for making dough). Since we know the sugar content is 33-grams we divide 33 by 340 X 100 = 9.7%, or for every 100-grams of soda that we add we will also be adding 9.7-grams of sugar (again, close enough for dough), so if we want to limit our sugar contribution to 5% based on 16-ounces of flour (22.72-grams) we would need to add 234.22-g/ml of the soda to the dough with the remainder of the dough absorption coming from tap water.

Just another way of looking at it.

BTW: the easy way to find the amount of soda needed to provide a specific amount of sugar (in this case 22.72-grams) is to divide the weight of sugar needed by 9.7 (grams of sugar provided by 100-grams of soda) and multiply that number by 100 (22.72 divided by 9.7 = 2.342 X 100 = 234.22). To test that answer (I'm old school) simply find 9.7% of 234.22 (234.22 X 9.7 (press the percent key) and read 22.719 (the amount of sugar we want to add to the dough)

Tom Lehmann/The Dough Doctor

5764

### **General Pizza Making / Re: Does some cheese burn more easily than others?**

When I use fresh mozzarella cheese, I drain it well, and pat it dry, then I like to peel it like an orange and place the pieces on the pizza. The pieces are fairly thin and excess moisture is easily evaporated off during baking.

Tom Lehmann/The Dough Doctor

5763

### **Hearth Ovens / Re: metal chimney decaying / fragmenting on the inside**

The by-products of combustion while corrosive are actually pretty mild when compared to what happens when we introduce a yeast leavened product into the mix. In commercial ovens this used to be a primary concern until we learned how to address the problem. A number of years ago I was in a bakery that was cited for having rust on the inside roof of their oven, to correct the problem they lined the entire oven with stainless steel but neglected to consider that it would be cooler behind all that stainless, the acids condensed behind the stainless and within 18-months completely rusted out the superstructure of the oven, it was a 200-foot long tunnel oven and when the superstructure gave way the oven folded in the middle and with the conveyor still running it was flopping on the floor like a fish out of water, quite a sight to see.

Tom Lehmann/The Dough Doctor  
5762

### **Dough Ingredients / Re: Ginger Ale in Dough?**

Steelplayer;  
The citric acid in the soda is an acidulant, meaning that it will acidify the dough to some extent which is usually a good thing where yeast is concerned as yeast is a acid loving micro-organism so it will most likely improve the yeast performance to some extent. Soda, on the other hand is an alkali so it will raise the pH of the dough (higher number) which will typically slow or in some cases even stop the yeast from fermenting.

Tom Lehmann/The Dough Doctor  
5761

### **Prep Equipment / Re: Would a Marble board work better than a peel?**

In addition to making your pizza on a piece of parchment paper you could also make it in shallow, dark colored anodized pan (American Metalcraft: [www.amnow.com](http://www.amnow.com)), then allow the dough to proof for whatever time you feel is appropriate, transfer to the oven to bake for a few minutes (dough will continue to rise for the first few minutes in the oven) and as soon as the dough has "set" slide the pizza out of the pan to continue baking on the oven hearth.

Tom Lehmann/The Dough Doctor  
5760

### **New York Style / Re: pizza with fruit (grapes, apples, etc.)**

We have been making what we simply call a dessert pizza for a good number of years now, like yours it is a giant leap above what many think of as a fruit or dessert pizza. Here is how we make ours;

16-ounces of cream cheese

8-ounces of powdered sugar

Blend above until smooth.

Add 2-whole eggs and blend in until smooth.

Add 16-ounces of sour cream and 16-ounces of ricotta cheese and mix until smooth. Mix the above until smooth, the mixture should have the consistency of mayonnaise or very soft butter, if it is too stiff or firm, add cream to thin the mixture to the correct viscosity. Prepare a crust as follows:

Using a regular pizza crust, brush the surface with melted butter, then generously sprinkle with a cinnamon sugar mixture edge to edge.

Prepare apples (just about any kind works well) by slicing and removing the core but leave the peel on, place into a bowl of water to which lemon juice has been added to prevent the apples from browning.

Prepare bananas by slicing about 1/4-inch thick and placing in the same lemon

juice water as the apple slices.

Slice kiwi, and strawberries (mango and fresh (not canned) peaches are great too). Other toppings that we add are blueberries, black berries, raspberries red and green grapes, pineapple pieces, coconut, and lightly toasted pecans. From this point on use your imagination. Remember, all of these do not need to be used, time on the pizza, just choose some that will make an attractive presentation with regard to color.

Spread the cheese mixture on the prepared pizza skin about 1/4-inch thick (no thicker), then add the desired toppings and bake as you would any regular pizza.

When the pizza comes out of the oven set it aside to cool for several minutes then apply a drizzle of powdered sugar-water icing and serve. These pizzas can be served hot, cold, reheated or hot with a scoop of ice cream. A good friend of mine makes them a little differently, he uses well drained fruit cocktail to replace the fresh fruit and finishes the pizza with a drizzle of sweetened condensed milk right out of the can.

Just don't use pie filling on a pizza.....ever!

Tom Lehmann/The Dough Doctor  
5759

### **Newbie Topics / Re: Cutter Pan Size**

In addition to Lloyd's Pans, American Metalcraft also catalogs the cutter pans in 14" (top dia) <[www.amnow.com](http://www.amnow.com)> (page 229 of their new, 2015 catalog).

Tom Lehmann/The Dough Doctor  
5758

### **Dough Clinic / Re: Pizza Crust Questions**

PPG;

If you go to the Pizza Marketing Quarterly (PMQ) web site at <[www.pmq.com](http://www.pmq.com)> and go into the RECIPE BANK you will find a complete formula/recipe for a basic home made pizza that has a very good track record. There are many different types of pizza that you can make, but this is just a good basic recipe than can be modified as necessary to provide specific characteristics in the finished crust that you may be looking for. Generally any good bread flour will work well, and as for the type of yeast to use, any type of baker's yeast will work well for you if used according to package instructions. When making pizzas at home by machine you can use instant dry yeast (IDY) by adding it dry to the flour, but if you will be mixing by hand it is best to pre-hydrate the IDY in warm (95F) water for about ten minutes just as you would active dry yeast (ADY). The same can be said for compressed yeast (fresh yeast). When staging the ingredients into the mixing bowl I like to add the water first, then add the salt and any sugar to the water (no need to stir), this is followed by the flour. Begin mixing the dough until it looks something like wet oatmeal, then add the oil and continue mixing. Another way is to put the oil into the water, then add the flour and immediately begin mixing. I like the first method, but a lot of people like to use the second method, experiment to see what works best for you.

Tom Lehmann/The Dough Doctor  
5757

### **Dough Clinic / Re: Beginner dough questions!**

Mike;

I've got a home made dough recipe posted in the RECIPE BANK on the PMW web site <[www.pmq.com](http://www.pmq.com)> click on Food & Ingredients, then the Recipe Bank drop down, use "pizza dough for your search, scroll down to Home Style Pizza Crust. You will want to make the following changes:

- 1) Replace the flour shown with Caputo-00
  - 2) Increase the water to 10-ounces.
  - 3) After step #5 divide the dough into desired weight pieces, oil each dough piece and place into individual plastic bags (bread bags work great, food bags work great too, but not Zip-Lok bags) twist the open end of the bag into a pony tail to close then tuck the pony tail under the dough ball as you place it in the fridge. The dough will be ready to use after 24 to 36-hours. To use the dough, remove it from the fridge and allow it to temper AT room temperature for about 90-minutes, then turn the dough ball out of the bag into your dusting flour and begin opening the dough into pizza skins by your preferred method.
  - 4) If you prefer to use sea salt it can be substituted at the same level as shown. This should get you started on the path to experimenting with making pizza. Remember, your mistakes will taste just as good as your successes.
- Tom Lehmann/The Dough Doctor  
5756

### **Dough Clinic / Re: An experiment that failed impressively**

When mixing the dough by hand, or by machine for less than 5-minutes it is recommended that IDY be pre-hydrated in a small quantity of water at 95F. There is a distinct possibility that the yeast level was either insufficient or did not activate very well (most likely a combination of the two) to become the dominant micro-flora in the dough, this would allow for some other bacteria to become dominant resulting in the development of a "funky" aroma and equally impressive taste were you to proceed with making a crust out of the dough.

Just an educated guess.

Tom Lehmann/The Dough Doctor  
5755

### **Dough Clinic / Re: Pizza Crust Questions**

Oops, thanks for catching that. I neglected to add the addition of the yeast. When making dough at home I normally add the yeast suspension to the water in the bowl immediately before addition of the flour, then begin mixing and all is good. It's important to begin mixing soon after you add the yeast suspension to the water, if not mixed fairly soon the salt and sugar in the water can have a potentially negative impact upon the yeast activity. While I'm thinking about it I guess you could also add the yeast suspension to the water first and then add the salt and sugar (if used)just before you add the flour and begin mixing. Either way should be fine.

Tom Lehmann/The Dough Doctor  
5754

### **New York Style / Re: Cold fermented dough for the first time (pepperoni and shrooms)**

That's a great lookin' pizza! :)  
Can you share the details of how you made it?  
Tom Lehmann/The Dough Doctor  
5753

### **Dough Clinic / Re: Beginner dough questions!**

Mike;  
Just go back to the recipe I directed you to in PMQ (RECIPE BANK) and delete the oil. Main thing is to get the oven hot enough if you want the real deal.  
Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Total dough ball weight**

DDT;

To get you started here is the procedure:

- 1) Determine how much dough you want to make, in your case 3 dough balls at 326-grams each = 978-grams (to allow for some loss let's use 1,000-grams as the amount of dough needed.)
- 2) Add up the bakers percent for all of the ingredients you use in your dough (it will probably come in close to 170)
- 3) Move the decimal two places to the left on this number ( $170 = 1.70$ )
- 4) Divide the desired dough weight (1,000-grams) by 1.70 to get the total flour weight needed to make 1,000-grams of dough.
- 5) Now all you need to do is to enter the new flour weight (let's say 588.2, call it 583-grams) in your calculator then press "X" then enter the ingredient percent you want the weight for and press the "%" key. Read the ingredient weight in the display window. Repeat this for each ingredient and you have a new formula sized to give you 1000-grams of total dough weight.

Hope this helps,

Tom Lehmann/The Dough Doctor

5751

**Dough Clinic / Re: Total dough ball weight**

DDT;

It appears that you don't yet have your recipe in formula form (bakers percent). One easy way to convert any recipe into bakers percent is to weight each ingredient three times and record the weight of each weighing (be sure to tare the container first) after you have weighed each ingredient three times divide the total weight for each ingredient (sum of all three weighings) by three to find the average weight of each ingredient. Then assign 100% to the flour weight. Divide each average ingredient weight by the average flour weight and multiply by 100 to get the bakers percent for each ingredient. Your recipe is now a formula given in bakers percent. In this form you can very easily manipulate the size of the finished dough up or down in weight.

Tom Lehmann/The Dough Doctor

5750

**Shop Talk / Re: How long does it take you to cut and ball dough**

Additionally, if your dough management procedure calls for taking the dough directly from the mixer to the bench for scaling and balling the maximum time that the dough, regardless of size, should be processed (scaled, balled, and into the cooler) is 20-minutes. Failure to follow this guideline can result in inconsistent dough performance or even blown dough. Just as a point of reference, two of us can cut/scale, ball, box and put into the cooler a dough based on 50-pounds of flour weight (about 87-pounds/ 12-ounce dough ball weight/116 dough balls) just inside the 20-minute mark. We've done this for years to demonstrate to our students that it can be done, and no, we don't do this all the time for a living, we only do it once a year during our annual pizza seminar. If you go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> there might be a video demonstrating how we do this.

Tom Lehmann/The Dough Doctor

5749

**Dough Clinic / Re: Mr Dough Doctor**

Bill;

I'm going to assume you will bake the pizza in a home oven, and the pan is dark colored.

To make a pretty basic pizza here is something to start with:

- 1) 9-ounces
- 2) 4.26
- 3) 9.372
- 4) 8.52

This should give you a pizza from which you can bench mark and then adjust the formula accordingly to give you the pizza characteristics that you want.

Tom Lehmann/The Dough Doctor

5748

### **Newbie Topics / Re: Ball to Bench Process**

Hate me if you want, but try using a bread bag or "food" bag (not a Zip-Lok bag). Just lightly oil the dough ball, drop it into the bag, twist the open end into a pony tail and tuck it under the dough ball as you place it in the fridge, if you want to stack them in your fridge to save space, put the bagged dough in your existing plastic container uncovered for a couple hours, then cover and stack. To use the dough just invert the bag to turn the dough out. I like to turn the dough out into a bowl of dusting flour that I will use to open the dough balls into pizza skins. The dough maintains a nice round shape and doesn't get damaged or stretched during removal from the bag. You can reuse the bags a number of times too.

Tom Lehmann/The Dough Doctor

5747

### **Newbie Topics / Re: Chicago Deep Dish Pan: Anodized(dark) vs. Aluminum(silver)**

Brewman;

I think it would be safe to say that in most cases a dark colored pan will be better than a bright silver colored pan. The reason being that the silver color reflects heat away from the pizza while a dark colored pan absorbs heat. Additionally, all dark colored pans are not created equally, some are nothing more than some type of finish baked onto the pan, others have an anodized finish applied that is much more durable and then there is the premium pan, made by <[www.lloydpans.com](http://www.lloydpans.com)> which has a proprietary finish that is both bonded to the metal and has non-stick properties to boot. If you vigorously rub the finish on these pans with the edge of a quarter you will create a flat spot on the quarter but do no damage to the finish on the pan, that's the good news, the bad news is that like other premium things they are more pricey than other pans, but you'll never wear it out.

A good depth for a deep-dish pan is either 2 or 2.5-inches deep with the 2-inch depth being the more common.

Tom Lehmann/The Dough Doctor

5746

### **Dough Clinic / Re: Help from Mexico ,,,I'm new help me with my dough please**

In Mexico much of the flour is milled to a very high level of starch damage (about 16%) which can make it impossible to do an overnight cold ferment on the dough as the dough slowly turns into soup within a short time after mixing. Try this, mix a small dough and after mixing set it aside to ferment at room temperature, after 90-minutes come back to the dough and form it into dough balls. If the dough handles

well it is an indication that the flour has a low level of starch damage, but if the dough is soft and extremely sticky your flour has a high level of starch damage. This is important to find out before making and recommendations as it will impact how the dough must be handled once it is mixed.

Tom Lehmann/The Dough Doctor  
5745

**Dough Clinic / Re: IDY distribution problem i;<sup>1/2</sup>.**

JVP123;

IDY can be added directly to the formed dough without any problem just so long as the dough is still mixed for at least 5-minutes after the yeast has been added.

Tom Lehmann/The Dough Doctor  
5744

**Dough Clinic / Re: IDY distribution problem i;<sup>1/2</sup>.**

JVP123;

When I mix my doughs by hand (which I usually do at home) I like to suspend the yeast (IDY/ADY/CY) in a small portion of warm (95F) water, then stir until the yeast is completely suspended and pour into the cold water that I will use for making the dough. The addition of IDY to the flour or to the dough is recommended only if you are using a mixer as opposed to mixing by hand.

Tom Lehmann/The Dough Doctor  
5743

**New Forum Members / Re: I need help to make some killer pizza..**

Mike;

Save yourself a lot of wasted energy by trying to perfect your pizzas at home in a different oven from what you will actually use. To get around the problem you are experiencing with your commercial oven at home you will need to contact an electrician to determine what amperage draw the oven has. If your home has sufficient amperage you might be able to put the oven on its own dedicated line, or you may need to increase the amperage at your breaker box. The worse case scenario is that you would need to have a dedicated breaker box and have a new line run from the power source (pole?) to your home. A good working dough formula to begin with is as follows:

Flour (strong bread flour) 100%

Salt: 2%

Yeast (instant dry yeast IDY) 0.375%

Water: (about 70F) 60%

Oil: 2%

Procedure:

Add water to mixing bowl

Add salt

Add flour

Add yeast dry directly to the flour

Mix for 1.5 to 2-minutes to hydrate the flour then add the oil

Your target finished dough temperature is 80 to 85F

Immediately take the dough to the bench for scaling and balling

Place dough balls into plastic dough boxes and oil the top of the dough balls

Take to the cooler and cross stack for 2-hours then down stack and allow to cold ferment for 24 to 48-hours

To use the dough, remove dough balls from the cooler, allow to temper AT room temperature about 2-hours or until the dough reaches 50F before you begin

opening the dough balls into pizza skins

If you will share with me how you plan to manage your slice operation I can provide additional input.

I hope this helps you get started.

Tom Lehmann/The Dough Doctor  
5742

**Dough Clinic / Re: The human hand VS technology.**

TRB;

Thank you for being a loyal follower of my PMQ articles.

While there are machines from A-M Manufacturing that will automatically both divide and round (ball) the dough, the stand alone dough rounders are much more commonly encountered except in a commissary operation where the high speed and capacity of the divider/rounder (1,200 to 1,500 pieces per hour) can be effectively utilized. When using a dough rounder the dough is cut/scaled manually and tossed into the rounder where it is mechanically formed into a uniform round ball. As for degassing the dough, this is never a problem since the dough is rounded immediately or very soon after mixing, after rounding, the dough is then fermented for whatever your dough management procedure calls for. Do keep in mind though that there are some types of dough that cannot be rounded using this type of equipment, these are typically very high absorption, wet, slack, sticky doughs. If in doubt as to whether your dough will process through a divider/rounder or stand alone rounder contact the manufacturer to find out if the equipment will work with your dough.

As for special baking platforms for baking "mega-size" pizzas check with Paul Tiffany at Lloyd Pans <ptiffany@lloydspans.com> as they have baking platforms designed specifically for this. My pizza partner from when I was at AIB (Jeff Zeak) does Pizza Expo each year working in the XLT oven booth and one of the things he makes is a 72-inch diameter pizza, while he does this in an air impingement oven, it might also be able to do this in a deck oven too. I say MIGHT because in a deck oven, regardless of make, you will have hot spots requiring that the pizza be moved/rotated during baking to achieve a uniform bake and when the pizza pretty well fills the entire oven cavity it's a bit problematic in figuring out how you're going to rotate the pizza. This problem doesn't exist in an air impingement oven as the entire pizza is uniformly baked in a single pass.

Tom Lehmann/The Dough Doctor  
5741

**Dough Clinic / Re: Storing dough in the fridge**

If you leave the containers un-lidded for a couple of hours as you did you should have no problem with excessive gas pressure popping the lids off. Both methods work well, but because there is a difference in the rate of dough cool down between the two methods pick one and work with it.

Tom Lehmann/The Dough Doctor  
5740

**Dough Clinic / Re: Oil or sugar???**

DDT;

If you like everything else but just want to get a little more color to the top of the crust I would suggest brushing the outer rim of the pizza skin with a very small amount of oil just before placing it in the oven for baking. Oil in the dough will not have much of an impact upon the crust color and sugar, while helping to give more top color to the crust it will also increase the bottom color even more and that may

not be what you want.

Tom Lehmann/The Dough Doctor

5739

**Dough Clinic / Re: The human hand VS technology.**

TRB;

When using the rounder as described you would take the dough directly from the mixer to the bench for scaling and then immediately through the rounder, you would then allow the dough balls to ferment for the 4-hour period of time or whatever time you elect to ferment the dough.

Tom Lehmann/The Dough Doctor

5738

**Dough Clinic / Re: Oil or sugar???**

DDT;

With 18-hours of fermentation time putting more work into the dough prior to scaling and balling will not have any impact upon the finished dough, but replacing a portion or all of the A.P. flour with bread flour will have the desired effect upon the finished dough skin.

Tom Lehmann/The Dough Doctor

5737

**Dough Clinic / Re: Storing dough in the fridge**

TRB;

There is specialized laboratory equipment that does just that. measures the amount of gas produced in specific periods of time under controlled conditions. This is how we determine the potency of different types of yeast as well as the impact of storage time and temperature on yeast. When we used to make wine we used a gas trap and bottled the wine when the bubbles entering the trap reached a prescribed number per minute. When we were making distilled spirits we would allow the fermentation to proceed until all gas production ceased and then we'd take it to the still for distillation. It could be done with a dough since gas production is a function of the amount of fermentation having taken place. You would need to measure the gas produced by the yeast and then evaluate the dough for the characteristics you're looking for, once you have the characteristics you can then correlate that to the amount of gas produced and theoretically, if you were to ferment all following doughs to the same amount of gas production the fermentation should be close, HOWEVER it is well known also that the temperature of the dough also impacts the type of acids formed during the fermentation process thus also impacting finished crust flavor so all of those following doughs would need to be fermented at a like temperature, and since temperature is one of the main controlling features for yeast fermentation it might just be easier to control the dough temperature and then ferment to time, kinda takes us back to where we started.

Tom Lehmann/The Dough Doctor

5736

**Dough Clinic / Re: The human hand VS technology.**

TRB;

I'm not a medical doctor, but I've stayed at Holiday Inns, so here goes, Since fermentation hydrolyzes starch into sugars for the yeast to feed upon and the byproducts of fermentation acids, carbon dioxide and alcohol plus the protease enzymes naturally present in the yeast all contribute to degrading the proteins in the flour, I would suggest fermenting your dough as long as possible. I can't say

how long that is but when you have reached a point of too much fermentation the dough will exhibit collapse, may take on an acid or undesirable flavor and exhibit stickiness as well as poor volume/height characteristics in the finished crust. I don't know if this will also help, but many people report less intestinal distress when eating pizza made with only fresh green leaf basil as a flavoring (no dried basil, dried oregano or fresh oregano). Garlic doesn't seem to present a problem.  
Tom Lehmann/The Dough Doctor  
5735

### [\*\*Dough Clinic / Re: Help from Mexico ,I'm new help me with my dough please\*\*](#)

You're probably correct about the oven, it sounds like you don't have enough top heat. What is your baking time and temperature that you're using at present? As for mixing, I'll assume you are going to hand mix the dough. Put water (26C) in a bowl, add the yeast to the water in the bowl (assuming fresh/compressed yeast) and stir to suspend the yeast in the water. Add oil to the water immediately followed by the salt and sugar (if you use sugar), no need to stir or mix. Immediately add the flour and begin mixing. Mix for several minutes to get good distribution of ingredients throughout the dough. Turn the "dough" out of the mixing bowl onto a lightly floured surface and begin to knead the dough by turning and folding the dough. Knead the dough just until it looks smooth and feels somewhat elastic. Divide the dough into desired size/weight pieces, form into dough balls, wipe the dough balls with oil, place into individual plastic bags twisting the open end to close and tucking it under the dough ball as you place it in the fridge. Allow the dough to cold ferment in the fridge for at least 24-hours, 48 or more is better. Remove dough from the fridge, allow to warm at room temperature until the dough reaches 10C, or you can just allow it to temper for 90-minutes before you begin opening the dough balls up into pizza skins. Turn the dough out of the bag into a bowl of flour, dust all sides of the dough ball with flour. An easy way to open the dough balls is to roll the dough out using a rolling pin to about 2/3 of the desired diameter (this will not degas the dough) then finish opening the dough to full diameter by bench stretching. Once the dough is opened to the desired diameter, place onto some type of baking platform (pan, disk, parchment paper, etc.), dress the dough as desired and bake at a temperature of at least 500F/260C. This should get you started.  
Tom Lehmann/The Dough Doctor  
5734

### [\*\*Shop Talk / Re: steam for small deck pizza oven\*\*](#)

Ralph;  
When making rustic breads you only need to have steam in the oven for the first couple minutes of baking, this allows for sufficient time to get the desired oven spring before the crust begins to set. We have successfully used pans of hot water in the oven while at the same time misting the dough immediately before placing it in the oven. With a little experimenting you will be able to figure out how much water to put into the pan (the larger the surface area the better) so it is completely evaporated inside of 5-minutes, this way you will not need to open the oven to remove the water filled pan. With a good stone hearth oven you can swab the oven

deck with a wet mop as you put the bread into the oven to accomplish the same thing, but with anything else you will most likely crack the deck.

Tom Lehmann/The Dough Doctor  
5733

**[Pizza Cheese / Re: Need some advice](#)**

Different cheese from different manufacturers can/will perform differently in different ovens due to differences in baking temperature, baking time, top/bottom heat balance as well as airflow characteristics of the oven. I'd suggest going back to whoever is trying to change you over and ask for a sample to work with to see how they compare in your oven specifically. No sample, no change.

Tom Lehmann/The Dough Doctor  
5732

**[Dough Clinic / Re: Mixers](#)**

It should work just fine for you.

Tom Lehmann/The Dough Doctor  
5731

**[Dough Clinic / Re: Converting from a same day dough to a 3 day cold ferment - questions...](#)**

P.B.:

In going to an extended cold ferment I would suggest reducing the IDY to something in the 0.375 to not more than 0.5% range. Adjust your water temperature to give you a finished (mixed) dough temperature in the 70 to 75F range. As for fermenting the dough you will always achieve more uniform fermentation by cutting the dough into individual pizza weights and forming into balls which are then fermented as opposed to fermenting the dough in a large mass which can be all but impossible to cool efficiently.

Tom Lehmann/The Dough Doctor  
5730

**[Dough Clinic / Re: Highest Bromated flour](#)**

Ruu:

Staying with the G.M. brand of flours your best bet will be to use All Trumps which comes in at approximately 14.2% protein content. You won't find any flour containing more than about 15-ppm potassium bromate (if I remember correctly, 20-ppm is the legal limit for use).

As for the gluten, all vital wheat gluten is sort of a tan color, that's just the nature of the beast. I've never seen the use of added gluten turn the crumb of the finished bread to an off color when use at normal levels, typically between 3 and 10% based on the weight of the total flour. Keep in mind that each 1% vital wheat gluten that you add (based on the total flour weight) will increase the total protein content of the flour by 0.6%, so the addition of 2% VWG to All Trumps flour will give you roughly 15.4% protein content. Also, be sure to increase the dough absorption by an additional 2% for each percent vital wheat gluten added. As for dough conditioners, I am assuming that you mean dough strengtheners. There are numerous dough strengtheners available but you might have a problem accessing them as they are intended only for wholesale applications. In any case, you might contact Cain Food Industries, Dallas, Texas. They might still have their bromate tablets available, but if not, they have oxidative enzymes that are very effective at replacing bromate without the associated potential health issues of bromate. By the way, the flour that you referenced contains 50 to 60-parts per million (PPM)

potassium bromate. This is a level of bromate that has not been used in the U.S. since the late 1960's. The use of bromate has been banned just about world wide due to its potentially carcinogenic implications.

Tom Lehmann/The Dough Doctor  
5729

### **Dough Ingredients / Re: Cornmeal question**

My own personal preference is a blend of equal parts flour, semolina flour and cornmeal. Whatever you use you want to use just enough to get the job done and not get carried away with it.

Tom Lehmann/The Dough Doctor  
5728

### **Newbie Topics / Re: ratio of flour to water**

Without a scale it is hard to "guesstimate" the the dough absorption, especially at 60% since 70% absorption will make quite a dramatic difference (softer dough). Whit that said though I've got a feeling that the issue might be with your particular flour. All flour is NOT the same, soft wheat flour, hard wheat flour, high protein, low protein, high starch damage, low starch damage, fine particle size and coarse particle size, any of these can/will impact the dough absorption, for this reason it is recommended that you determine the best absorption for your particular flour by the trial and error method, make doughs with different absorptions and see which one works best for you. Once you find the absorption that works well for your flour you can begin making different styles of crusts be increasing or decreasing the absorption to get the dough/crust characteristics you're looking for.

Tom Lehmann/The Dough Doctor  
5727

### **Off-Topic Foods / Re: Pizza screen**

By attaching a couple of wire handles on then they also make a pretty decent platform to proof your home made yeast raised donuts on. After the dough has proofed, just lower the screen with the donuts on it into the frying fat, turn the donuts to complete the frying process and lift the screen out by the wire handles, donuts and all, then transfer to a screen for draining off the excess oil.

Tom Lehmann/The Dough Doctor  
5726

### **Dough Clinic / Re: Highest Bromated flour**

Ruu;

What you were using was a bromated form of Arkady Yeast Food. Or, you were using bromate tablets made by British Arkady. The tablets are essentially the same as those available from Cain Food Industries. You might ask them if they have an office on the east coast, or you can try Watson Foods (Google to get more information) I know they have a lot of the oxidation tablets too, and they are located on the east coast too.

Tom Lehmann/The Dough Doctor  
5725

### **Newbie Topics / Re: ratio of flour to water**

That's a great example of what we call "biochemical gluten development". When I used to teach pizza making to local families here in and around Manhattan, Kansas I told everyone attending to bring bowl and a wooden spoon. The bowl was for mixing the dough in and the spoon was for mixing the dough just like the handle of

the spatula was used in the video. I told everyone to mix the dough using the wooden spoon just until you thought the spoon was going to break then stop mixing, from that point on we pretty much followed the same procedure shown in the video. No more arms like the village blacksmith from kneading the dough. The procedure works just as well for making bread and rolls too. One of the most commonly asked questions: Does it need to be a wooden spoon? Answer: Yes, with any other spoon there is a likely hood that you will over mix the dough. No harm done but just more work than necessary. Never did break the handle on one of those wooden spoons either. That's how dough was made before Mr. Hobart created his ingenious invention.

Tom Lehmann/The Dough Doctor  
5724

### **Dough Clinic / Re: IDY to fresh yeast conversion**

We did this work while I was employed at AIB using the Gasograph Meter for measuring yeast activity through gas production, what we found was that to duplicate fresh (less than 5-days old) compressed yeast we had to use 50% ADY and 35% IDY based on the amount of compressed yeast (CY) used. Put another way, to replace 1-pound of CY you would need to use 8-ounces of ADY or 5.6-ounces of IDY. Based on these numbers I have always advocated using replacement values of 50% for ADY and 0.375% for IDY.

The thing(s) to remember about CY is that you must receive it fresh, not a week or two old from a small distributor's cooler if you are to get the anticipated shelf life from the CY. CY begins deteriorating about 10-days after it leaves the manufacturing facility, it must be stored between 38 and 42F, never frozen. Under these conditions in a home application you can expect to get about 3-weeks to "possibly" a month of decent life from the CY. If the CY is temperature abused, like forgetting to put it back into the fridge immediately after weighing out what you need, all bets are off the table with regard to shelf life. When CY has passed that critical line you might see mold growing on the yeast, the dough will not ferment as vigorously as it once had, and you might find some off flavors/aromas in the finished crust. Discoloration of the yeast is not necessarily a sign of deterioration nor is an ammonia smell. IDY on the other hand can have a VERY LONG shelf life, in a home baking application as long as a full year if handled correctly. Unopened bags of IDY will have a 2-year shelf life, once opened, leave the IDY in the original bag, use what you need and roll the bag down on top of itself to slightly compress the contents then secure with a rubber band. If you will use the entire bag within a week it does not need to be refrigerated, in fact it is better if not refrigerated, but if you will be using from the bag over a period of time as most home bakers do, place the closed bag in the fridge or in the freezer (yes, unlike CY, IDY can be stored in the freezer), BUT when using from the previously opened bag be sure to scale/portion out what you need and reclose the bag and place it back into the fridge or freezer as quickly as possible. This is done to prevent the formation of condensation on the yeast or in the bag. Moisture will dramatically reduce the shelf life of IDY.

Hope this helps.  
Tom Lehmann/The Dough Doctor  
5723

### **Sicilian Style / Re: proofing time for deep-dish, sicilian, al taglio pizza**

With many of the sourdough starters that I've worked with over the years it has taken upwards of 8 to 10-hours to achieve the desired rise during the final proofing period. This is based on using just the starter for the leavening (no yeast).

As for your "thickness factor" 0.22 equates to almost 25-ounces of dough weight for a 12-inch diameter deep-dish pizza. I think this is pretty heavy as I normally use a "dough loading factor" / "thickness factor" of 0.14 to 0.15 which figures out to 16 to 17-ounces for a 12-inch diameter deep-dish pan. Normal proofing typically calls for the dough to at least double in height/thickness during final proofing, the remainder of the finished crust thickness is achieved through oven spring.

Tom Lehmann/The Dough Doctor  
5722

**Sicilian Style / Re: proofing time for deep-dish, sicilian, al taglio pizza**

When the dough first comes off of the mixer it may be difficult to open into a pizza skin as the dough can be quite tough, if you find that to be the case portion the dough immediately after mixing and form into balls then set aside to ferment at room temperature until the dough can be more easily formed into a pizza skin and placed into the pan. I've found that this normally takes between 1 and 2-hours. I like to do this in the afternoon or evening prior to making the pizzas that way the dough can final proof overnight and be ready to go on the following day.

Tom Lehmann/The Dough Doctor  
5721

**Dough Clinic / Re: Hearth Bake Disks...**

Most pizza disks will warp when used in any type of deck oven, even the Hex Disk which is designed to emulate a pizza screen will warp. This warping creates some very real baking inconsistencies in a deck type of oven but in an air impingement oven there is no deck surface and the air impinges upon the disk without any problem even though it may lift a little off of the conveyor. Some people like to use a pizza screen in a deck oven (screens do not warp as disks do in a deck oven) when they do this they typically bake the pizza on the screen for all but a minute of the baking time, then the pizza is slid off of the screen and placed on the deck to complete baking for the last minute, sometimes less.

As for quality of pizzas coming out of an air impingement oven, if they are set up properly with the correct finger configuration for the type of pizza being made, and the right baking platform is used, they can produce some really great pizzas, good enough to win in some of the popular pizza competitions. The problem with air impingement ovens is that for some unknown reason supposedly intelligent people insist upon baking their pizzas as QUICKLY as possible, trading quantity for quality, additionally these ovens are also used to make any number of different menu items all at the same temperature and unless the oven has a split conveyor, at the same time as the pizzas are baked at.

Tom Lehmann/The Dough Doctor  
5720

**Dough Clinic / Re: Would be great to see someone develop a pizza dough App**

I'm in total agreement as there are just too many variables which are all intertwined. My approach is to say that each of us knows what dough management procedure works best for them under their specific conditions, with that out of the way all you need to do is to calculate your dough ingredient amounts and there is already a calculator for that, or like me, you can use bakers percent, probably doesn't take more than a couple minutes.

Tom Lehmann/The Dough Doctor  
5719

## [\*\*Dough Clinic / Re: Hearth Bake Disks...\*\*](#)

Yep, the MM-360's had them too. When you look inside of an air impingement oven and look to the top and bottom of the oven you will see stainless steel panels with holes in them, these are the "fingers" I'm referencing. Inside of each one of those panels is a removable sleeve that is designed to modify the airflow through each finger panel. You can even block off the airflow to any of the panels effectively making it a radiant heating panel. I'm surprised that you were not brought up to speed on knowing about the fingers as the conveyor must be removed and the fingers disassembled for cleaning about twice a year. Failure to do so can ultimately lead to blocked fingers (impeded airflow) and poorly baked pizzas. Typically, most air impingement ovens are set up with a full open finger profile across the bottom and some variation of full open and modified airflow across the top. When the fingers are removed and disassembled for cleaning it is all too common for the inserts to be installed into the wrong finger panel thus impacting the top bake. This is the reason why many managers now have a finger map taped to the side of the oven.

Tom Lehmann/The Dough Doctor  
5718

## [\*\*Dough Clinic / Re: cold fermenting fridge temperature\*\*](#)

It would also help to know what the finished dough temperature is (dough temperature immediately after mixing).

Tom Lehmann/The Dough Doctor  
5717

## [\*\*Dough Clinic / Re: Final Dough Temperature impact on dough fermentation\*\*](#)

Mitch;

There is no hard and fast answer to your question but you are correct in that anything at or just slightly above 45F will negatively impact the refrigerated life of your dough, how much so is impossible to predict without experimentation with your dough in your cooler. Due to the higher temperature of your cooler the finished dough temperature is even more critical with regard to fermentation as it will take longer to cool down at the higher temperature and that could be a game changer out at three or more days. Remember my mantra, "you cannot have effective dough management without effective time and temperature control". You may need to experiment with even lower finished dough temperatures due to your higher holding temperature. Realistically, about the lowest dough temperature you will probably be able to achieve is between 60 and 65F. If you can consistently hit your finished dough temperature, get the dough scaled, balled and into the cooler in short order (not more than 20-minutes) and maintain the temperature (whatever it works out to be) in your cooler as consistent as possible you should be able to get five or more days shelf life from your dough balls while in the cooler.

Tom Lehmann/The Dough Doctor  
5716

## [\*\*Dough Clinic / Re: Can't get good crust out of WFO. What are we doing wrong?\*\*](#)

Abouna;

It would help if you could provide your "recipe" as a "formula" in bakers percent as this would allow us to see if the formula is in correct balance. With that said, the problem may not be with your dough formula but instead with your dough management procedure., You show water at 95F being used to make the dough and then allowing it to rise (ferment) for two hours before taking it to the fridge for

overnight cold fermentation. The soggy (not wet) but limp description you gave of the crust suggests that the dough might be over fermented and is collapsing under the weight of the topping ingredients creating a thin center section to the crust with very poor, dense crumb structure. A quick way to see if this is the problem is to use only 1/4-cup of water at 95F to activate/suspend the yeast in, and adjust the temperature of the rest of the water to 75F, then manage the dough as you are presently doing. This will reduce the amount of fermentation that the dough receives, thus strengthening it so it will be better capable of supporting the weight of the topping ingredients. Please let us know if this give you improvement.

Tom Lehmann/The Dough Doctor  
5715

### **Dough Clinic / Re: What is the best Active Dry Yeast to use**

IDY is the best thing to come along yeast wise in nearly a century. ADY is not always as consistent as we would like to think it is, and it can be a bit finicky when it comes to long term storage. IDY can be added right into the flour without pre-hydration if you use a mechanical mixer (big advantage) but if you are mixing by hand it must be pre-hydrated in warm water (95F). We did a study many years ago where we re-hydrated the IDY in water at different temperatures. We found that it was most detrimental to re-hydrate it in water that was colder than 95F, and when we re-hydrated it in water that was only 5F warmer then recommended we also experienced a loss of yeast activity but not nearly as bad as what we saw at the lower water temperatures. As for storage of IDY there is a lot of confusion surrounding just how it is best to store it. The best way is to leave it in the original bag then after using what you need, fold the bag down upon itself to reduce the headspace in the bag and secure it with a rubber band. If the entire package will be used within two weeks it is best to store it at room temperature, otherwise opened bags are best stored under refrigerated conditions. Unopened bags can be safely stored in the freezer for up to two years, after that you will begin to see some deterioration of the yeast activity to the magnitude of about 25% over the next 12-months, after that you're on your own as we did not run the tests out beyond three years. Why store it at room temperature? The reason for this is because as you remove the IDY from the refrigerator you will get condensation forming on the yeast in the bag due to the temperature differential between room and refrigerator temperatures, moisture is the number one enemy of dry yeast when it comes to storage life. Since IDY is only at about 6% moisture content when the bag is first opened it tends to absorb moisture from the humidity in the air quite readily this is why it is recommended that the IDY be left in the original bag and just folded down tight upon the yeast (limits exposure to air and to condensation both of which are detrimental to the shelf life properties of IDY).

Tom Lehmann/The Dough Doctor  
5714

### **Sauce Ingredients / Re: I hate freezing my left over pizza sauce!**

JVP;

The problem that you are experiencing is due to the way the water in the sauce is being carried. When you make the sauce fresh the majority of the water is contained in little "juice sacks" I don't remember the correct name for them, but think of them as little water filled balloons. When you freeze the sauce in your home freezer which is referred to as "static" freezing (high temperature, 0F and little or no airflow) the sauce is frozen very slowly allowing for the formation of large, angular ice crystals. These large ice crystals rupture those juice sacks allowing the water to leach out making the sauce to appear thin. In a commercial

facility the sauce is frozen at much lower temperatures of -30 to as low as -60F with airflow of around 600 linear feet per minute, this "blast" freezing allows for the formation of much smaller ice crystals which don't have as much of the deleterious effect upon those juice sacks as static freezing does. This is also why the ice cubes you get from your home freezer are opaque rather than nearly clear as as the commercial ice cubes you buy (it's all in the size of the ice crystals). I wish I had a solution for you but it's one of the laws of physics that can't be violated. Yes, you could add a thickener to the sauce to tie up the water released as a result of slow freezing but that will also change the mouth feel/textture of the finished sauce. We did some work many years ago in which we cooked the sauce prior to freezing. While this did not correct the problem it appeared to improve the look and texture of the sauce after it was defrosted and applied to the pizzas, the only down side was that the cooking step changed the flavor profile of the sauce slightly. You might want to try this to see if it will work in your specific application.

Tom Lehmann/The Dough Doctor

5713

### **Dough Clinic / Re: What is the ideal temp for opening up dough?**

The recognized lowest recommended temperature to begin opening the dough into skins is 50F. Depending upon the strength of the dough and the absorption it will vary with different doughs. I have used 50F as a starting point myself but I almost always find that a higher temperature works better, usually something in the 60's.

Tom Lehmann/The Dough Doctor

5712

### **Dough Clinic / Re: suggestions for making pizza dough**

You say that you are now weighing your ingredients more that you were previously. When converting from volumetric portions to weight measures did you portion out each ingredient at least three times and divide the total weight by three to arrive at the ingredient weight that you're now using? I've seen any number of previously good recipes go awry when they were converted to formulas based on weight rather than volumetric portions because the conversion was not done correctly. Realistically, I'm guessing that like was previously mentioned, you are now using a different oven, and as you've seen from reading posts here the oven can make or break a pizza.

Tom Lehmann/The Dough Doctor

5711

### **Dough Clinic / Re: Vital Wheat Gluten - Storage**

The greatest problem with VWG is moisture, so if the box has a plastic or some other liner (it probably does) leave it in the liner, roll it down tight against the VWG and secure with a rubber band then place into a Zip-Lok bag and store refrigerated or frozen. Note: When you go to use it the next time be sure to bring it out of the refrigerator or freezer several hours prior to opening the bag as this will reduce the possibility of condensation forming in the bag. As always, when using VWG it is a good practice to immediately blend the VWG into the flour after scaling as this will help to prevent the VWG from "pilling" due to exposure to humidity/moisture or inadvertently adding the dough water in such a way so that it contacts the VWG in a direct manner. Once the VWG is blended into the flour there is no need to worry about this happening.

Tom Lehmann/The Dough Doctor

5710

## [\*\*Dough Clinic / Re: Need the Dough Doctor God again\*\*](#)

Bill;

The pan that you describe has a surface area of 187.03-square inches. A good dough loading factor to start with for a thin crust is 0.0973-ounces of dough per square inch of surface area, so  $187.03 \times 0.0973 = 18.198$ -ounces of dough for your pan size. I would just round it off to 18-ounces, from there you can adjust the dough weight as needed to give you exactly what you are looking for in finished crust thickness.

Here is a neat trick using bakers percent. Divide the total bakers percent of your dough formula by 100, then divide the total dough weight that you need by that number and you now have the total flour weight needed to make that dough size/weight, from there you can use your bakers percent calculations to find the individual ingredient weights to make the dough.

In addressing your cited problems, I would need to ask what the water temperature and finished dough temperature of both doughs was. Variations in water temperature/finished dough temperature could give the differences that you observed. The procedure that I always use is as follows:

- 1) Put water in mixing bowl (90F).
- 2) Put yeast in the water and stir to suspend the yeast in the water.
- 3) Add the flour followed by the salt and sugar (if used), begin mixing until the flour has absorbed the water, then add the oil and continue mixing until a smooth dough consistency is achieved.
- 4) Measure the finished dough temperature, it should be in the 80 to 85F range. Adjust the temperature of following doughs to achieve the target temperature.  
Note: Adjust the water temperature in 5F increments.
- 5) Take the dough to the bench and scale/ball immediately.
- 6) Lightly oil each dough ball and place into individual plastic bags (think bread bags). Twist the open end to close then tuck the pony tail under the dough ball as you place it in the fridge. Note: I typically do not allow the dough ball to ferment at room temperature prior to placing it in the fridge as this has the potential to introduce a great amount of inconsistency into the dough after the refrigeration period.
- 7) After the dough has been in the fridge for 24 to 72-hours, remove the bagged dough ball(s) and set out at room temperature until the temperature of the dough reaches between 50 and 60F, then turn the dough out of the bag into some dusting flour, coat the entire dough ball with dusting flour then proceed to open the dough ball into a pizza skin by your preferred method.

Since you are using a solid bottom pan, very lightly oil the pan and fit the pizza skin into the pan, dress the skin as desired and bake at a minimum temperature of 500F. The use of a well preheated pizza stone under the pan should help the quality of bake.

Tom Lehmann/The Dough Doctor  
5709

## [\*\*Dough Clinic / Re: High Altitude Concerns?\*\*](#)

Hi Walter;

Glad to hear that you are making the big leap of faith. I'm sure you will enjoy Reno and your new location.

The basic rule is that no formula changes are typically needed at altitudes of less than 5,000-feet, so that puts you right on the cusp of needing to make some changes. Start out with no dough changes at all, if you see the dough drying out more than usual, increase your dough absorption by 3% and that should take care of that problem, if you find that you will need to make changes due to the altitude

difference look at reducing the yeast level by 25%, no other changes should be needed. As for your ovens, yes, be sure to have the air-fuel mixture adjusted. As for baking, I would recommend baking at 25 to 50F higher oven temperature (deck oven) as the higher evaporative rate will have a cooling effect upon the pizza and the higher temperature will address that.

If you encounter any other problems, let me know.

Tom Lehmann/The Dough Doctor  
5708

**Dough Clinic / Re: Help with dough! Too sticky too elastic**

After reforming the dough balls on the second day how long did you wait before beginning to open the dough balls into pizza skins?

Tom Lehmann/The Dough Doctor  
5707

**Dough Clinic / Re: Help with dough! Too sticky too elastic**

I have two possible solutions;

1) After re-ball the dough lightly oil the dough ball and place it back into the bag and allow it to ferment at room temperature for about two-hours, then turn the dough out of the bag into a bowl of dusting flour and proceed to open the dough into pizza skins. The two hour period may need to be adjusted longer or shorter for best results.

2) Immediately before you place the dough ball into the bag (first time) lightly oil the dough ball, then allow to cold proof as you presently do. When you are ready to open the dough ball into a pizza skin turn the dough ball out of the bag into a bowl of dusting flour then proceed to open the dough up into a pizza skin by your preferred manner. Note: This procedure does not call for re-ball the dough. The only time I ever re-ball the dough is when/if it gets too over fermented, then I will re-ball it and allow it to ferment at room temperature until the dough has once again become sufficiently extensible to be easily opened into a pizza skin.

Tom Lehmann/The Dough Doctor  
5706

**Dough Clinic / Re: Help with dough! Too sticky too elastic**

If using bread bags, or any type of bag be sure to lightly oil the dough ball just before dropping it into the bag, this will eliminate the stickiness. Also, I recommend allowing the dough to come up to only 50 to 55F before opening the dough balls into pizza skins, the dough can get a little out of hand if you allow it to come up to room temperature, whatever that might be. The thing to remember is that the dough cannot be opened into pizza skins immediately after re-rounding it into balls, it must be allowed sufficient time to relax after balling or the dough will fight you to the bitter end through out the entire forming process.

When plastic bread bags are used, and the bag is pulled down into direct contact with the bag, or something close, the dough will cool down without developing condensation in the bag (this is one reason why I don't like to use Zip-Lok bags, because this is nearly impossible to accomplish when using them. The dough will be very relaxed when you are ready to use it so if you just invert the bag over your dusting flour the dough ball will drop out of the bag into the dusting flour and be ready to immediately begin opening into a pizza skin.

I hope this helps,

Tom Lehmann/The Dough Doctor  
5705

## [\*\*General Pizza Making / Re: Sauce is red..Crust is Gray\*\*](#)

Another thing to look at is the ash content of the flour. Flour with an ash content above 0.6% will have a decidedly dull appearance to it which can translate into a gray colored finished crumb structure. The appearance of brown flecks in the dough would indicate the presence of bran which in turn would indicate a high ash content in the flour. To test this you might see if you can find a flour with an ash content of 0.57 or lower. You might Google your flour to see if the manufacturer/miller has the flour specifications posted on line.

Aside from this, the excessive use of dusting flour can also result in something of a gray crust color. Some things that I've done in the past to address poor crust color are to brush the edge of the dough with water immediately before placing it in the oven, or you might also try brushing it with a little oil to see if that helps.

Occasionally, I've found that creating a moist atmosphere in the oven helps with crust color problems too, here I place a cake pan with a little water in it about 5-minutes before I put the dressed dough skin in the oven, be sure to remove the pan of water just before you close the oven door.

Tom Lehmann/The Dough Doctor  
5704

## [\*\*Dough Clinic / Re: Help with dough! Too sticky too elastic\*\*](#)

The length of time it will take for the dough to rise from refrigerated temperature to 50 - 55F will vary with both the room temperature and the size/weight of the dough ball. This is why I use a thermometer to establish a base line and then you can go with time after that until the room temperature changes drastically or you change the dough ball weight.

Tom Lehmann/The Dough Doctor  
5703

## [\*\*General Pizza Making / Re: Sauce is red..Crust is Gray\*\*](#)

JPB;

If the dough is so sticky that you need to use all that dusting flour and it won't come off after forming the pizza skin, I'd be inclined to reduce the dough absorption until I get a better handling (less sticky) dough. Keep in mind that you can improve the way a soft dough handles by putting a little oil on your hands and on the bench top too.

Tom Lehmann/The Dough Doctor  
5702

## [\*\*Dough Clinic / Re: Dough Management\*\*](#)

Benny;

The first thing you will need to do is to convert your dough "recipe" to a "formula" based on bakers percent. Once you do this you can accurately manipulate the size of the dough up or down without any other formula changes. To begin, portion out your ingredients into three different containers as if you were going to make three different doughs, now WEIGH each of the triplicate ingredients and divide the sum by three to find the average weight for the ingredient. But why not just weigh all three into a single container and just weigh that? We have found that since this is not the normal method used to portion the ingredients the results tend to be different from when the ingredients are portioned one at a time. Once you have determined the average WEIGHT of each ingredient (including the water) we can begin converting the ingredient weights into bakers percent. Flour is always 100%, to find the percent of each of the other ingredients divide the weight of each ingredient by the weight of the flour and multiply by 100. You have now converted

your recipe to a formula based on bakers percent. Weigh several of your dough balls to find the average dough ball weight that you use. Now, multiply the average dough ball weight by the number of dough balls needed to find the total dough weight needed to make those dough balls. Add up the total of the percentages in your formula and divide that number by 100. Divide the total dough weight by this number (generally around 1.67) and you will have found the weight of flour needed to make the specified number of dough balls. Using your calculator, enter the flour weight then press "X" followed by the ingredient percent that you want the weight for then press "%" and read the ingredient weight in the display window.

Remember, the ingredient weights will be in the same weight units as you gave the flour weight in (ounces, grams, pounds, kilograms, etc.). As for a mixer, I would probably suggest something like a Hobart 60-quart mixer. For agitator you will want to have a flat beater for mixing/blending sauce and a dough arm (reverse spiral design) and if possible a pastry (sweet dough) mixing attachment as this will allow you to better replicate your present mixing procedure. Check with Norma here on this web site for suggestions on dough storage. Also, make sure you know all of the laws and regulations that you will need to follow. Best of luck to you.

Tom Lehmann/The Dough Doctor

5701

### **Dough Clinic / Re: Dough divider and rounder**

Conventional pocket type and rotary drum dividers cannot handle dough that is much above 67% absorption without excessive problems due to stickiness, there are dividers and rounding systems available that can handle dough that is made with high absorption but to the best of my knowledge all of the dividers are rotary extrusion type dividers (Google Reiser V-Mag extruders) in conjunction with a rounding table with diagonal rounding bars specific to the size/weight of the dough piece. As you might guess, this is some pretty costly, high speed, high volume equipment that is intended for large wholesale manufacturers.

Tom Lehmann/The Dough Doctor

5700

### **Prep Equipment / Re: I built a manual dough sheeter**

COOL!

How about springing for another \$60.00 or so for a 12-V starter, like they use on the Briggs & Stratton 12 to 17-H.P. riding lawn mower engines. Mounted directly to the frame and replacing the hand crank it could be operated off of a marine battery all day long making a hard job even easier.

Tom Lehmann/The Dough Doctor

5699

### **Dough Clinic / Re: over night warm rise recipe**

A warm overnight fermentation is really pretty "iffy" due to the potential for such a great amount of variation in fermentation resulting from differences in finished dough temperature as well as room temperature. With excessive fermentation comes weak dough that can collapse under the weight of the topping ingredients, development of "off" flavors, the formation of excess acids (by-product of fermentation)can greatly inhibit crust color development which is further compounded by the fact that the yeast has metabolized most, if not all of the sugars. So, what's a person to do? Emergency dough is always an option, or you can make a dough using only 0.25% compressed yeast, 50% absorption and only 50% of the total flour called for in your dough formula. Mix the dough as cold as possible and place it into a suitably sized container and lightly cover to prevent

drying. Allow to ferment for up to 24-hours or overnight. After the fermentation period mix the fermented dough with the remainder of the flour, salt, sugar, oil/fat, and the normal amount of yeast called for in the formula, mix the dough just until it becomes smooth, then scale, ball and lightly oil the dough balls, set the dough balls aside and cover to prevent drying and allow to ferment once again until the dough balls are soft and extensible which normally takes between 1 and 2-hours at room temperature. From that point on handle the dough balls just as you would with a normal dough.

Tom Lehmann/The Dough Doctor  
5698

### **New York Style / Re: Question on what to do with overblown dough**

What I might do to salvage the dough is as follows:

Add a small amount of high gluten flour to the dough, then add just a pinch of sugar, knead this into the dough or mix it into the dough just until you achieve a smooth dough consistency, immediately scale and ball the dough, lightly oil the dough balls and set aside to proof at room temperature until the dough is soft and pliable, which usually takes an additional 1 to 2-hours, then open into pizza skins by your normal manner. The other option is to divide the dough in half and incorporate each half into a new dough much in the same way as you would incorporate a sponge. Once incorporated into a new dough handle and process in your normal manner.

Tom Lehmann/The Dough Doctor  
5697

### **General Pizza Making / Re: key to soft pizza crust--soak in oil?**

Adding liquid milk to the dough to replace all of the water or a portion of it will contribute some lactose to the dough formulation. Lactose (milk sugar) is not fermentable by bakers yeast but does significantly improve the browning characteristics of the dough, hence since we typically bake to color, it will shorten the baking time all things being equal. There is a little interaction of the milk proteins and calcium content of the milk with the flour proteins (gluten) but the result is only a stronger, tougher dough.

Tom Lehmann/The Dough Doctor  
5696

### **Cracker Style / Re: Cracker crust help**

Your photograph looks a lot like the Chicago style cracker type dough formula that I developed many years ago. I have the formula and procedure posted in the PMQ Think Tank. It is really pretty easy to make but it does require a dough sheeter/roller to form the dough balls/pucks into a pizza skin. At home you can get away using a pie pin or rolling pin but if you use a rolling pin do not use the handles, instead, roll the dough with your hands placed over the top of the barrel and pushing down with great effort. It's a workout if you are going to make very many. The dough formula is not critical in my opinion so you might want to start out using a formula that you're familiar with and make a few slight modifications.

1) Reduce the total dough absorption to not more than 50%, depending upon your flour 45% might work better.

2) Use any type of yeast at the normal level, but it MUST be suspended in the dough water.

3) Put water (80F) in mixing bowl.

4) Suspend the yeast in the water by stirring until completely suspended, then immediately add the salt and sugar (if used), followed by the oil (I personally like to

use 5% oil in this dough formula), then add the flour and begin mixing at low speed just until the dough takes on a very crumbly appearance. Yes, there will still be a lot of dry flour present and it will be hard to call it a dough. In reality, it looks a lot like a pie dough in the making. The dough is not properly mixed. DO NOT OVERMIX.

5) Take the "dough" to the bench and weigh out about 12-ounces for a 12-inch diameter finished crust.

6) Form the dough into a puck shape as you would if making pie dough, pushing it together from the sides until it roughly takes on a puck like appearance, then wrap each dough piece in stretch wrap and place in the fridge to cold ferment and fully hydrate over night.

7) On the following day bring the dough out from the fridge and allow to warm at room temperature until the dough reaches 50F, then lightly flour the dough puck (you will notice that it looks better now) and begin rolling the dough out to about 1/8-inch thickness or a little less, dock the dough well and trim to 12-inches in diameter, brush lightly with olive oil and dress the skin to the order. Bake at 550 to 600F.

Tom Lehmann/The Dough Doctor  
5695

### [\*\*Dough Clinic / Re: Need the Dough Doctor God again\*\*](#)

Clark;

The process will work the same regardless of the type of yeast used. I don't like to add the salt and/or sugar to the water containing a yeast suspension as it can, in some cases adversely impact the yeast activity leading to inconsistent fermentation of the dough. If you are using IDY you can just blend it into the flour along with the salt and sugar and then add the water as you have proposed. When blending the dry ingredients into the flour don't get carried away, just a couple revolutions is all that is needed

Tom Lehmann/The Dough Doctor  
5694

### [\*\*Dough Clinic / Re: Dessert Dough how do I make it less chewy.\*\*](#)

Yep, butter, margarine, or Butter Flavored Crisco at 5% or more would do wonders while improving the flavor at the same time. Think of it like this, the difference between a hamburger bun and French bread is about 13% sugar and 3% fat, both sugar and fat are what we call "tenderizers". Are you using a Dutch process cocoa for the greatest flavor and color impact? Don't get too upset if you don't achieve a strong cocoa flavor in the crust as the problem is that cocoa develops its best/strongest flavor in an alkaline environment, usually pH 8.0 and higher, while a dough is slightly acid as is the finished crust.

Tom Lehmann/The Dough Doctor  
5693

### [\*\*Dough Clinic / Re: need help\*\*](#)

Nope, not "mold" as it takes upwards of four days after baking for it to appear as the baking process destroys any mold that might be present. Instead, the problem appears to be due to the crust lifting off of the bottom of the pan creating a thermal break between the dough/crust and the hot pan. The most common cause is due to baking in a pan either without oil in the pan, or not enough oil in the pan. The oil creates a bridge between the dough and the pan thus eliminating the thermal break, allowing the entire bottom surface to color up much better. Occasionally we find the problem is due to the dough being too tough or too dry. When this is the

case the dough creeps in the pan and in doing so lifts off of the bottom of the pan with the same end result, in this case the solution is to make a softer, more relaxed dough, or change over to a perforated pan which will not allow the pockets to form under the dough.

Tom Lehmann/The Dough Doctor  
5692

**[Prep Equipment / Re: I'd need a commercial grade heavy duty small dough mixer \(about 10qt\)](#)**

Keep an eye out for a Hobart A-120 (12-quart) or A-200 (20-quart). They are a common fixture in many restaurants and food service facilities so they come up pretty often. Both are 110-V so power will not be a problem. Both mixers are very sturdy and should give excellent service if you can find a good one. Be prepared to pay between \$1,000.00 and \$2,000.00, but for a piece of equipment that will be put into commercial duty the cost is well worth it. You don't want your mixer to break down right when you need it most. Just be sure to get a reverse spiral dough arm and a flat beater with your mixer. If it doesn't have either one, you can buy them from Hobart or Northern Restaurant Equipment might have the attachments as well as the mixers. A stainless steel bowl is preferred over a tin plate bowl but it's not a deal breaker if the tin plating is in good condition. I've occasionally run across a Hobart 30-quart mixer (floor model). These seem to be the "white elephants" as nobody seems to want them. The last one that I saw at an auction went for \$300.00 last summer. Watch the auctions!

Tom Lehmann/The Dough Doctor  
5691

**[Chitchat / Re: Safety of sourdough starter in vicinity of baby feeding equipment?](#)**

There is a good reason why "flour" as we know it in baking is not used in making baby food. Sort of the same problem we encounter with honey and infants.

Tom Lehmann/The Dough Doctor  
5690

**[Dough Clinic / Re: Vital Wheat Gluten - Storage](#)**

If you blend the vital wheat gluten into the flour no special handling requirements are needed, just store the flour in a manner that will retard oxidation and insect growth. I like to store my flour in smaller plastic bags that I place in our chest freezer, like this it will literally keep for years.

Tom Lehmann/The Dough Doctor  
5689

**[Dough Clinic / Re: Chew](#)**

In addition to dough formula, dough management procedure can also play a significant role in the textural properties of the finished pizza. Since we don't have any information on the dough management procedure at this time, I would recommend as a first action to eliminate the oil from the dough formula, this should toughen the finished crust. Your dough absorption looks ok. As for dough mixing, it will have very little, if any impact upon the textural properties of the finished crust unless your dough management procedure calls for a very short fermentation time.

Tom Lehmann/The Dough Doctor  
5688

## [\*\*Dough Clinic / Re: Chew\*\*](#)

Chris;

Your fermentation time is ok as is the yeast level, so I'm putting my money on deleting the oil for now. If that fails to work, reducing the fermentation time will increase the toughness/chew of the finished crust too.

Tom Lehmann/The Dough Doctor

5687

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza boxes\*\*](#)

I'd go with the corrugated boxes as they are better insulators than the thin single ply cardboard boxes. Most have the steam vents punched, all you need to do is to open them. You're right, nothing good ever happens to the pizza from putting a pizza in a box. I look at it as the lesser of two evils.

Tom Lehmann/The Dough Doctor

5686

## [\*\*General Pizza Making / Re: Room for improvement?\*\*](#)

And your problem is?????????????????

That's a pretty good looking pizza just as it is. :)

While the oven spring looks awfully good to me, if you still want more, you might experiment with increasing the dough absorption in 2% increments, this will result in a softer dough that will tend to exhibit more oven spring during the first minute or so of baking.

If you want to change the presentation a little without changing anything else you might try sprinkling about an ounce of shredded Parmesan cheese around the edge just before you place it in the oven. This typically gives an attractive appearance and adds some depth to the overall flavor profile of the pizza.

Tom Lehmann/The Dough Doctor

5685

## [\*\*General Pizza Making / Re: Room for improvement?\*\*](#)

Note:

Those were supposed to be question marks in my reply, not sad faces! Just learned something new here, multiple question marks = sad faces, go figure?

Tom Lehmann/The Dough Doctor

5684

## [\*\*Dough Clinic / Re: Dough Storage - Dough tray vs sheet pans\*\*](#)

My own personal preference is for the WRH dough boxes <[www.wrh.net](http://www.wrh.net)>, they have an excellent seal, are super durable, come in a variety of colors which may help you to identify the day of manufacture, they can also provide lids for the top box in a stack plus they make a special scraper designed specifically for removing dough balls and scraping their boxes clean. You will need to oil the dough balls no matter what you do or it will stick to anything you use to cover it with. The amount of oil used to oil the tops (only) is very small, so I wouldn't worry about it. Since you can scrape the box clean after use, and it never goes into the public area of your store, you should be able to get away with washing once or twice a week. Your inspector will make the determining call on that, sometimes it is better to beg forgiveness than to ask permission. Another neat thing about the WRH boxes is that they have cleats molded into them to facilitate cross stacking in the walk-in cooler, then when down-stacking the top quarter inch of each box nests into the box beneath it making for a tight seal, then just lid the top box of the stack. Instead of buying special dollies for the boxes, I have seen where a box is fitted with wheels

to allow the stack to be moved around, I have also seen plastic frame moving dollies used too. The wood dollies will not pass inspection.

Tom Lehmann/The Dough Doctor  
5683

**Dough Clinic / Re: Flour substitution**

Which "00" flour are you planning to use?  
Tom Lehmann/The Dough Doctor  
5682

**Dough Clinic / Re: Having trouble with dough?!**

The very first thing that I would suggest is that the "recipe" be converted to a "formula" which is based on weight measures rather than volumetric portions. To do this just portion out each ingredient three times into a single container (one container for each ingredient) then weigh each ingredient, subtract the tare weight of the container and divide by three. This will give you a pretty accurate weight measure for each ingredient, once you have done that, divide the weight of each ingredient by the weight of the flour and multiply by 100. By doing this you have successfully converted your dough recipe into a dough formula based on weight measures and presented in bakers percent. Please post these numbers for us to look at.

Some things that jump out at me at first glance:

105F water is very hot for a refrigerated dough, more common is something in the 70 to 75F range.

Use instant dry yeast for now, and just add it as it is (dry) to the flour.

The salt level might be a bit too low, when you have the formula in bakers percent I will be able to determine if this is the case.

Here is a good starting point for making your dough:

1) Put water (70 -75F) in bowl first.

2) Add salt and sugar (no need to mix).

3) Add the flour and IDY and mix just until you don't see any dry flour in the mixing bowl.

4) Add the oil and continue mixing as normal for about 10-minutes.

5) When the dough is finished mixing, pour just a LITTLE oil down the inside of the bowl to coat the dough.

6) Check the finished dough temperature, you are looking for something in the 80 to 85F range.

7) Turn the dough out of the mixing bowl, it should come out much easier now that you've oiled the dough a little.

8) Scale the dough into desired weight pieces and form into balls.

9) Place dough balls into oiled containers and place UNCOVERED in the fridge for 3-hours, then cover the container(s) for storage or lightly oil each dough ball and place into individual bread bags, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the fridge (no need to leave open or remember to cover with this procedure)

10) Allow to cold ferment for a minimum of 18-hours before using the dough, the dough may go as long as 4 or more days in the fridge before use.

11) To use the dough, turn it out of the container or bag into a bowl of dusting flour, then pin the dough out to about 75% of the diameter you want, finished opening the dough by hand stretching to full diameter.

12) Dress and bake as desired.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor

5681

**Dough Clinic / Re: Effect of docking on the cornicione**

Justin;

That's a mighty fine looking pizza!

When it comes to docking the dough you will want to use a "real" dough docker, with blunt plastic tips on the docking wheels as opposed to some of the supposedly dockers with long pointy tips. With that said, docking the dough doesn't eliminate the bubbles, what does is to "tack weld" the dough together to help control the size of the bubbles. If you look at a saltine cracker you can see this very clearly. Also, the docker holes are closed at the bottom where the dough has been compressed by the docker pin(s) thus locking it together. If you dock only the center section of the pizza skin you will typically get a thinner center section in the crust with a more pronounced edge, if you dock the entire pizza skin, from edge to edge, the edge will still raise, but not as much and the finished pizza will have a flatter appearing profile.

Tom Lehmann/The Dough Doctor

5680

**Dough Clinic / Re: Complete newbie...dough like rubber, shall i bake or start over**

Munish;

If you follow the formula provided by Peter, adjust the water temperature to give you a finished dough temperature of 80 to 85F/ 27 to 29C, then immediately after mixing divide the dough into your desired weight pieces and form into balls, wipe the dough balls with salad oil and place into individual plastic bags. Twist the open end of the bag forming a pony tail and tuck the pony tail under the dough ball as you place it in the fridge. Allow the dough balls to cold ferment for 48-hours, then turn the dough ball(s) out of the bag into a bowl of flour and using a rolling pin carefully open the dough ball up to just slightly more than the diameter of your pan, generously oil each pan and place the flattened/shaped dough into the pan, set the panned dough aside and allow to proof/rise for between 45 and 70-minutes or until the dough rises about half way up the side of a 1.5 to 2-inch deep, dark colored pan. This should give you a risen dough thickness of about 13 to 15 mm. The dough is now ready to be dressed and baked. By the way, your flour protein content is at what I would consider to be the high end to make a really good deep-dish pizza. A good flour protein content for this application is 11.4 to about 12.5%.

Tom Lehmann/The Dough Doctor

5679

**Dough Clinic / Re: Flour water salt yeast book issue**

Dough made with short fermentation time such as an emergency dough or dough made using limited fermentation time such as a dough that is mixed, fermented and made into pizza all during the same day will usually exhibit toughness in both the dough (snap-back/memory) and the finished crust (chewiness) due to the lack of fermentation which has a softening or weakening effect upon the flour proteins owing to the effects of acids and alcohol formed during fermentation as well as enzymes which are present in the yeast and when you allow time for these to work on the proteins in the flour you get improved dough extensibility, reduced chewiness in the finished crust and since much flavor of the crust results from the denaturizing of flour proteins during baking, when the proteins are exposed to the acids, alcohol and enzymes during extended fermentation you get more denaturing of the proteins resulting an improved finished crust flavor.

I hope this explains some of what you are seeing.

Tom Lehmann/The Dough Doctor

5678

### **Dough Clinic / Re: freezing question**

When made with fresh yeast the best time to freeze dough is IMMEDIATELY after mixing, mix, scale, ball and freeze then lightly oil the dough ball, wrap in stretch wrap, place back in freezer. The dough will remain good to use for about 3-weeks. To use, remove from freezer and place directly into the fridge to thaw for about 24-hours, remove from fridge, unwrap, and place in lightly oiled bowl, drape with a piece of plastic and allow to temper AT room temperature until the dough reached 50F, you can then proceed to open the dough into a pizza skin in your normal manner.

The same process is used when the dough is leavened only with a starter except the dough should not be stored for more than 10-days in the freezer.

Tom Lehmann/The Dough Doctor

5677

### **General Pizza Making / Re: Bacteria fermentation**

The lactic acid forming bacteria are the most common associated with fermentation as we know it. Any time you allow the dough to remain at a temperature that will support fermentation by bakers yeast the lactic acid forming bacteria will also be active, so in addition to using a sourdough starter, or any kind of a pre-ferment for that matter, allowing the dough to ferment at room temperature will also allow for at least some lactic acid formation in the dough, the problem is that when the dough has had sufficient time to develop enough lactic acid for flavor, the affects of yeast fermentation have taken their toll on the flour proteins (gluten) resulting in a soft or weak dough. When you allow for the lactic acid formation in a small portion of the flour and then add it to the remainder of the flour the unfermented flour is sufficiently strong to produce a good, manageable dough. This is why there is such a pronounced flavor impact when a sourdough starter is used to totally or partially leaven the dough.

Tom Lehmann/The Dough Doctor

5676

### **Dough Clinic / Re: How to store dough balls on food truck**

One way to store refrigerated dough for making pizza skins in the least space is to make them off site where you can hold it as a dough ball for 24 to 48-hours, then partially open the dough balls (1/2 to 3/4 finished diameter, lightly oil the skins placing a piece of parchment paper between the individual skins, you can stack as many as 10 high and store in your truck cooler. I had a good friend (Otis Gunn) now deceased who operated his pizzeria (The Pizza Wheel) out of his specially built trailer. He had a small spiral mixer for mixing the dough and at night he would mix, scale, ball the dough and place into dough boxes which were stored in the cooler under his prep table. If you size your pizzas so you can get away using not more than 10-ounces of dough per dough ball you can get 12 dough balls in a box so you will only need storage for 8 to 9 dough boxes. If you go into the archives at the PMQ Think Tank you will find some discussion on pizza trailers which would relate to a pizza truck.

Tom Lehmann/The Dough Doctor

5675

### **Dough Clinic / Re: Whats better ?? Hand stretched dough or rolled dough**

You can also use a rolling pin or pie pin to open the dough to about 2/3 to 3/4 of full diameter and then finish opening the skin up to full diameter by hand tossing. Using this method you do not degas the dough as you would if you were to open it completely by rolling it out to full diameter. I used to teach this method in our seminars and it worked very well for those who were either new at opening the dough entirely by hand (toss challenged) or for those who continually had problems getting thin spots in the skin as a result of poor technique. I always found it surprising that after this method was mastered most would begin opening the dough entirely by hand. I've helped open a number of stores where this technique was employed and it works very well. I even use it, especially when I'm making calzones where I don't want to have any thin spots in the dough.

Tom Lehmann/The Dough Doctor  
5674

**New York Style / Re: [HELP] Pizza dough doesn't rise**

Willy;  
As you need help right away, please call me at 785-537-1037 and I'll be glad to help you.

Tom Lehmann/The Dough Doctor  
5673

**Dough Clinic / Re: Crust too thick and dry but rich in flavour**

I see two possible solutions, one is to reduce the weight of the dough that you are putting into the pan, the other is to simply reduce the time you are allowing the dough to rise in the pan. Typically, these doughs are allowed to rise for between 45 and 75-minutes depending upon the exact dough formulation, finished dough temperature and room temperature. As you don't have the dough temperature and your room might be warm, there is a possibility that you are allowing the dough to rise in the pan too long, maybe reduce the final proofing time to something closer to 30-minutes to see if that gives you the finished crust thickness you're looking for. The old PH pans used to have a mark stamped in the side of the pan about 1/4 to 3/8-inch above the bottom of the pan, this was a reference mark that they used to allow the dough to proof up to to determine when the dough was ready to use (that's from back when they used to make their dough at the store).

Tom Lehmann/The Dough Doctor  
5672

**Dough Clinic / Re: Thanks Tom!**

Looks great! :)  
Tom Lehmann/The Dough Doctor  
5671

**Dough Clinic / Re: Whats better ?? Hand stretched dough or rolled dough**

When using a rolling pin be sure to keep your thumbs on TOP of the handles, not under them. This will give you better control over the rolling of the dough and also be sure NOT to allow the rolling pin to roll off of the edge of the dough, roll to the edge then stop and roll from a different direction. Pie pins are a bit easier to work with in that they are easier to manipulate on the dough and there is not so great a chance of rolling over the edge of the dough.

Tom Lehmann/The Dough Doctor  
5670

**General Pizza Making / Re: Bacteria fermentation**

Keep in mind that you also develop a different fermentation profile between warm (room temperature) and cold fermentation conditions due to the different types and amounts of acids formed during the fermentation process. A good place to see some of this difference is in many of the artisan breads sold today as compared to white pan bread. The white pan bread is made using a warm fermentation process (either a straight dough or sponge-dough process) while many of the artisan breads are made using some form or other of a cold fermentation process (excluding those made from a sourdough starter).

Tom Lehmann/The Dough Doctor  
5669

**Dough Clinic / Re: cheese floats on top vs being fused**

Absolutely! Too much sauce will make the cheese slide around as if it is on a skating rink. In pizzerias where there is a special concern about the problem due to liability. We have seen it so bad that as one takes a bite out of the pizza the cheese just slides right off. To a lesser extent, the application of excessive oil on the pizza skin prior to sauce application can also cause this problem, but not to the extent that excessive sauce does.

Tom Lehmann/The Dough Doctor  
5668

**New York Style / Re: Explosive dough at 48 hrs and tame at 72 hrs. Any Ideas?**

P.S.:

With regard to getting the edge to settle down a bit after 24-hours, what was your finished dough temperature? Remember, without temperature control you cannot have effective dough management. This is especially critical when you are managing the dough as you are. In looking at your dough formula I notice that the ADY is a bit high at 0.65% and the salt is low at 1.3% combined with the high dough absorption this might be causing the problem you are experiencing. By lowering the ADY to 0.5% and increasing the salt to at least 2% you will get improved control over the fermentation of the dough through better regulated yeast activity (unregulated yeast activity + a soft dough = potential for excessive oven spring).

Tom Lehmann/The Dough Doctor  
5667

**Prep Equipment / Re: Welbilt 20 Qt Mixer**

I've had some experience with them from my years at AIB. The mixer is also known as a "Varimixer" in reference to the fact that you do not have fixed speeds (1,2,3,4, etc.) instead, you have a variable speed mixer that is controlled by a leaver on the side of the mixer. So as to be able to mix a dough or batter consistently you will need to place reference marks on the side of the mixer allowing you to mix at the same speed each time. The mixer that we had was quite durable as we had it for a good many years. Think of it as a CVT as opposed to a 4-speed, manual shift transmission. Also, because it is a belt drive as opposed to a direct gear drive, I would not suggest that you get overly aggressive trying to mix doughs so large so as to heavily load the mixer. Make sure it comes with the reverse spiral dough mixing arm.

Tom Lehmann/The Dough Doctor  
5666

**Prep Equipment / Re: Welbilt 20 Qt Mixer**

I see the reverse spiral dough mixing arm in the photo, it also looks to be nearly, if not new, when you consider the cost of a much smaller mixer, if you can get it for around \$1,000.00 or so, it would be a good investment. Just make sure you will have a dedicated power outlet for it as most of these mixers will require dedicated 120-V, 20-amp service. You will certainly be the envy of all the other pizza makers on the block! :)

Tom Lehmann/The Dough Doctor  
5665

### **Shop Talk / Re: Help with pizza pricing**

Evan;

You might also want to post your question at the PMQ THINK TANK which is visited and moderated mostly by pizzeria operators/owners much like yourself. You can find them at <[www.pmq.com](http://www.pmq.com)> you will find the T.T. as a drop down under the Forums header. You will need to register and log in but it is well worth it and the best part is like here, it is all free.

Tom Lehmann/The Dough Doctor  
5664

### **Dough Clinic / Re: cheese floats on top vs being fused**

Don;

They don't do it by design, it is a fairly common problem that many new operators have. Liability is a major concern of all pizzerias. When a person walks into a major chain store and orders a pizza, then bites into a slice immediately after it is brought to the table and screams out in pain as the hot cheese burns the roof of the customer's mouth. Yes, the customer won the suit on the grounds that they were never cautioned that the pizza was very hot (please don't go there) as we have become a society where we do not take responsibility for our actions, and everyone else is responsible for our own stupidity, now you know why whenever you go out to eat and the food is brought to your table the first words that you hear is, ready for this??? "Be careful, it's very hot". The waitresses have been so trained to say this all the time that once when my Asian salad was brought to our table I responded "Oh, really?". So is the life of a pizzeria owner/operator.

Tom Lehmann/The Dough Doctor  
5663

### **Shop Talk / Re: Small One Man Wife Operation Question: Can I pre-stretch the dough?**

If you would care to share your dough formula and dough management procedure we might be able to recommend some changes that would improve the way the dough opens into a pizza skin, then you might not need to pre-stretch.

Tom Lehmann/The Dough Doctor  
5662

### **Prep Equipment / Re: Welbilt 20 Qt Mixer**

Depending upon your actual dough formulation, you should be able to mix a dough based on as much as about 4,500 grams (2.5 Kg) or almost 10-pounds of flour weight. With an average total formula percent of about 170% (sum of all ingredient percentages) you should be able to make around 17-pounds of dough in a single mix. Remember, pizzas doughs are best when only mixed until they have a smooth appearance. The beater attachment which I saw in the photo will work well for blending ground meat. Like I said, you will be the envy of every pizza maker, or baker for that matter, on the block.

Tom Lehmann/The Dough Doctor  
5661

**Dough Clinic / Re: Pizza Dough balls not maintaining shape**

Actually, they don't look too bad for three days. Can you provide us with your dough formula and dough management procedure? This would help in making a determination if you will need to make any changes and where the changes might need to be made.

Tom Lehmann/The Dough Doctor  
5660

**New York Style / Re: Explosive dough at 48 hrs and tame at 72 hrs. Any Ideas?**

Jersey Pie Boy:

Before you can even begin to address oven spring issued you have to be able to control your dough management through dough temperature. If your dough temperature is consistent and you process the dough the same way every time, for example, mix, directly to the scale for portioning and balling, then into containers and into the fridge (maintained at a constant temperature) you should have good dough management, meaning that your dough will perform in a predictable manner time after time (you must also hold up your end of the bargain too by being accurate with your scaling weights). With dough management under control, here are some things to look at with regard to oven spring;

Fat: increases oven spring potential by providing better dough lubrication and gas retention.

Water: Increasing the water content of the dough will allow for a more fluid dough which will exhibit greater oven spring.

Yeast: Contrary to popular belief, yeast does not have as much impact upon oven spring as one might think, so just increasing the yeast a little will have minimal impact upon oven spring.

Oven Temperature: Can have a major impact upon oven spring as it provides for rapid vaporization of water as well as expansion of the leavening gas and alcohol before the dough begins to set.

I could probably go on and write a book on oven spring, but these are the main drivers that we typically adjust to achieve the oven spring we're looking for.

Tom Lehmann/The Dough Doctor  
5659

**Dough Clinic / Re: Crispy crust**

Since your "00" flour is un-malted the addition of diastatic malt makes sense, however you are now getting color at a lower temperature than what the flour is intended to be used at. At your low baking temperature you could probably get away using a domestic bread type flour with about 12% protein content. If the new flour is malted you won't need to add any additional malt, and it is not recommended. Using a malted flour you will be able to bake the pizza longer to achieve a crispier finished crust. Also remember that if you are adding the malt for flavor, use a non-diastatic form of malt. I'm thinking that the diastatic malt that you are adding is resulting in a faster crust color development, hence a shorter bake as you are most likely baking to crust color. Using a malted flour and no added sugar, milk, or eggs in the dough formula will allow you to bake the pizza for the longest time to develop the crispiest texture without excessive crust color development.

Tom Lehmann/The Dough Doctor  
5658

## **General Pizza Making / Re: Tough Dough**

Normally when the finished crust is too tough it is an indication of insufficient fermentation which can result from any of the following as it pertains to your dough formula:

- 1) The ADY not being per-hydrated, or not pre-hydrated correctly.
- 2) Flour too strong.
- 3) Finished dough temperature too low/dough too cold after mixing.
- 4) Using a sheeter to sheet the dough too thin.
- 5) Insufficient dough weight for the diameter being made.
- 6) While the dough absorption looks ok for this type of crust, increasing the dough absorption may yield a lighter textured, and slightly more crispy finished crust.

If you are trying to make a Chicago style thin crust, I've personally never seen a Chicago thin crust that was crispy, in fact it is characteristically limp and much like eating pizza toppings on a piece of wet pasta. The only part of the pizza that even comes close to resembling crispy are the four corners of the party cut pizza. With that said, if you par-bake the crust and use that for the base you can have a Chicago style thin crust pizza that is reasonably crispy, even when dressed Chicago style.

Tom Lehmann/The Dough Doctor

5657

## **Dough Clinic / Re: Dough does not rise after freezing**

Peter;

I'm, in total agreement with what you have said, I would like to add the following; The soft, sticky dough is an excellent indication that a good portion of the yeast has been severely damaged by the very slow freezing process (home freezer combined with a warm dough temperature). This very slow freezing rate is extremely deleterious to yeast quality in the dough. The soft sticky nature of the dough is most likely being caused by the release of glutathione (think of "dead yeast" as a dough reducing agent much like L-cysteine/PZ-44) from the yeast. Then, as you state, there is not enough viable yeast present in the dough to support active fermentation. A good suggestion for anyone making dough to freeze is pre-hydrate the yeast (both ADY and IDY) in a small portion of 100F water, then use all cold/ice water to make the dough. A good temperature range for dough which is to be frozen is 65 to 70F, then rather than trying to freeze the dough as a dough ball, flatten the dough balls so they look something like a hockey puck, this reduces the cross section/thickness making the dough easier and faster to freeze. I like to lightly oil the flattened dough ball and then wrap it in stretch wrap or bag it as I place it in the freezer. The last work that I did at AIB was to find the best way to slack-out/thaw frozen dough. I found that the dough performed best when slacked out in the refrigerator for about 18-hours, then removed from the refrigerator/cooler for about 1-hour (70F ambient/temperature, time may vary with ambient temperature) until the dough reaches 50 to 55F, it is then placed back into the fridge for use on the following day. The reason for all of this manipulation is that as you have indicated the frozen dough has little if any fermentation time, so once it is slacked out it is much like a cold 50 to 55F dough coming right off of the mixer, then, that extra day in the fridge allows the dough to cold ferment for about 24-hours (time not critical), from that point on the dough is handled in a pretty normal manner which for me is to remove the dough from the fridge and allow it to temper at room temperature to 50 to 55F before beginning to open the dough into pizza skins.

I hope this adds a little wood to the fire.

Tom Lehmann/The Dough Doctor  
5656

### **Prep Equipment / Re: Marsal Wooden Dough Boxes**

Wood dough boxes as well as wood bagel boards are essentially a thing of the past, at least from a commercial point of view. There are a number of reasons for this, they tend to splinter and guess where the splinters end up? They develop cracks and joint gaps which make them impossible to clean properly, the porosity of the wood can trap bacteria (good and bad). Some time ago I came across an article showing that with reference to the bacteria concerns, wood might actually be better than the materials used to replace it, ain't that always the case? With that in hand, try to convince the local health inspector.....lotsa luck! Some of the better dough boxes are from WRH Industries, Ltd. (Paul Bartley) <pbartley@wrh.net> or <[www.wrh.net](http://www.wrh.net)> for their web site. In addition to making the large deep and shallow dough boxes they also make what they refer to as a half size dough box which is small enough to fit onto a home refrigerator shelf. They also sell a special plastic scraped that has the same radius as the box making for easy cleaning and dough ball removal without fear of damaging the box.

Tom Lehmann/The Dough Doctor  
5655

### **General Pizza Making / Re: Tough Dough**

When using ADY, it should be hydrated in approximately 5-times its weight of water at 100 to 105F. The amount of water is not as critical as the temperature of the water. Water that is too hot can kill the yeast while water that is too cold can pull glutathione out of the yeast cell as they rehydrate thus severely impairing their ability to ferment as well as producing soft, sticky or inconsistent dough texture. IDY on the other hand does not need to be rehydrated IF the dough will be mixed by machine for more than 4-minutes. If the dough is mixed for less than 4-minutes, or mixed by hand, it should be pre-hydrated. To hydrate IDY it is recommended that you use 95F water (temperature is much more important when using IDY). Water that is too cold will extract a significant amount of glutathione from the yeast with the same results as indicated above for the ADY. When using compressed yeast it can be added directly to the mixing bowl just like IDY if a machine is used to mix the dough BUT if the dough will be mixed by hand, it should be suspended in a portion of the dough water (temperature is not critical if the water temperature is between 45 and 105F) to ensure proper distribution throughout the dough mass.

Tom Lehmann/The Dough Doctor  
5654

### **Dough Clinic / Re: Dough tears when stretching**

From your description it sounds as if the dough might be over fermented to the point where it is becoming "bucky" (exhibits too much elasticity). To see if this is the problem try opening the dough four or five hours sooner. If that works try reducing the finished dough temperature by about 10F from where it's at right now. That will effectively slow fermentation allowing you to use the same time but get less fermentation within that time.

Tom Lehmann/The Dough Doctor  
5653

### **Shop Talk / Re: Organic Pizza in NYC**

If you go with grinding your own organic flour remember that you will need to start

with organically grown wheat.  
Tom Lehmann/The Dough Doctor  
5652

### **Shop Talk / Re: Montague Hearthbake ovens**

I've worked with them a number of times and never experienced any problems and the restaurants that

I've opened that had them have never reported any problems.

Tom Lehmann/The Dough Doctor  
5651

### **Stones/tiles/steel, Pans & Accessories / Re: PAPROD no longer carrying blue steel pans**

For bright steel pans try American Metalcraft <[www.amnow.com](http://www.amnow.com)> the bright steel pans can be seasoned to bake equally as well as the blued steel pans. Another option is to check out some used bakery equipment suppliers as commercial cake pans can be had in tin plate steel with a dark colored "bake-prep" finish which is usually a very dark green in color you can usually find these in sizes from 7-inch up to about 12-inches in diameter, usually in rounds but I have also seen them in a square format.

Tom Lehmann/The Dough Doctor  
5650

### **Sauce Ingredients / Re: best way to use fresh tomatoes**

As many of you know, fresh tomatoes are my "go to" excuse for pizza sauce. I never use sauce when I can use fresh, vine ripened tomatoes. Thin slice the tomato about 3/16-inch thick, place on absorbent towels to pull the excess moisture from the cut slices. To use, brush the pizza skin with a very light application of olive oil (this creates a moisture barrier between the fresh tomato and the dough) I then apply fresh sliced or minced garlic (about a tablespoon for a 12-inch pizza) then a few fresh basil leaves and cover with the tomato slices, apply cheese and other toppings as desired. At my end of the table you will also find cut slices (media luna) of fresh tomato as one of my requested toppings, they're that good. :)

Tom Lehmann/The Dough Doctor  
5649

### **Shop Talk / Re: Montague Hearthbake ovens**

Essen 1;

My comments were referencing the Montague deck ovens.

Tom Lehmann/The Dough Doctor  
5648

### **Sauce Ingredients / Re: best way to use fresh tomatoes**

Oops! That should have read to slice the tomatoes about 3/16-inch NOT 6/16.  
Blame it on old age.

Tom Lehmann/The Dough Doctor

(Moderator note: fixed in original)  
5647

### **Dough Clinic / Re: salt level**

The ingredient percentages (bakers percent) in the dough are based on the total flour weight, so as long as the flour weight remains constant you should not need

to change the salt or any other ingredient due to a reduction in dough absorption.

Tom Lehmann/The Dough Doctor

5646

**[Stones/tiles/steel, Pans & Accessories / Re: What kind of pan is it and how is it used?](#)**

Steve;

Your pan looks like something from Lloyd Pans. I'm guessing that it is a proprietary pan made for someone with a specific need. You might direct an e-mail along with a few pictures to Paul Tiffany at Lloyd Pans <[ptiffany@lloydpan.com](mailto:ptiffany@lloydpan.com)> to see what he has to say. I know that other pans of this type are designed so the pizza can be fully baked in the entire pan, when the pizza is removed from the oven the pan is placed on an elevated platform to support only the center section, the outer ring then falls away making it easier to remove the pizza from the pan. I've only seen this done with deep-dish pans since a shallow pan like yours is so easy to remove the pizza from, but you never know. I'd ask Paul to see what he has to say.

Tom Lehmann/The Dough Doctor

5645

**[Dough Clinic / Re: Slowing down fermentation](#)**

Pie Eye;

It might be in the way you are managing the dough. The steps that you have taken are the correct ones for slowing down the rate of fermentation, but if there were another factor involved this would explain the results you have seen. The factor I am referring to is the rate that the dough is being cooled down at. For example, we see the same dough failure after 48-hours in retail pizzerias when the boxes of dough are not cross stacked in the cooler, or when the dough balls are allowed to set out at room temperature for an hour or more before being placed in the cooler. Failure to cross stack the dough boxes traps air in the box creating a dead air space around the dough balls which is an excellent insulator then add to that the fact that fermenting dough typically gains about 1F in temperature for each hour it is allowed to ferment (heat of fermentation) and you can see how difficult if not impossible it is to regulate fermentation. By cross stacking the dough boxes the heat is allowed to escape for the first three hours in the cooler which allows the dough temperature to drop to a temperature where fermentation can be controlled. In the other case where the dough balls are allowed to ferment at room temperature for an hour or more before being placed in the cooler the dough becomes less dense (more open and porous) making it a better insulator so now when the dough is placed in the cooler it is again much more difficult to cool internally to a point where fermentation can be effectively managed and shelf life in the cooler is significantly reduced. So, what can you do? Immediately after mixing your dough scale and ball it, then wipe the dough ball(s) with oil and place it in a container in your fridge BUT DO NOT lid the container, instead, leave it unlidded for about 3 or 4-hours, then apply the lid and you should be good to go for three or more days in the fridge. What I do is to place the oiled dough ball into individual plastic bags (bread bags) but DO NOT seal the bags closed, instead, twist the open end of the bag into a pony tail and tuck the pony tail under the dough ball as you place it on the fridge shelf. The plastic bag is such a poor insulator that it allows the dough ball to cool naturally just as it would if in an uncovered container, but now you don't need to come back to it later to cover. Those bagged dough balls should be good for the better part of a week if made with a sufficiently strong flour (13% protein content).

I hope this helps.

Tom Lehmann/The Dough Doctor  
5644

**Dough Clinic / Re: Slowing down fermentation**

That very well could be your problem. Try taking the dough directly from the mixer to scaling, balling and refrigeration to see if that helps.

Tom Lehmann/The Dough Doctor  
5643

**Dough Clinic / Re: Freezing yeast**

You don't mention what kind/type of yeast that you are using so I will assume it is IDY (instant dry yeast) as it is the only one that you can effectively use in a dry mix as proposed. In this case the yeast is not yet hydrated so it has much better stability in the freezer. Many years ago I did a study using IDY subjected to different storage conditions to see just how robust it actually was. When the yeast was stored in a freezer (unopened package) we terminated the test after two years and found it to be essentially as good as it was when we started the test. We also looked at the yeast when it was incorporated into a dry mix the yeast still had a very decent shelf life of nearly 90-days before the activity fell off to 75% of what it was when the test was started. Based on my findings a good friend of mine who was working as a formulator for a commercial dry mix manufacturer began using IDY in their dry mixes with a 60-day refrigerated (not frozen) shelf life. In short, you should be able to make a dry mix using IDY and hold it under frozen conditions for at least 90-days, and depending upon what you are willing to accept as a finished product, possibly longer.

Tom Lehmann/The Dough Doctor  
5642

**Dough Ingredients / Re: Saf Pizza yeast**

In their commercial IDY's SAF has a green label yeast which, if I remember correctly, is developed specifically for use in making frozen dough. This IDY might be related to the other commercial green label IDY. If anyone can get a sample of it I'd sure like to see how the package ingredient deck reads

Tom Lehmann/The Dough Doctor  
5641

**Dough Clinic / Re: Freezing yeast**

Hondabbg;

Am I correct in assuming that you are freezing a "dry" mix as opposed to dough? If you are freezing a dry mix as my assumption is, and if after making a dough and subjection it to a period of cold fermentation the dough balls flatten excessively, the only thing that immediately comes to mind is that you might be using water that is too cold to make the dough, for example ice water as opposed to water at 70 or 75F or a little warmer. Now, if you were using ADY (active dry yeast) that would explain everything as it does not like to be included in a dry mix and the poor rate of rehydration in the dry mix allows glutathione to be leached out of the yeast for quite some time after the water is added to make the dough.

Can you provide us with your complete dough management procedure (everything you do to/with the dough from mixing to baking)? There might be something in the dough management procedure that is causing the problem too.

Tom Lehmann/The Dough Doctor  
5640

## **Dough Ingredients / Re: Saf Pizza yeast**

Literally translated: yeast + emulsifier. Many times the yeast will be combined with ascorbic acid to counter the "negative" effects (dough softening) of the small amount of glutathione resulting from the drying process and probably a little too from the rehydration of the IDY. Performance wise I would expect this yeast to exhibit normal fermentation properties while producing a slightly softer, more extensible dough characteristic.

Tom Lehmann/The Dough Doctor

5639

## **Dough Clinic / Re: Problem with Bottom Layer of Crust**

I think you answered your own question in your last sentence. 450F is most decidedly on the cool side, especially if you are not using some type of baking surface aside from the pan (which, by the way, should have a dark anodized finish or be well seasoned). It would help if you had a pre-heated steel plate (0.25" thick) or a tile/stone deck to provide sufficient latent heat to properly bake the bottom of the pizza. The amount of sauce applied to the dough can also impact how the crust bakes, I normally start with 3-ounces of sauce for a 12" diameter pizza and slowly work up from there if I need to. For cheese start with 4-ounces and work up from there. It looks like the type of crust that you are trying to make is what I would describe as a thin crispy. While the dough absorption is 52%, when considered along with the amount of flour that is being incorporated into the dough post mixing, I'm betting that the actual dough absorption is at least 5% or more lower so you are getting very little oven spring making it even more critical to have a good strong bottom heat in your oven to get a decent bake.

On a separate note:

Since you are using ADY rehydrate it in 100 to 105F water (not 85F) and allow it to hydrate/activate for about 10-minutes or until it begins to bubble. Then to improve your process you might try the following; Add the water to the mixing bowl along with the activated ADY, then add all of the flour followed by the salt and sugar, mix at low speed until all of the flour is hydrated then add the oil and mix for one more minute at low speed, now you can mix your dough for an additional 5-minutes or so until it begins to look smooth, now you can handle your dough as you presently do from that point on.

Tom Lehmann/The Dough Doctor

5638

## **Dough Clinic / Re: Freezing dough balls**

The best way to freeze dough balls is to mix the dough as you normally do, then immediately after mixing scale and ball the dough, flatten the dough balls so they look something like a hockey puck (1.5 to 2-inches thick) lightly wipe the "dough puck" with oil and place in the freezer. Allow the dough to remain in the freezer unwrapped for at least 2-hours, three is better, then place into a plastic bread bag for storage. To close the bag, twist the open end into a pony tail and secure with a twist tie. The dough will keep in the freezer for 3 to 4-weeks. To use the dough, remove from the freezer, remove the twist tie from the package and tuck the pony tail under the dough ball as you place it in the refrigerator for 24-hours. Remove the dough ball from the fridge and place at room temperature for 60-minutes, then place back into the fridge for 24 to 36-hours. To make a pizza skin, turn the dough out of the bag by inverting the bag (if you oiled the dough ball it will come out easily), into a bowl of dusting flour and proceed to open the dough in your normal manner.

The "cheap" way to freeze dough balls is to just flatten the balls into a puck shape,

oil and place into individual bags and place in the freezer. Expect 10 to 15-days frozen shelf life by this manner. To use the dough just transfer to the fridge for 24-hours then place at room temperature until the dough reaches 50 to 55F and open into pizza skins by your preferred manner.

Tom Lehmann/The Dough Doctor  
5637

**[Stones/tiles/steel, Pans & Accessories / Re: Steel vs Aluminium \(Aluminum\)](#)**

If they are both the same weight they should perform similarly.

Tom Lehmann/The Dough Doctor  
5636

**[Dough Clinic / Re: Lighter airier crust](#)**

Two options come to mind:

- 1) Increase the oil content to the 3 to 4% range. Oil is a tenderizer so it helps to make the finished crust more tender eating.
- 2) The other option is to allow the formed skin to rise more between opening the dough ball and dressing it to bake. This added proofing stage will give you a more tended eating crust characteristic.

Tom Lehmann/The Dough Doctor  
5635

**[Stones/tiles/steel, Pans & Accessories / Re: Blue Steel plus Lard](#)**

Works fine, finished crust is not quite as crispy as is possible when oil is used, but not much not to like about it. One of my personal favorites is to use bacon grease which my wife saves in a cup near the stove after making bacon. I even use it in the dough too, in fact, I even like to use it when I make home made bread, and for a special treat, I use it like butter on dark rye bread sprinkled with a little Kosher salt. Like a good friend of mine always says "Everything goes better with beer and bacon." Bacon grease included.

Tom Lehmann/The Dough Doctor  
5634

**[General Pizza Making / Re: Best way 2 prepare & slide pizza onto a pizza peel \( paddle \) ?](#)**

I like to use equal parts of corn meal, semolina flour and regular flour for my peel dust, I open the dough on the bench/counter top and place it on the peel (wood peel) for dressing, then give it a shake as I take it to the oven just to ensure the dressed skin is loose on the peel, then peel the dressed skin onto the stone for baking. I use a metal blade peel for my oven peel used to remove the baked pizza from the oven.

Tom Lehmann/The Dough Doctor  
5633

**[Dough Clinic / Re: When making 4 dough balls.](#)**

Pizza Boy;

I concur with Got Rocks. I like to go for consistency whenever I can.

Tom Lehmann/The Dough Doctor  
5632

**[Dough Clinic / Re: Help in the Hot and Humid days!](#)**

Danny;

It is not the humidity that is causing your problems. Commercial bakeries can be cold and dry or very hot and humid, and they never make any adjustments to the dough absorption based on temperature or humidity.

Without a lot more information on your dough formula and dough management procedure it is impossible to say for sure what might be happening, but here are a few culprits;

- 1) You volumetrically portion your dough ingredients as opposed to weighing them.
- 2) You are using oil in the dough as opposed to shortening and you are mixing it with the water at the time of addition.
- 3) You are not tracking and maintaining a consistent finished dough temperature.
- 4) Your finished dough temperature is too warm for the dough management procedure you are using.
- 5) You are placing your dough/dough balls into a tightly sealed container when you place them in the fridge.

If you can provide more specific information it will help me to provide more specific direction.

Tom Lehmann/The Dough Doctor  
5631

### **Dough Clinic / Re: Help in the Hot and Humid days!**

Danny;

Two things that I would advise against doing, don't add the IDY to the cold water, in addition to potentially harming the yeast you can also leach out glutathione from the yeast which will have a softening/weakening effect upon the dough much like L-cysteine/PZ-44. It is recommended that you either hydrate the IDY in a small quantity of 95F water before adding it to the dough, or if using a mechanical mixer add it into the dry flour or add it right after you add the oil. Covering the dough containers will only trap heat inside the container resulting in weakening of the dough due to over fermentation or excessive heat build up, it also traps moisture in the dough resulting in a very sticky dough when you go to use it. A better approach might be to lightly oil the dough balls then leave the containers open for about 3-hours in the fridge, then cover for the remainder of the cold fermentation period. This also adds to the consistency of the dough for more effective dough management.

Tom Lehmann/The Dough Doctor  
5630

### **Dough Clinic / Re: Bench rest too long !!**

I can see a couple of options;

- 1) After the normal bench time you could have proceeded to make the skins and place them on something (pizza screen for example) or a dinner plate, with some dusting flour and immediately placed them in the fridge. That would have slowed down the fermentation rate sufficiently fast to allow the skins to be held for several hours.
- 2) Depending upon your flour strength you might have re-balled the dough every two hours or so, as necessary, this doesn't stop or slow fermentation, but it does a lot to re-strengthen the dough, in this case possibly enough for you to pull it off, but if you are using Caputo or all-purpose flour there may not have been enough protein or the protein might not have been strong enough to hold up through all that fermentation abuse (acids and enzymes will take their toll on the flour proteins).

Tom Lehmann/The Dough Doctor

5629

**Dough Clinic / Re: Bench rest too long !!**

Carl;

No, it's not the same as re-ball the dough piece. By re-ball you effectively re-orient the gluten structure making the dough somewhat stronger. This is why we never re-ball the dough just before we open it into pizza skins, to do so will make the dough tough and elastic making it more difficult to shape without excessive dough memory.

Tom Lehmann/The Dough Doctor

5628

**Dough Clinic / Re: Help in the Hot and Humid days!**

Danny;

If you opt to pre-hydrate the IDY I would suggest that you hydrate it in just a couple ounces of 95F (measure with a thermometer) allow it to hydrate for 5-minutes, then add it to the mixing bowl along with the cold water (no fear of harming the yeast as it is now already hydrated). I use the cold water rinse out the yeast container too. By putting all of the water in the bowl first you will significantly reduce the overall mixing time. Try this in your spare time: Put the water in the bowl along with the hydrated IDY, add the salt and any sugar (honey), add all of the flour and begin mixing just until the flour is completely hydrated, then add the oil and mix until the oil is incorporated. If you are using a mixer, mix the dough about 5-minutes more at low speed, if mixing by hand, allow the dough to rest for 30-minutes, then knead until the dough begins to look smooth, check the dough temperature (80 to 85F) or whatever temperature you find works best for YOU. 80 to 85F is a good temperature but some like to use a colder temperature. Whatever temperature you use, the important part is to keep that temperature CONSTANT for all of your doughs, all of the time. Take the dough directly to the bench and cut/scale into desired weight pieces, form into individual balls, wipe lightly with salad oil and place into individual containers or a dough box. Place into the fridge uncovered for 3-hours, then cover until ready to use. To use the dough, remove from the fridge, leaving the container(s) covered, allow the dough to temper AT room temperature until the dough reaches at least 50F. You may want to experiment with this temperature too as it will vary with your procedures. Open the dough balls into pizza skins and dress as desired.

Tom Lehmann/The Dough Doctor

5627

**Off-Topic Foods / Re: Barometric Pressure HELP -- What's my boiling point?**

Lydia;

Gas or electric stove? I'm in agreement that in all probability it isn't the humidity, barometric pressure or your specific altitude that is giving you fits. With those beans, a loss of gas pressure or voltage coming into your home could cause those problems of inconsistent cooking times. Try this, pick out a pot, any pot will do. Put 2-cups of your coldest tap water into the pot (be sure to use a thermometer to measure the water temperature after you have poured it in the pot), then place the pot of water on your range and turn the burner to the highest setting, watch the pot as it heats up and make a note of the time that it takes to come to a rolling boil, repeat this on several different occasions and see if there is a significant difference in the time that it takes for the water to come to a full, rolling boil. If you find a significant difference you will need to discuss this with your utility company to see if there is a problem with the gas or electric coming to your house. If your range is

gas you might also be experiencing a problem with the gas regulator. As for a dough that is perfectly good and easy to handle and within 4-minutes turns into a slurry, the only thing that I can think of that would do that in that short of a time is a reducing agent like L-cysteine/PZ-44, glutathione/dead yeast, or a proteolytic enzyme (the most common one that we encounter in the home is papain (this is the enzyme found in pineapple and papaya) this enzyme aggressively hydrolyzes protein and can turn a dough into a slurry in just a couple minutes. This is why both pineapple and papaya are served after a meal to help digestion.

Let us know what you find out.

Tom Lehmann/The Dough Doctor  
5626

### [\*\*Off-Topic Foods / Re: Barometric Pressure HELP -- What's my boiling point?\*\*](#)

Lydia;

Most of the wonderful aroma coming from the dough are produced by the live yeast doing what they do best feeding and generating carbon dioxide and alcohol, a process we refer to as fermentation, once baked, all yeast has gone through the thermal death point of roughly 145F so at that point all yeast in the dough is dead. The dead yeast that I was referencing as a reducing agent is a commercial product made by the yeast companies for producing a softer, more relaxed dough consistency. It is sold in a dry, powder form somewhat resembling vital wheat gluten, but it has just the opposite effect upon the dough.

What you have described sounds like nothing more than a gas bubble forming in/on the dough, trust me when I say this, when a dough is broken down (slack/runny) it can be poured out of the mixing bowl. The gas bubble would explain also why it developed so fast. You say that you are using liquid soy lecithin in place of oil and eggs, exactly how much lecithin are you adding based on the flour weight?

By the way, don't fret the barometric pressure thing, bakers don't begin to make formula adjustments until there is a difference of 2,500-feet in altitude, and even then the adjustments are very small, but when we start looking at a difference of 5,000-feet the adjustments are rather extensive and when you get to a 10,000-foot difference things begin to get a little problematic with all the changes that need to be made.

Ask the power company to put a monitor on your incoming power line. This will continually monitor the line for any surges or drops in power over a period of a week or more. If they don't find anything out of the ordinary the problem is most likely inside your home so it will be time to call an electrician to have things checked out, probably not a bad thing to do anyway as you said you are having other electrical issues too.

Tom Lehmann/The Dough Doctor  
5625

### [\*\*Dough Clinic / Re: Consistency problems\*\*](#)

Question, with your spiral mixer, why are you mixing your doughs for different lengths of time? Also, what is your finished dough temperature?

If the dough temperature is too high for your dough management procedure the yeast could possibly consume all of the sugar added to the dough formula in turn producing more acid (a by-product of yeast fermentation) which in turn would hinder crust color development, but this would give the problem across all of the crusts made from that specific batch, which you say is not the case, so we can probably take that off of the table for now, inconsistent crust browning as well as limp/soft areas in the crust are more consistent with the way the dough is opened into skins than anything else. Areas that are overly thin do not brown as well as

thicker areas of the crust and a double whammy they quickly absorb moisture from the top of the pizza making the problem even worse.

Tom Lehmann/The Dough Doctor  
5624

**Dough Clinic / Re: Consistency problems**

75 to 80F is a good temperature to shoot for. Your mixer is indeed a spiral mixer. What is the bowl capacity of your mixer? The reason why I ask is because spiral mixers are very tolerant of dough size, meaning that you can mix a dough that is rated for full mixer capacity or 50% of mixer rated capacity without the need to adjust the total mixing time. The minimum size dough that is recommended for spiral mixers is 25% of rated capacity. Since pizza dough is very under mixed to begin with, it is doubtful that you are under mixing the dough. The best way to describe a fully/properly mixed pizza dough is to say that it is mixed just until it begins to take on a smooth, satiny appearance, at that point the dough is fully mixed. This is a lot different from what you might be used to doing with a bread dough which is mixed to a much greater level of gluten development and extensibility. One thing that you said struck a chord with me, you said the problem you are having looks "like a fat ring". I've seen that problem literally hundreds of times and if it is the same thing that I'm thinking it is, the problem is due to collapse of the crust (insufficient bake time). Without making any other changes, bake the pizza as long as you can, even a few seconds will help, and let us know if you see any improvement.

Can you send a picture of the problem you are experiencing, just to make sure we're on the same page.

Tom Lehmann/The Dough Doctor  
5623

**Dough Clinic / Re: Please help**

LB;

If you will e-mail me at <thedoughdoctor@hotmail.com> I will be glad to send you a copy of my Dough Management Procedure that I've developed for pizzeria application. Can you tell us something about your store concept too?

Tom Lehmann/The Dough Doctor  
5622

**Dough Clinic / Re: Consistency problems**

That reach in looks pretty tight with those dough boxes which probably makes offsetting them (substitute for cross stacking when using a reach in cooler) difficult and probably not as effective as one might like it to be. This would lead me to think that bagging the dough balls in individual food bags and placing them on aluminum sheet trays would work better for you. Just lightly oil each dough ball, drop it in a food bag and twist the open end into a pony tail, tuck the pony tail under the dough ball as you place it on the tray. Whatever your minimum cold ferment time is, divide that by two and down-stack the trays in the cooler at that time then allow to cold ferment until the normal time is achieved. This should give you a more consistent cold ferment.

Tom Lehmann/The Dough Doctor  
5621

**Newbie Topics / Re: I need a good dough recipe ASAP!!!**

Also, what can you tell us about the flour that you have available to work with. Assuming you have access to a walk-in cooler? How do you plan to hold your

dough? Do you have dough boxes? How long do you want to hold your dough in the cooler? What type and size of dough mixer do you have to work with? Ohhhh, so many questions.

Tom Lehmann/The Dough Doctor  
5620

**Dough Clinic / Re: Bench rest too long !!**

Putting a fermented dough ball back in the fridge really doesn't do much for the dough except to allow it to continue fermenting. The reason for this is due to the open cell structure of the dough which insulates the dough and inhibits any significant temperature change, thus allowing it to continue fermenting. If the yeast level is high the dough can/will respond accordingly during the bench time by fermenting at a faster rate due to the higher yeast level, hence in that case bench time tolerance would be less than for a dough made with a lower yeast level, then too, a dough made with a higher absorption level will become noticeably softer with extended bench time than a dough made with a lower absorption. Without full knowledge of the ingredients used, dough formulation, and dough management parameters used it is really difficult to assess accurately what might have happened.

Tom Lehmann/The Dough Doctor  
5619

**Dough Clinic / Re: Is there anything wrong with this mixing and resting procedure**

Pizza Garage;

Not to worry, as long as you have yeast or a cultured leavening system in the dough you're in good shape. It's when the finished dough temperature is above 90F and you don't have commercial yeast or a cultured leavening system that the gate can be left open for unwanted bacterial growth which can result in at the very least a "different" flavor profile than expected in the finished crust. This is not so much of a problem when the finished dough temperature is below 90F. There is a reason why laboratory incubators are set to operate in the 90 to 100F range, it promotes the growth of a broad spectrum of bacteria. The addition of our added leavening allows for selective microbial population of the dough resulting in the anticipated dough performance and flavor profile.

Your rest period appears to be more of a hydration period for the flour, and when combined with a short mixing time and cold fermentation period results in biochemical gluten development which results in a well developed gluten structure but unlike mechanically developed gluten is very soft and relaxed allowing for good expansion properties (oven spring) in the oven promoting a very open, light textured crumb structure. This is a procedure that is very similar to a home made dough process that I used to teach to local farm wives. Stir all the ingredients together in a bowl using a wooden spoon (this prevents the dough from being over mixed), remove the spoon and scrape the dough out onto a lightly floured surface, place the dough into an oiled container (the mixing bowl works well) and allow the dough to hydrate for about 30-minutes (time not critical) then turn the dough out of the bowl and knead just a couple times, place the dough back into the oiled bowl, lightly cover and allow to ferment several hours or until you're ready to use the dough for making bread or pizza crust. I have a copy of it posted in the PMQ Recipe Bank if you'd care to see it.

Sounds like you're on your way to making some great deep-dish pizzas!  
Tom Lehmann/The Dough Doctor  
5618

## **Dough Clinic / Re: Bench rest too long !!**

JPB;

As the dough ferments and the yeast produces carbon dioxide and alcohol (acids too but that's another story) within the air nuclei created during mixing, those nuclei expand and effectively create dead "air" spaces which we all know is a great insulator. The entire dough expands so it is really just one big insulated mass, as we place the dough back into the fridge it is all but impossible to effectively cool the mass due to the insulating properties of the expanded cell structure, and keep in mind too that as long as the dough is fermenting it is also generating heat (heat of fermentation) which unless extracted from the dough will continue to drive fermentation. Placing a dough ball back in the fridge will chill only the outer portion of the dough ball which might temporarily improve the handling property of the dough during the shaping process, but to put it back in the fridge for another day will just result in another day of fermentation.

If the dough is managed properly for extended cold storage/cold fermentation the dough is placed into the fridge and left exposed to the cold air as soon as possible after mixing (we recommend within 20-minutes) at which time there is little fermentation taking place so the cell structure is still very dense (cut a just mixed dough and you will see what I mean) this dense dough has poor insulating properties so it is easily chilled to 40 to 45F at which temperature fermentation is well controlled and a relatively long (several days) refrigerated shelf life can be expected without the dough becoming excessively gassy. On the other hand, allow the dough balls to bench rest for an hour or more before placing them in the cooler/fridge and fermentation begins to take off after about 20-minutes so by the time the dough balls actually go to the fridge they have developed pretty efficient insulating properties and cooling the dough through to the core of the dough ball becomes problematic if not impossible so long refrigerated shelf life is not possible. The kicker in this case is that as the dough continues to ferment in the cooler/fridge the cell structure continues to enlarge making the dough an ever increasingly better insulator which makes it even more difficult to thoroughly cool, it's a spiral that creates a dough with a fairly short shelf life (unless you really want a strong fermentation flavor, which in some cases is not a bad thing) but due to the effects of the acids formed during fermentation and the enzymes present in the yeast the dough will feel wet and sticky and may collapse when placed in the oven.

Tom Lehmann/The Dough Doctor

5617

## **Dough Clinic / Re: Bench rest too long !!**

Actually, you don't need to give up on that great flavor for the consistency gained by taking the dough balls to the fridge sooner, just allow for more cold fermentation time. Some posters here will allow their dough balls to CF for a week or more which by nature would develop great flavor and also provide a reasonable level of consistency. This is where the fun part of experimenting with pizza comes in.

Tom Lehmann/The Dough Doctor

5616

## **Dough Clinic / Re: Bench rest too long !!**

JPB;

I normally consider them as part of the mixing process as they do aide in gluten development.

Tom Lehmann/The Dough Doctor

5615

### **Dough Clinic / Re: Flour**

Not really, there might be minuscule differences in weight for a given volume of flour but for all practical purposes, all flours of a given type will weigh the same per given volume. The only volumetric differences in weight that are normally, and correctly, considered are between scooped, sifted and packed.

Tom Lehmann/The Dough Doctor

5614

### **Dough Clinic / Re: Sue's Pizza Dough**

Sue;

I'll toss my hat into the ring too. Your dough recipe cannot be accurately reduced in size as it is presented. What I would ask you to do first is to provide us with the weights of each ingredient which you are presently portioning volumetrically, once we have those weights the recipe can be changed into bakers percent, once converted into bakers percent the formula can be accurately manipulated into size you want. If you want the formula sized for a specific number of pizzas we will also need to know the dough weight for each pizza as well as the number of pizzas you want to make from the dough.

Tom Lehmann/The Dough Doctor

5613

### **Dough Clinic / Re: Sue's Pizza Dough**

Peter;

As you know, when dealing with volumetric portions the weights of those portions can be all over the board due to the technique employed in portioning the ingredient. This is why I think it is best for Sue to portion the ingredients by her method, using her portion containers, and whatever else might influence the weight of the portion. Once we have those portion weights we can convert the recipe to a formula in bakers percent. If you add up the total bakers percent and divide by 100 you can use this number to determine the flour weight needed to make the new dough size. In this case the dough size would be calculated as total dough weight divided by 55 (number of pizzas presently made from the dough) times 4 (the number of pizzas she wants to make), then divide this new dough weight by the total bakers percent of the dough formula to find the amount of flour needed to make the new (smaller) dough size. Once we have the new flour weight we can use bakers percent calculations to find the weight of the other dough ingredients.

Tom Lehmann/The Dough Doctor

5612

### **Dough Clinic / Re: Flour**

Sue;

Off topic, but what part of Arkansas are you located in? I'm familiar with N.W. Arkansas, especially Alpena, Rudd, Metalton, Huntsville, St. Paul, and Combs.....Just curious. I know there's a lot more to Arkansas than that little piece of Arkansas real estate.

Tom Lehmann/The Dough Doctor

5611

### **Dough Clinic / Re: Dough**

Based on the information you provided (dough based on 10-pounds of flour for use

in a brick oven). By brick oven I'm assuming that you mean a gas fired, deck oven? Will also assume you want to bake on the deck as opposed to on a screen, disk or pan and that you will be using a planetary type mixer.

Here is a starting formula:

Flour (strong bread or pizza flour 12.8 to 13.7% protein content): 100% (10-pounds)

Salt: 1.75% (2.8-ounces)

IDY: 0.375% (0.6-ounces)

Oil: 2% (3.2-ounces)

Water: (70 to 75F) 68%/variable (108.8-ounces/6.8-pounds)

Procedure:

Put water in mixing bowl, add salt, flour and IDY.

Mix at low speed just until the flour is hydrated (about 2-minutes) then pour the oil into the dough.

Mix at low speed or medium speed just until the dough is smooth.

Desired finished dough temperature: 80 to 85F.

Take dough directly to the bench for scaling and balling.

Place dough balls in plastic dough boxes, wipe the tops of the dough balls with oil and cross-stack in the cooler for 2.5-hours.

Down-stack the dough boxes or lid for 24 to 48-hours cold fermentation.

Remove dough balls from the cooler, leaving them covered and allow to warm to 50F before opening into pizza skins. Dough will be good to use at room temperature for 3-hours.

Open dough into pizza skins by your preferred method, place skin on lightly dusted peel and dress top the order, take directly to the oven for baking.

Any unused dough balls can be opened into skins and placed on pizza screens and stored in a wire tree rack in the cooler (cover with a food contact approved plastic bag to prevent drying). The dough can be held like this for use later in the day.

To use pre-opened skins, remove from cooler as needed, invert the skin off of the screen onto a lightly dusted peel, finish stretching out to full diameter, dress and bake.

Tom Lehmann/The Dough Doctor

5610

### **Dough Clinic / Re: First time Electric proofer buying. Help!**

P;

I think a proofer/oven is different from what you are referencing. A proofer/oven operated as a proofer with your desired temperature and relative humidity and then after a prescribed length of time operating under those conditions, the proofing phase turns off and the heating elements come on so the unit operates as an oven. These are popular in Europe, but not so popular here in the States.

Are you referencing a warming cabinet? A proofer has humidity controls in addition to temperature controls where as a warming cabinet only has temperature controls (dry heat). I can't imagine what advantage this might offer over holding the par-baked crusts at room temperature. They won't rise anymore as the structure of the dough is fully set and drying the crusts out doesn't serve much benefit to the finished pizza as the crust will be reheated and dried when the pizza is given the final bake. One of the biggest consumer complaints of a pizza made on a par-baked crust is that of exceptional dryness especially as the pizza begins to cool. The wholesale pizza industry has addressed the problem through the addition of specific gums and fiber to the dough formula to help retain water in the finished (par-baked) crust. The ideal par-baked crust to have is one that has essentially the same moisture content after the finishing bake as the same pizza made using raw

dough.

Tom Lehmann/The Dough Doctor  
5609

### [\*\*Dough Clinic / Re: Dough\*\*](#)

That is a "sweet" oven! The dough formula I provided should work well in the oven.  
Tom Lehmann/The Dough Doctor  
5608

### [\*\*Dough Clinic / Re: First time Electric proofer buying. Help!\*\*](#)

P;  
One of the things that I've seen done in situations like yours is to "deck" the pizza. Leave it on the pan until the toppings are just short of being done, then remove the pizza from the pan and place it directly on the deck to finish baking (usually less than 60-seconds). The time the pizza will need to be decked will depend upon your oven temperature. If you can accept a longer baking time you might also be able to do the entire bake in the pan but at a lower temperature.

Tom Lehmann/The Dough Doctor  
5607

### [\*\*Prep Equipment / Re: dough mixer good or bad quality?\*\*](#)

I can't speak to the manufacturer or the performance of the mixer but the design is sound and it has been in use for a good many years in Europe, Asia, Africa, Middle East and Latin America. The one pictured has a bowl cover to reduce dusting when the mixing sequence is first started which is a nice feature to have.

Tom Lehmann/The Dough Doctor  
5606

### [\*\*Dough Clinic / Re: Amazed by this pizza crust:\*\*](#)

TBM;

Take away/carry out pizzas are not quite as problematic in the soggy/limp issue as delivery pizzas are, the reason being is that the delivery pizzas are placed in some type of delivery bag/moon bag to retain temperature for delivery where as carry out pizzas are either placed into a bag or into a box which is a lot less detrimental to overall pizza quality than those insulated bags which simply become a glorified sauna for the pizza. Boxed pizzas have vent holes in the box to allow the pizza to "breathe" and bagged pizzas allow the steam to pass through the bag thus effectively reducing the sogginess issue, unless of course the sogginess is a result of excessive oil being released from the toppings, that becomes a whole different issue requiring at minimum some type of raised platform (ripple sheet, plastic mat) under the pizza to at least partially address the problem. There are at least three different types of crusts that come to mind from your description;

1) Thin crispy crust. This is made from a low absorption dough, typically around 40%. The dough is given significant cold fermentation (several days) to develop flavor and improve the potential for crispiness. This is similar to the type of crust that was so common back in the 50's and to some extent the early 60's. The dough must be opened using a dough sheeter/roller as it is just too tough to open by hand, at least by my hands.

2) Cracker type crust. This type of crust is made something like a long flake (flaky) pie crust where the ingredients are just barely incorporated, not even enough to form a "dough" as we know it, but instead a "shaggy" mass. Using a planetary mixer the mixing time is only around 2-minutes at low speed. The "dough" is scaled, pushed together to form pucks (just like you would do when making pie

dough), then best when individually wrapped in stretch film and placed in the fridge to cold ferment for a minimum of two days before opening using a dough sheeter/roller. Just like #1 above a rolling pin just doesn't cut it with this type of dough as you generally end up over working the dough and destroying the unique finished crust properties.

3) Par-baking. Either of the two above crust types can be par-baked for a truly crispy crust that is excellent at retaining its crispy eating characteristics, additionally, just about any type of crust will demonstrate a significant improvement in overall crispiness and retention of crispiness when par-baked. I have a good friend here in Manhattan, KS who owns A.J.'s New York Pizza, it is a slice and whole pie operation and all of the pizzas are made using a par-baked crust which we make ourselves. I live 30-minutes from the store and when I get home with a pizza it has those same properties that you have described, the pizzas are boxed in a thin, corrugated box with vent holes opened and a sheet of parchment paper under the pizza in the box. Sure, the pizza has cooled down somewhat by the time I get it home, but the texture of the crust far outweighs the temperature (still nice and warm but not hot). Now you know why it is my favorite pizza place.....ever. If you want to know more about A.J.'s you can go to their web site at <[www.ajsnypizza.com](http://www.ajsnypizza.com)>.

Tom Lehmann/The Dough Doctor  
5605

### **Dough Clinic / Re: Deep Dish Dough in Slow Cooker**

Oh WOW! This is a new one on me. Slow cookers/aka crock pots I know from past experience seem to be all over the board with regard to temperature on the "high" setting. The maillard browning reaction doesn't take place until the surface temperature gets up to 350F so I don't think we will get any crust color that way so we will need to turn to caramelization which is achieved through the use of sugars in the dough formula. The sugar can be any type of sugar from lactose (whey) if you don't want the sweetness associated with sugar, or any other sweetener aside from the artificial stuff which doesn't contribute to crust color. How much to add? Going out on a limb here, but I would guess that 5% would be a reasonable starting point. Time, time, time, it will take a fairly long time to bake any kind of pizza in a crock pot and all of that time might really dry the pizza out. If it does, an old trick is to add about 3% rehydrated mashed potato to the dough to help it retain water. Watch for any meats and especially the cheese to oil out. Give it a try and let us know what you find.

Good luck!

Tom Lehmann/The Dough Doctor  
5604

### **Dough Clinic / Re: Airy, puffy rim**

That finished crust has what I would call a bread like cell structure that could be caused by any of the following;

- 1) Excessive mixing time (too much gluten development at the mixer).
- 2) Stiff or non-extensible dough that resists oven spring. Increase dough absorption to the 63 to 65% range to see if that improves things.
- 3) The appearance of the raised edge/rim suggests a stiff or under hydrated dough. With sufficient dough absorption your baking temperature is high enough to reapply "pop" the dough during the first few seconds of baking if you have sufficient latent heat in the deck surface (what is the oven deck made of and how thick is it?)

What method are you using to form the pizza skins from the dough balls? Also, you might want to allow the dough to warm to at least 50F/10C before opening it into skins.

Tom Lehmann/The Dough Doctor  
5603

### **Dough Clinic / Re: Flour**

Sue;

No, but I used to have some very good friends living there, Efton and Fay Smith. About 2-miles west (towards Green Forest) of Alpena and about a mile south. Efton was born on Barley Mountain (you could see it from their farm) and bought the farm when he and Fay were married (a long time ago). Both passed away a good number of years ago at the nursing home there in Harrison. Folks at the feed store might remember him. I deer hunted all over that area and still continue to hunt down around St. Paul and Combs. Beautiful country!!! You should be in just about full color right now?

Tom Lehmann/The Dough Doctor  
5602

### **Dough Clinic / Re: Flour**

Sue;

I'm located in Manhattan, Kansas, about 350-miles north of you, or exactly 400-miles north of St. Paul, Arkansas. My wife and I are planning to take a long weekend trip down to St. Paul next summer, then with a little luck I hope to make it back down again in November to do some deer population control work. I've got pictures that I've taken in the Boston Range that will absolutely take your breath away, I can't imagine what it must be like in Wisconsin.

Tom Lehmann/The Dough Doctor  
5601

### **Dough Clinic / Re: Deep Dish Dough in Slow Cooker**

IronJ;

After I responded to your posting I went to the kitchen to stir a crock pot of chili that I was making with all the peppers I had to pick to avoid the frost last week, then I got to thinking about a pizza in the crock pot, the thought that crossed my mind was how will you be able to develop top color on a pizza being baked in a crock pot? If you put the lid on to retain top heat you will also retain moisture/steam and probably make something more like a wet pasta than a pizza, take the lid off and you don't have any top heat at all. Maybe cover with perforated foil to reflect heat back onto the pizza while still allowing steam to escape, but then will the escaping steam lower the "top" temperature to a point where it would still be all but impossible to develop any kind of top bake?

It would be an interesting project.  
Tom Lehmann/The Dough Doctor  
5600

### **Dough Clinic / Re: Stevia in the dough?**

Don;

Actually it is a sugar, but about 200 times sweeter than sucrose and for all purposes it is non-caloric. Unlike some of the other "artificial" sweeteners stevia has a high tolerance to heat so it survives normal baking temperatures quite well. The only impact that you will see from adding stevia to your pizza dough is increased sweetness.

Tom Lehmann/The Dough Doctor  
5599

**[Dough Clinic / Re: I need help with MATH to correct a dough formula](#)**

Let's see if we can walk through this one;

You total flour is comprised of 50% AP, 25% WW and 25% Bread Flour = 100%  
Your starter at 40% should be 40% of these weights:  $187g + 152g + 152g = 491g$ .  
( $491 \times 40$  press the "%" key and read 196.4g of starter)

That 196.4g of starter is comprised of flour + water + yeast? (what is the ingredient composition and amounts used to make the starter?)

That's as far as I can go without knowing what the composition of the starter is.  
Also, note the discrepancy in calculated amount of starter. Maybe I'm missing something?

Tom Lehmann/The Dough Doctor  
5598

**[Dough Clinic / Re: I need help with MATH to correct a dough formula](#)**

Since your SD starter is 100% hydration/equal parts of flour and water the starter will be 50% water. The flour that is in the SD starter is not used in the total flour calculation due to the fact that it is pretty well depleted through fermentation and exposure to acids and enzymes.

With 491 grams of total flour, 40% starter (196.4-grams) the starter will contribute 98.2-grams of water to the dough hydration calculation which is 20% absorption based on the total flour weight. If we are looking for 72% absorption subtract 20% from 72% = 52% (this is the % absorption that still needs to be added to the dough to give you a total dough absorption of 72% ( $491 \times 52$  press the "%" key and read 255.32-grams of water yet to be added to the dough. To check our math:  $255.32 + 98.2 = 353.52$  if we divide 353.52 by 491 (the total flour weight) and then multiply by 100 we get 72% total dough absorption.

If you just want to see what your existing dough absorption (in bakers percent) is just take the sum of all the water that you are adding to the dough and then add half of the weight of starter that you are adding as water (remember your starter is half water) and divide the sum by the total flour weight (491 in this case) and multiply by 100 to get the TOTAL DOUGH ABSORPTION.

Whew!

Tom Lehmann/The Dough Doctor  
5597

**[Dough Clinic / Re: Flat dough balls - too extensible](#)**

Barry;

The problem may lie with the 1% diastatic malt that you are using. If your flour is already malted (it will tell you on the bag if it's malted, or it may show that the flour contains malted barley flour, the addition of any more active/diastatic malt will contribute to a softer dough generally accompanied by stickiness. If your flour is not malted, a normal addition of diastatic malt is around 0.25% (assuming a 20 degree lintner value) which is a measurement of enzyme activity in the malt. I would suggest making a dough without the malt to see if that improves the dough, if it does then just switch over to a non-diastatic malt which you can use just like any sugar so there is no limit as to how much you can add except for the impact upon flavor and color of the finished crust. I've used non-diastatic malt at levels high enough to impart a malt flavor to the crust (think malted milk balls).

Tom Lehmann/The Dough Doctor  
5596

**Dough Clinic / Re: The secret of big bubbles in a crust.**

TDO;

Increasing the dough absorption by roughly 5% and allowing more time between re-ballng and opening the dough would be the first things that I would look at. I normally let the dough balls rest for an hour or more before opening into a skin. When you reference "pre-fermented pizza flour" are you saying that you use a dry sour in your dough? Your formula doesn't show this though, just curious.

Tom Lehmann/The Dough Doctor

5595

**Dough Clinic / Re: Another Green Egg guy with a dough problem**

B;

Maybe my approach is too simplistic, but why not just use your existing dough formula, delete the honey and see how that bakes, then if you still feel the need to test a "00" flour go ahead. You might also need to adjust the baking temperature a little too.

Tom Lehmann/The Dough Doctor

5594

**Dough Clinic / Re: Another Green Egg guy with a dough problem**

Can you put a piece of aluminum foil on the under side of the stone? I'm thinking that this might reflect some heat away from it, just a thought.

Tom Lehmann/The Dough Doctor

5593

**Dough Clinic / Re: Pease Porridge Hot, Pease Porridge Cold...**

JPB;

It sounds like the second pizza might have pulled enough heat out of the deck to allow for a slower bake and indeed more oven spring. Oven spring happens when the internal pressure within the dough increases sufficiently to expand the dough structure resulting in a greater volume/height and more open crumb structure. Oven spring ceases when the dough structure begins to set due to gelatinization of the starch. A colder than normal oven or baking surface can allow for the increase in oven spring due to the longer time needed for the starch to reach gelatinization temperature or a very hot oven can/will cause vaporization of water in the dough to very quickly cause the dough to expand resulting in what we call oven spring, but this must happen before the starch has a chance to gelatinize, this is why you get a very fast oven spring and usually a somewhat larger cell structure at the high baking temperatures.

Tom Lehmann/The Dough Doctor

5592

**Dough Clinic / Re: Cooling the douhg**

Roy;

If you will send me an e-mail at <thedoughdoctor@hotmail.com> I'll be glad to send you a copy of my Dough Management Procedure which is a comprehensive procedure for managing your dough to give you improved consistency for up to four days in the cooler.

Your IDY level appears a bit low for a dough that is to be managed for pizzeria use. I would suggest increasing the IDY to 0.375% while at the same time adjusting the water temperature to give you a finished dough temperature in the 80 to 85F / 26.6 to 29.4C range, under most conditions this will necessitate the use of 70 to 75F /

21.1 to 23.8C water.

Tom Lehmann/The Dough Doctor  
5591

### **Dough Clinic / Re: Pease Porridge Hot, Pease Porridge Cold...**

That's the best part, we get to eat our mistakes!

Tom Lehmann/The Dough Doctor  
5590

### **Chicago Style / Re: How to get deep dish out of pan**

I like to use a deep-dish pan gripper to hold the pan and then run a short blade spatula around the pizza to make sure it separates from the pan, then using a long blade decorating spatula or the (Pie Server #PS-196 From American Metalcraft) or something similar, insert the spatula/pie server between the pizza and the pan, then in one fluid motion raise the pan up quickly and stop, as if trying to flip the pizza out of the pan, as the pizza raises in the pan insert the spatula/pie server under the pizza and tipping the pan towards the spatula/pie server, and guide the pizza out of the pan.

Tom Lehmann/The Dough Doctor  
5589

### **Dough Clinic / Re: Pease Porridge Hot, Pease Porridge Cold...**

They don't get any better!

Tom Lehmann/The Dough Doctor  
5588

### **Chitchat / Re: LEOPARD SPOTTING CHAR WITH CONVEYOR OVEN?**

Zambo;

You bet! We have been doing it for years at the different pizza shows when we've had a pizza kitchen to work from.

First, if you have one of the newer generation air impingement ovens (less than 7-years old) set the temperature at 510F, if you have one of the older generation air impingement ovens, like the old M-M PS-360 ovens set the temperature as high as it will go (typically 525F).

Second: Delete any sugar, milk, or eggs from the dough formula.

Third: This is critical, you will need to use the Hearth Bake Disk (black anodized, non-stick finish, cloud hole pattern) from Lloyd Pans <[lloydpan.com](http://lloydpan.com)> or contact Paul Tiffany at Lloyd Pans <[p.tiffany@lloydpan.com](mailto:p.tiffany@lloydpan.com)> .

Fourth: Use a well fermented dough (cold ferment 48-hours is normally pretty good)

Fifth: Increase the total dough absorption to around 62 - 65% if possible.

Sixth: Open the dough balls by hand only (do not machine open)

Seventh: Place the opened pizza skin onto the Hearth Bake Disk, dress and bake (DO NOT OVER DRESS) More toppings is not better in this case.

Eighth: Set the belt speed to 5-minutes and adjust accordingly to prevent scorching the toppings.

No, the pizzas do not look like they were just baked in a wood fired oven at high temperature, but instead, they look like they were baked in a good, hot deck oven. Those strange shaped holes in the disk are what will provide the desired char on the bottom of the pizza while the solid rim on the disk will prevent the development of a "pizza bone" which is common when baking at high temperatures in these ovens with other baking platforms.

Tom Lehmann/The Dough Doctor

**Newbie Topics / Re: Wooden Peel care**

One other note regarding metal bench scrapers, DO NOT sharpen them on an angle like a knife, instead, the correct way to sharpen them (if you want to call it that) is to lay a fine cut file flat on a table then push the scraper along the file while holding the blade 90-degrees to the surface of the file. This puts a flat/square edge on the scraper so as it is used (held at about a 45-degree angle) that square edge will remove everything in its way and if used on a clean wood surface it will smooth the surface while removing minor imperfections. If you have a butcher block work surface it can't be beat for cleaning it. After scraping, just give the surface a light coating of mineral oil and you're good to go.

Tom Lehmann/The Dough Doctor

5586

**Dough Clinic / Re: PIZZA FLOUR BLENDS??**

I am not familiar with any "Italian" multi-grain flour blends but they are getting to be quite popular with a lot of the higher end pizzerias. You have two options, one you can buy a ready made multi-grain blend from most distributors. These are blends of anything from 7 to 11 or more different grains coarse ground and ready to add to your flour, or as I have been doing this past summer, we have been making our own multi-grain blends. We start out with a trip to the supermarket where we buy a variety of different grains such as teff, quinoa, sunflower seeds, buckwheat, triticale, rye, flax seed, uncooked oatmeal, corn meal, etc. We put these together to make a blend (you will want to experiment with the composition of the blend). Put 10-ounces of the blend into a bowl and weigh it for tare, now begin adding warm (NOT HOT) water to it while stirring when you get a thick mass, set aside to hydrate for 30-minutes, add water to the mass again until you achieve the consistency of thick oatmeal, set aside again, this time for 60-minutes. Keep adjusting the amount of water until the finished consistency after hydration is like very thick oatmeal. Now weigh the bowl again, it will weigh substantially more due to all the added water. Subtract the tare weight of the bowl so now you have the weight of the multi-grain blend and added water. Subtract 10 from this number and you will have the weight of water added. Divide the weight of water added by 10 and multiply by 100 to find the % absorption of the multi-grain blend. From that % subtract 5. This will be the multi-grain absorption value that you will need to use when calculating the total absorption of your dough. Assuming that you will use the multi-grain blend to replace 40% of the total flour in your dough formula (this is what many use) take 40% of your total flour weight and replace it with your multi-grain blend, now calculate the absorption of the multi-grain blend based on the above calculations. The remainder of the flour will be your regular pizza flour. Use 55% to calculate the absorption of that portion of your flour. Example: Your dough size is based on 25-pounds of flour. Replace 40% with your multi-grain blend = 10-pounds of multi-grain blend needed. The remainder of the flour (60%) will be your regular pizza flour (15-pounds). Let's assume the total absorption of the multi-grain blend was 80%, subtract 5% = 75%. To calculate dough absorption 10-pounds X 75 (press the % key) and read 7.5-pounds of water. 15-pounds X 55 (press the % key) and read 8.25-pounds of water. Add the two up  $7.5 + 8.25 = 15.75$  pounds of water will need to be added to make your multi-grain dough (15.75 divided by 25 X 100 = 62% (based on the total weight of the flour plus the multi-grain blend). THESE NUMBERS ARE ONLY TO SERVE AS AN EXAMPLE IN DOING THE CALCULATION. The ACTUAL dough absorption will most likely be somewhat higher. The absorption of the multi-grain blend will vary with the grain/seed composition as well as the

amount used. I wrote very comprehensive instructions for doing this calculation in one of my In Lehmann's Terms articles in PMQ Magazine.

It's important to understand that the dough will be softer and more sticky than you are used to seeing immediately after mixing, so you will need to allow the dough to hydrate for 60-minutes after mixing before proceeding with cutting/scaling and balling. At the time when you are balling the dough it SHOULD FEEL SLIGHTLY TACKY, if it doesn't you probably don't have enough water in the dough and finished crust quality will suffer. Done correctly, these finished crusts have a great flavor and texture.

Tom Lehmann/The Dough Doctor  
5585

### [\*\*Dough Clinic / Re: PIZZA FLOUR BLENDS??\*\*](#)

Zambo;

Let me know if you need any help with the calculations.

By the way, I've found that a few extra sunflower seeds in the multi-grain mix is much appreciated by many customers. Their appearance makes for a very good looking crust and the flavor is superb.

Tom Lehmann/The Dough Doctor  
5584

### [\*\*Chitchat / Re: Home Run Inn frozen pizza?\*\*](#)

CDN;

The reason why those crusts are so oily is because they are formed using a hot press. If you turn one over you will see what appears to be circular ridges in the bottom of the crust, that's a give away that they were formed on a hot press. Hot pressed crusts are pretty well coated in oil just prior to pressing. The oil provides two benefits, first it helps the dough to release from the top die of the press and secondly, it provides added oil to the pan in which it is baked for improved pan release properties. In this instance, the dough ball is oiled, then placed onto a special pan which has those circular ridges (to help control snap-back) and pressed right in the pan. The crust is baked (par-baked) on the pan and then automatically removed from the pan after baking, it is then cooled and sent to the topping line for finishing and packaging. A lot of people like this type of crust due to the fat content (we used to say that everyone has a "fat loving " gene) and since there is so much fat/oil in the pan the crust is closer to fried than baked, then, due to the dimensional differences of those circular ridges, they tend to get crispier than the rest of the crust providing an added level of eating interest.

Tom Lehmann/The Dough Doctor  
5583

### [\*\*Dough Clinic / Re: Explanation of MegaRims?\*\*](#)

JPB;

There are a number of things that influence the way the rim performs/expands during those first few seconds of baking, dough absorption, yeast level, flour type, amount of fermentation, oven temperature and decking and how the edge was actually formed are the main factors to consider. My approach has always been to go after the edge forming technique first. Begin with a very narrow untouched edge and work out from there to see if you can achieve the edge characteristic you're looking for. I wouldn't worry too much at this time as to how your dough or edge looks prior to baking as compared to that of others as your dough is not the same so it will in all probability perform differently. If this approach fails to give the results you're looking for then you will need to delve deeper. In that case I might

suggest looking at variations in dough absorption first and possibly yeast next.  
Tom Lehmann/The Dough Doctor  
5582

**Stones/tiles/steel, Pans & Accessories / Re: Pans Ruined in Dishwasher - You'd think I'd Know Better**

JPB;

Now that you've got your pans cleaned you will most likely want to re-season them again to improve the quality of bake. Wipe the pans inside and out with a thin coating of salad oil and place in a 425F oven for about 30-minutes (make sure a window is opened as there will probably be some smoke). The newly seasoned pans will have a slight amber tint that will darken with use. Then NO NOT EVER WASH YOUR SEASONED PANS. To clean them just wipe out with a clean towel while still warm, or if you just gotta get them wet, here is the procedure for washing a seasoned pan: Grasp pan in one hand and soft plastic bristle pot brush in the other, dip pan into hot soapy water and gently scrub the pan using the pot brush, rinse the pan, put down the pot brush and grab a clean towel, wipe the pan dry on both the inside and outside (note that you have NOT released your grasp on the pan until now), place the pan into a warm oven to finish drying for about 10-minutes, or do as I do, turn the oven off, open the door and come back later to remove the now dry pans.

By the way, now you know the biggest advantage to the commercial quality black anodized finish pans.

One other thing, most of the pizzerias that I've worked for remove the pizza from the pan for cutting and then place it back into the pan for serving. When this is done in a commercial establishment the pans MUST be washed after every use, this is where the black anodized finish pans are a real life saver, or should I say "pan saver".

Tom Lehmann/The Dough Doctor  
5581

**Chitchat / Re: Home Run Inn frozen pizza?**

Trinity;

Those Totino's crusts, like the Jeno's crusts are submersion fried. Pillsbury (Totino's) and Jeno's were in litigation over the process for more than 10-years at a cost of some 12-million dollars. It was finally settled when Jeno Palucci (not sure about the spelling) sold out to Pillsbury a number of years ago.

Tom Lehmann/The Dough Doctor  
5580

**Stones/tiles/steel, Pans & Accessories / Re: Pans Ruined in Dishwasher - You'd think I'd Know Better**

JPB;

If your intent is to just use the pans for serving there is no need to season them, but do be careful as to how you wash them, additionally, since your pans responded to the dishwasher in the way they did, there is a possibility that they are just plain spun aluminum pans and not anodized. The anodizing process helps to protect the pans (for a time) from such things as you experienced. One of the reasons why most stores offering their pizzas to their customers in pans also bake in the same pan is so the pizza fits the pan. If the pizza is bigger or smaller than the pan they have a problem on their hands. I realize that this is not a problem in a home setting. If you want to experiment with pan baking on a deck keep in mind that you might need to place a pizza screen under the pan to hold it up off of the deck to

prevent the bottom of the pizza from becoming too dark. If your pans are bright (silver color) you may not have that problem as the bright reflective color of the pan may reflect sufficient heat away from the bottom of the pizza to prevent excessive crust color development, then too, you can bake in the pan (any pan will do in this case) until the crust is just par-baked and pop the pizza out of the pan to continue/finish baking on the oven deck (this will set the size of the pizza) then remove the pizza to a cutting station/board where you will cut it into the desired number of slices and then slide it back into the baking pan for serving.

Tom Lehmann/The Dough Doctor  
5579

### [\*\*Chitchat / Re: Home Run Inn frozen pizza?\*\*](#)

JKB;  
Remember the old adage used by General Patton "hold your friends close, but hold your enemies closer". Love your own pizza but try some of the others too, if for no other reason just to reaffirm the love for your own pizza.

Tom Lehmann/The Dough Doctor  
5578

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pans Ruined in Dishwasher - You'd think I'd Know Better\*\*](#)

Unless the pan is one of those from Lloyd Pans with their proprietary non-stick finish you will need to have oil in the pan for each use, sometimes you can get two bakes out of a pan that was oiled once but seldom more than that. The other thing to consider is how oil actually functions in a pan, it isn't there just to improve the release properties, it also helps the bake by bridging the any minor air gaps between the dough and the pan surface resulting in much improved heat transfer, and if used at sufficient quantity it can give the finished crust a fried quality as well as flavor.

Tom Lehmann/The Dough Doctor  
5577

### [\*\*Dough Clinic / Re: How do I make my pizza dough crust lighter/whiter without sacrificing sweetness?\*\*](#)

And yet more questions, is it the top of the pizza that you want to make lighter in color, the bottom of the pizza or both top and bottom? What kind of oven are you using? If you are baking in a pan, tell us about the pan, color and depth.

Tom Lehmann/The Dough Doctor  
5576

### [\*\*Dough Clinic / Re: Storing already panned dough\*\*](#)

It sounds as if your dough management may not consistent, my mantra has always been "time and temperature control are the keys to effective dough management.

Allow me to pose a few questions:

Do you have a targeted finished dough temperature? If so what temperature/temperature range are you targeting?

Do you measure the temperature of each dough as soon as it is finished mixing?  
Do you take the dough directly from the mixer to the bench for scaling and balling?

Do you monitor the temperature of your walk-in?

Do you store the dough in the walk-in as far away from the door as possible, if not do you have plastic strip curtains over the door?

These would be the first questions I'd ask and explore before looking at the dough formula for a possible solution.

Tom Lehmann/The Dough Doctor  
5575

**Dough Clinic / Re: How do I make my pizza dough crust lighter/whiter without sacrificing sweetness?**

Hey guys, that's an air impingement oven, just change the top finger configuration to flow less air to the top of the pizza. No formula changes needed.

Total cost: about \$100.00 for a new top finger.

Tom Lehmann/The Dough Doctor  
5574

**Dough Ingredients / Re: dough additive**

It should provide an interesting malted milk like flavor to the finished crust, since it already has sugar in it don't add any supplemental sugar the dough formula.

Tom Lehmann/The Dough Doctor  
5573

**Shop Talk / Re: Hobart Cutter Mixer and Good Recipes**

Nice looking kitchen. Your VCM doesn't require a totally different dough formula, just a couple of tweaks: Whatever type of yeast that you use should be suspended in a small amount of warm water (ADY and IDY) or cool water (fresh/compressed yeast) as the mixing time isn't sufficient to guarantee good yeast dispersion throughout the dough, plus the mixing time is too short for ADY to be thoroughly incorporated into the dough (4 to 5-minutes). Make sure the VCM has the DULL mixing blade, the sharp one is for cutting veggies, and cheese. Attachments are available from Hobart if you need anything.

Put the water (65F) in the mixing bowl first, then add the yeast suspension, salt and sugar (if used) and lastly add the flour. Total mixing time will be around 70-seconds. Mix the dough just enough to achieve a smooth dough consistency. DO NOT OVER MIX. Better to under mix than to over mix. Your targeted finished dough temperature should be in the 75 to 80F range for this mixer. Then just employ an effective dough management procedure and you should be good to go. I notices that you mentioned a spiral dough mixer too. These mixers are totally dedicated to only one thing, mixing dough, and they do a very fine job of it too. Planetary and VCMs are multi-functional in their role in a pizzeria.

Tom Lehmann/The Dough Doctor  
5572

**Shop Talk / Re: Hobart Cutter Mixer and Good Recipes**

If you will e-mail me directly at <thedoctor@hotmail.com> I'll be glad to provide you with a copy of a very effective dough management procedure that incorporates all of the key points for effective dough management.

The changes that I would recommend to your proposed formula and procedure are as follows:

- 1) Since you are planning to use IDY, suspend it in 16-ounces of water at 95F as this will ensure optimum yeast performance, allow the yeast to hydrate for 10-minutes, then add it to the 65F water in the mixer bowl along with the salt and sugar (you might want to re-think using sugar in a coal or wood fired oven due to the probability of excessive charring/most formulas for use in these types of ovens do not use sugar)
- 2) No need to mix the salt, (sugar?) hydrated yeast and water together.
- 3) Add all of the flour at one time, 1,750 rpm will ensure thorough incorporation in 60 to 70-seconds.

The rest of your proposed dough management procedure should work fine for you, but removing the dough 4-hours prior to use from the cooler might be more than needed or desirable (especially with your proposed IDY level of 0.5%), instead, pull the dough out of the cooler at least 2-hours prior to use and check the temperature, when the temperature of the dough ball reaches 50F you are good to go with beginning to use it, this method will allow you to effectively use the dough for at least 3-hours after you begin opening it into skins.

Tom Lehmann/The Dough Doctor

5571

### **Dough Clinic / Re: Storing already panned dough**

Been there, done that too, the best way to use that panned/risen dough is as follows:

1) Add it to your new dough at the rate of 15% based on the total dough weight, this will calculate out to about 12-pounds for a dough based on 50-pounds of flour. Best way to add it is to chop it into chunks and drop it into the flour just before you begin mixing.

2) Still have dough left over? Convert it into bread sticks, or garlic knots. Cut into 1" strips (about 1.75-ounces) spray with a LITTLE water and roll under your hands to form a "rope" (hot dog), leave as is for bread sticks, or tie into a single overhand knot for garlic knots, place onto a lightly oiled pan, brush with oil or melted butter and allow to proof for about 40-minutes (you will need to experiment to find the best time). You can also proof on a sheet pan lightly dusted with corn meal then gently remove and transfer to a prep-peel to peel into the oven if you wish to bake directly on the hearth. I like to par-bake only, then for the order, just place back in the oven to thoroughly reheat and finish browning, brush with garlic flavored butter oil with diced garlic pieces for the garlic knots, or butter oil for the bread sticks and finish with a good dousing of Parmesan cheese blended with dried basil and a little Romano.....OR, make them into dessert sticks by brushing with butter oil, and par-baking, when reheated, brush again with butter oil and toss in a cinnamon-sugar mixture while still hot, serve with a dipping cup of powdered sugar-water icing.

If you still have too much dough left over you are being overly optimistic on your evening sales and need to reassess how much dough to pull.

Tom Lehmann/The Dough Doctor

5570

### **Shop Talk / Re: Hobart Cutter Mixer and Good Recipes**

We had an early model VCM when I was working at the American Institute of Baking and that was the rpm of that 45-quart model. Hobart may have slowed it down a bit since then, like you said, "a good thing". The VCM is the only mixer that you can truly over mix the dough in. Due to the high mixing speed the doughs tend to come off of the VCM a little tacky but that quickly leaves the dough.

Tom Lehmann/The Dough Doctor

5569

### **Dough Clinic / Re: Pizza Dough in the danger zone.**

I'll toss my hat into the ring too.

Look at it like this, bakers, for hundreds of years have allowed dough to ferment at ambient/room temperature for at least 4-hours, and in most cases, a lot more.

Typical sponge-dough process bread used to be made with sponges that were fermented for up to 6-hours and in some cases 18-to 24-hours, additionally, many commercial bakeries used to ferment their dough in temperature/humidity

controlled rooms (proofers/proof boxes) at 90F and approximately 80% relative humidity and to top that off they then subjected the dough to an hour or more of final proof at 100 to 105F with 86 to 88% relative humidity.....all of this PRIOR to baking! Even dough made with fairly high levels of milk and egg are subjected to many hours of combined fermentation, rest, and final proof time prior to baking.....when was the last time you heard that white pan bread or your favorite sweet dough or Danish pastry was implicated in a microbial related food safety issue? The biggest concern that I have, and I've expressed it many times before is that of the probability of cross contamination when we use raw shell eggs in making pizza dough. Doing so at home is one thing, but doing so in a commercial business establishment/pizzeria is a whole different thing, remember, it ain't the dough, it's the cross contamination that's the issue here. Mind you, all of this discussion is on yeast leavened dough only, cookie doughs ARE A DIFFERENT KETTLE OF FISH as you don't have the acid development as you do in a yeast leavened dough.

As for the food safety inspector.....well, I won't dive into that pool, but as the military slogan goes "when in doubt shoot it, salute it, or paint it" or just say NO. How hard would it have been for her to simply say "Let me research that and get back to you?"

Tom Lehmann/The Dough Doctor  
5568

#### **Dough Clinic / Re: A little extra time..no problem?**

A lot would depend upon the flour you're using and the amount of yeast being used. As long as the dough is being fermented (sum of all the time that it is between the temperature of 45F and about 125F) the yeast is producing acids, alcohol, and carbon dioxide. The alcohol and acids are extremely degrading on the flour proteins, weakening them quite significantly, plus the enzymes present in the yeast will also continue to hydrolyze proteins, further weakening the flour. The acids will also lower the pH of the dough making it more difficult to brown during baking unless you are baking in a super hot oven (this is why sourdough bread is so light in color). The fact that you put the dough back into the fridge is what firmed the dough sufficiently, allowing you to open it into a pizza skin without it becoming a sticky mess. Without knowing more about the dough formula and dough management procedure I can't say if the yeast was in a condition to provide any further fermentation, or if the dough was just so weak that it lost its ability to retain leavening gas. In any case, if you open the dough gingerly, taking care so as not to degas it, and bake it in a hot enough oven on a good solid baking surface capable of holding a lot of latent heat, you can generally get away with making a pizza from the dough.

Tom Lehmann/The Dough Doctor  
5567

#### **Dough Clinic / Re: Pizza Dough in the danger zone.**

Don't forget about your state restaurant association, be sure to contact them to let your feelings be known. By the way, you also have the right to ask who was consulted in making such a stupid regulation. Lean of your state restaurant association, that's what they're there for, if we don't, independents will be regulated out of existence.

Tom Lehmann/The Dough Doctor  
5566

#### **New Forum Members / Re: Mobile Pizzeria**

Pizza trailer/truck or other?

Begin by discussing your thoughts with your local codes/licensing and health department to see what they will require of you....better to do it now as opposed to finding out about something later and since you will need to be licensed you will want to and need to play by their rules. Also check to see if you will need to be licensed in each county that you plan to operate in or if your state license will allow you access to the entire state. If you're thinking about a "pizza trailer" go back in the PMQ Think Tank archives as there was once a lot of discussion on that very topic. Look for postings by Paul Nyland/Pizza Paul.

Tom Lehmann/The Dough Doctor  
5565

**[General Pizza Making / Re: Beer Pies \(pies that make you want to drink beer - a.k.a. bar pies revisited\)](#)**

The thread topic brings up a story about a pizza manufacturer in Wisconsin that started out making pizzas and selling them to local bars along with a simple toaster oven to bake them in. The concept worked better than expected as bars were reporting that when the pizzas were served (at no cost to the patrons) beer sales rose significantly...great for business! As time went on other manufacturers, both large and small, got onto the wagon for a piece of the action and sold their pizzas at a lower cost which was received by open arms by the bars (remember that they were giving it away when the bar was busy) in short order the bars all discovered that when they used brand "X" pizzas (all others except for the original pizzas) the bar patrons ate the pizza but beer sales didn't go up resulting in a potential loss of revenue....not a good thing! So they went back to the original pizzas (from the unnamed manufacturer) and viola! Consumption of beer again increased when the pizza was served, fact or fiction? Turns out it was fact, the manufacturer made their pizzas using the cold press forming method, that method requires the use of high levels of L-cysteine (sold in a commercial form called PZ-44), it just so happens that when used at high levels, L-cysteine mimics the effect of thirst on your lips....ahhhh, give me another beer!

None of the other manufacturers used the cold press forming method so they didn't need to use L-cysteine, and if they did it was at a much lower level so it didn't mimic thirst as the higher levels did. You can see this for yourself if you use PZ-44 in your dough at roughly 3-times the recommended level. If you do this your dough management procedure should look like this: Mix, immediately scale and ball, rest for 10-minutes, open into a pizza skin, place onto an oiled pan, rest for 5-minutes, again press the dough out to completely fit the pan, dress and bake. To replicate those first pizzas mentioned par-bake the skins until they just begin to show color, immediately upon removal from the oven invert on a cooling screen to cool for 30-minutes, then dress and place into a toaster oven to finish the pizza.

A little "pizza history" there.

Tom Lehmann/The Dough Doctor  
5564

**[General Pizza Making / Re: Deck oven baking](#)**

If we are talking about a new commercial deck oven the common practice is to spread a thin layer of corn meal over the deck surface, as soon as the corn meal is toasted you can sweep it out of the oven and you're good to go ahead and begin baking right on the deck. A good idea with a new deck oven is to bring it up to temperature gradually before you begin baking in it. Start at 300F and allow to operate for 1-hour, then 350F for another, progress all the way up to your highest baking temperature then allow to operate a couple of hours. Shut down for the day,

on the following day set the thermostat at 450F and treat the deck with corn meal as described above, after sweeping the corn meal out of the oven set the thermostat to your desired baking temperature and you're ready to begin baking pizzas.

Tom Lehmann/The Dough Doctor  
5563

### **Shop Talk / Re: Is polished concrete a suitable surface for opening dough?**

When you're doing it at home for your family anything does, but when you add the word "commercial" to the equation it all changes as there are now specific rules, regulations and laws that you must abide by. At the risk of repeating myself, this is something that you need to discuss with your local health inspector. If they approve of it, great, if they don't, better to find out now rather than later when they won't issue a certificate until you get it replaced.

Tom Lehmann/The Dough Doctor  
5562

### **General Pizza Making / Re: Deck oven baking**

Some of the advantages of an air impingement oven over a deck oven are:

- 1) Smaller foot print required
- 2) Ease of operation (no oven tender is needed)
- 3) Improved uniformity of bake
- 4) Increased production rate
- 5) Handles moisture released from the toppings much better than other baking systems (great for pizzas heavily laden with vegetable toppings)
- 6) Potentially provides for a cleaner operation
- 7) Potentially shorter bake time as compared to traditional deck ovens
- 8) Potentially lower operating cost

Greatest disadvantage:

All the ambiance of a giant shoe box

Tom Lehmann/The Dough Doctor  
5561

### **Dough Clinic / Re: Need Instruction and Help**

Pieman;

When dough is press formed you MUST have a very soft, extensible and relaxed dough for it to produce a quality pizza skin and resulting crust. Presser crust do not like to be made with a very strong flour as it just makes the memory/shrinkage issue all the more worse, instead use a flour with not more than 12.8% protein content (think General Mills Superlative), then allow the dough balls to cold ferment for at least 48-hours, remove the dough balls very carefully from the dough box (DO NOT ROUND OR SHAPE) and place onto the lightly oiled platen, set the head temperature at 250F and press for 7-seconds. If you still experience too much snap-back/memory add between 1 and 2% PZ-44 to the dough.

For the most part you cannot just take a dough that is developed for opening by a different manner and expect it to open decently using a hot press. Also, there will be a difference in crumb structure in the finished crust between hot pressed and other opening methods. I have discussed this in much greater detail in one of my articles in PMQ Magazine (In Lehmann's Terms / archives).

Tom Lehmann/The Dough Doctor  
5560

## **Prep Equipment / Re: Commercial Proofer/Retarder Recommendation**

Pavoid;

Actually you're talking about two different pieces of equipment. A retarder operates at refrigerated temperature of 38 to 42F while a proofer operates within a normal temperature range of 85 to 105F with humidity control to provide a relative humidity of 75 to about 86% (could go to as high as 100% but then it is raining in the proofer, not a good thing). If you want to have a good, small proofer look at the Belshaw Econo-Proofer from Belshaw Bros., Inc. at [www.belshaw.com](http://www.belshaw.com) as for a walk in retarder, Hobart makes some pretty good ones, but you might also go to the PMQ Think Tank and post a question to the resident equipment expert George Mills regarding walk-in retarders/coolers.

Tom Lehmann/The Dough Doctor

5559

## **Shop Talk / Re: What sort of oven is this I spotted it on Pinterest wood fire or gas or both?**

I've personally used them quite a number of times for making a variety of different types of pizzas. They will operate at temperatures up to 1,000F (determined by hand held IR thermometer) when wood or coal fired so they're no slouch in the temperature department. Depending upon the model, the stone hearth is massively thick too so there is never an issue with latent heat in the deck. The only down side to these ovens is that some operators insist upon operating them at 450 to 500F for making a traditional American type of pizza, they do a great job, but what a waste of a great potential in the oven. My own preference is for one that is both gas fired and wood or coal/anthracite as this allows the oven to be idled to 300-350F overnight and quickly brought back up to baking temperature in 2-hours or a little less. Only once did I work with a 100% wood fired version, never again! I took two days to bring it up to baking temperature from cold and you have to constantly feed it, then in the morning it took about four hours to bring it back up to baking temperature. Remember, with these ovens, due to their massive deck you have to rebuild the latent heat in the deck before you are ready to bake, and if you let the oven cool down that can take time. You will also need to make sure your insurance will cover a wood or coal fired oven in your store, and if you rent make sure your lease will allow this type of an oven too, lastly, don't forget to check on any applicable codes regulating coal or wood fired ovens.....so many things to think about.

Tom Lehmann/The Dough Doctor

5558

## **Prep Equipment / Re: Commercial Proofer/Retarder Recommendation**

Brian;

An unused refrigerator would work fine for your retarder/cooler for cold fermenting the dough in. Just confirm that it is working properly and holding between 38 and 42F. I like to use plastic bags for storing the dough in as the grid shelves can be left in place and the bagged dough balls just spread out on the shelves without the need to go back into the fridge to cross stack and nest or cover dough boxes. By using bags you can put the dough balls in the fridge and come back to it at the end of the cold ferment period. There has been quite a bit of previous discussion on bagging dough balls, but my method is to lightly oil the dough balls, and drop them into plastic food storage bags, they're like bread bags, they're cheap and available from most restaurant suppliers or on line. Twist the open end of the bag into a pony tail to close (DO NOT TIE) and tuck the pony tail

under the dough ball as you place it on the shelf in the fridge. To use the dough, bring out to room temperature and allow to warm until the dough reaches at least 50F then begin opening the dough balls into pizza skins, dress and bake.

Depending upon your dough formula and dough management procedure you will probably want to experiment with the temperature that you let the dough balls warm to prior to opening them to see what works best for you. As for cold fermentation time, you will want to experiment with that too, begin at 24-hours, then go to 48-hours and then to 72-hours. If you would like to get a copy of my Dough Management Procedure just e-mail me at <thedoughdoctor@hotmail.com> and I'll be glad to send you a copy.

Tom Lehmann/The Dough Doctor  
5557

### **General Pizza Making / Re: Pizza Pocket Dough Formula?**

I would suggest using a typical bread type flour with protein content in the 10.8 to 11.5% range. I'm not so sure I'd want to use diastatic malt unless you are looking for a potentially sticky dough. Non-diastatic malt would be a much better choice for this type of product. As for baking, I'd suggest baking on a screen as opposed to on the deck as you will have a more difficult time getting the center to heat to or above 165F without getting the crust too dark where it is in contact with the oven deck. You might also want to consider brushing the pizza pocket/calzone with clarified butter or garlic flavored butter (commercial product recommended) immediately before baking, a nice addition is to sprinkle the top surface with shredded Parmesan cheese too. Don't forget to cut a couple of slits into the top to allow for the release of pressure from within the sealed pocket, failure to do so will result in the pockets blowing up like a balloon and sometimes even blowing open along the seam. If you are going to make a lot of them be aware that many bakery suppliers carry what they call a fried pie crimping tool. It's made of cast aluminum and crimps/trims the dough all in a single operation. If I remember correctly the crimpers are designed for crimping and trimming a folded 6" diameter circle of dough.

You may need to experiment with the baking temperature too, I'm thinking that about 450F might be close to what you will need to be baking at in a deck oven.  
Tom Lehmann/The Dough Doctor  
5556

### **New York Style / Re: Having trouble stretching dough for Artichoke Basile's Margherita recipe.**

"High gluten" high protein flour will almost always give a tougher and more elastic dough than all purpose, or lower protein content flours with all things being equal. When high protein flour is used, especially with lower dough absorption the dough typically needs to be fermented for a longer period of time. For a dough made with a high protein/high gluten flour, even with 2% IDY, a total of only 2.5-hours of total fermentation is quite short, especially in view of the 54.36 dough absorption being used and what I will assume is a hand forming technique for opening the dough ball into a pizza skin as opposed to using a mechanical dough sheeter/roller.

Actually, the dough that you are making along with the dough management procedure employed isn't all that much different from an emergency dough which can save the day in a pizzeria if you find yourself out of dough for any reason, but aside from that there isn't too much to say about it. A good experiment would be to oil the dough balls immediately after forming and place in individual plastic bags (do not seal closed) instead twist the open end into a pony tail and tuck it under the dough ball as you place it in the fridge. Allow the dough balls to cold ferment for

24-hours, and 48-hours to see if that improves the way the dough opens for you. I'm betting it will. If you don't want to cold ferment try allowing the dough balls to ferment at room temperature for more than the 1.5-hours they are presently receiving, by progressively allowing the dough balls to ferment for at least 2-hours more in 30-minute increments you should see some improvement and be able to zero in on a time that allows the dough to be opened more easily.

Keep us posted on your results.

Tom Lehmann/The Dough Doctor

5555

### **Dough Clinic / Re: Making pizza dough for my pizza shop, debugging**

Tay;

Here is the procedure that was designed specifically to address the problems that you are experiencing.

The dough is designed to come off of the mixer at 80 to 85F/26 to 29C, and the water temperature is adjusted to give you this finished dough temperature, make adjustments as necessary to achieve/maintain this temperature range.

1) Put water (70F/21C) in the mixing bowl first.

2) Add the flour followed by the salt, sugar and IDY.

3) Begin mixing at low speed for 2 to 3-minutes (you need to mix just enough so you don't see any dry flour in the bottom of the mixing bowl).

4) Add the oil and mix one additional minute in low speed.

5) Mix the dough in medium speed for 8 to 10-minutes or in low speed for 15 to 20-minutes in the dough cannot be mixed at medium speed.

Put the mixer in low speed and while running, pour 1-ounce/28-grams/ml oil down the inside of the mixing bowl allowing the mixer to run for 30-seconds. This will coat the dough with oil making it much easier to remove from the bowl.

6) Take the temperature of the dough, you are looking for a finished temperature of 80 to 85F/26 to 29C) record the temperature for future reference.

7) Take the dough DIRECTLY to the bench for scaling and balling.

8) Place the dough balls into your plastic dough boxes and wipe the top of the dough balls lightly with salad oil.

9) Take the dough boxes DIRECTLY to the cooler and cross-stack the dough boxes to allow for heat ventilation. Allow the dough boxes to remain cross-stacked for at least 2.5-hours, then down-stack the boxes. This is where the top box is removed and placed in the bottom position for building a new stack. This new stack will be just in reverse order (from top to bottom) of your original stack.

10) Allow the dough to cold ferment in the cooler for 24 to 48-hours. The dough will keep for up to 72-hours in the cooler.

11) To use the dough, remove the number of dough boxes that you anticipate you will need to use over the next 3-hours and allow to set at room temperature (keep covered at all times) until the dough temperature rises to 50 to 55F/10 to 13C, then begin opening the dough into skins as needed. The dough will remain good to use over about a 3-hour period of time (

5554

### **Dough Clinic / Re: Making pizza dough for my pizza shop, debugging**

TAY;

SORRY ABOUT THAT, I HIT THE WRONG KEY AND POSTED BY ERROR.

To continue:

The dough will remain good to use over a 3-hour period of time. To use any dough balls that have not been used in this time, open the dough balls into skins and place onto pizza screens put the screens in a wire tree rack and place in the cooler

for use later in the day. Be sure to cover the rack of dough skins with a plastic bag to prevent drying. To use the pre-opened dough skins, remove from the cooler, allow to warm at room temperature for about 20-minutes, then use in your normal manner. If you bake on pizza screens, be sure to remove the dough from the screen it was stored on and place onto the baking screen. Failure to do this may result in the dough/crust sticking to the screen after baking. If you bake on the deck just remove the dough from the screen, place onto your prep-peel stretch to clean up the shape a little if necessary, dress and bake in your normal manner.

This should get you started and address the problems for are experiencing.

Tom Lehmann/The Dough Doctor  
5553

### **Shop Talk / Re: Baking temp and time for conveyer ovens**

Tay;

Your temperature is within the normal range for baking in an air impingement oven. The lateral heat problem is one that is experienced with some regularity in air impingement ovens, especially those of older design. New production ovens have, for the most part, addressed the problem. You may need to go back to the manufacturer to have new fingers installed (reduction in airflow on the hot side) to address the problem. You might also try baking at a lower temperature, 450F, as the problem seems to be diminished when baking at lower temperatures.

Tom Lehmann/The Dough Doctor  
5552

### **Dough Clinic / Re: Making pizza dough for my pizza shop, debugging**

There are two styles of pan crust pizza, thick crust where the dough is either rolled out or stretched out to fit the pan, the dough is then given a short proofing period, typically 30 to 45-minutes before it is dressed and baked. The other is deep-dish style, here a deep pan is used (1.5 to 2-inches deep/37 to 50 mm) and the dough is fitted to the pan in the same manner, but the dough is allowed to proof/rise for upwards of 75-minutes or more depending upon the desired final crust thickness. In either case, the dough management procedure will be the same as previously discussed. The only change you will need to make will be as follows:

- 1) Open the dough ball to fit the pan. (oiled or greased pan)
- 2) Place the opened dough piece in the pan, cover and set aside to proof/rise as necessary.
- 3) Note: A common way to handle pan style pizza dough after panning is to allow it to rise to a predetermined height, normally about 1/2 of the normal proof height, then take the panned dough to the cooler (do not cover for at least 30-minutes) then cover to prevent drying. The dough can be stored in this manner for the remainder of the day if necessary.
- 4) The dough will continue to rise in the pan but due to the chilling of the dough it will stop or drastically slow in rising at the desired height. You will need to experiment to find out what the correct height is.
- 5) To use the pre-risen panned dough, remove from the cooler as needed, dress and bake. A lot of pizzerias will prepare their dough in this manner before they open in the morning then make another batch in the afternoon for the evening trade. Pizza Hut, when they used to do all of their dough preparation at the store had a line stamped into the side of the pan, about 1/2-inch (12.5 mm) above the bottom of the pan as an indicator for the height that the dough was to be allowed to proof to before going to the cooler.
- 6) Any proofed, unused dough at the end of the day can be incorporated into your new dough at the rate of 15% of the total dough weight maximum.

I hope this helps,  
Tom Lehmann/The Dough Doctor  
5551

### **Dough Clinic / Re: Dough Improver? Does it make a difference**

Dough improvers are divided into two different classes, strengtheners and reducing agents. Strengtheners can be things like DATEM, ascorbic acid and oxidative enzymes. Their function is to make the dough stronger, in bread production their observed function is to increase the volume/height of the finished bread. In pizza production, with dough that is properly managed you probably not see any affect. Reducing agents include things such as proteolytic enzymes (protease), L-cysteine, glutathione (dead yeast), deodorized vegetable powder (garlic and onion), and papain. These additives weaken the dough making it more extensible with reduced memory or snap-back. There is some application of these ingredients in pizza production but mostly limited to crusts that are formed using one of the pressing methods, but it may also be used by wholesale producers using the sheet and die cut forming procedure where short fermentation times are the "norm" and dough shrinkage after cutting can get to be a problem. In bread production, especially commercial bread production these additives are used primarily to reduce dough mixing time. Other additives are designed as bread crumb softeners, aka anti-staling agents, these are the ingredients that allow you to have bread that remains soft and palatable for two weeks or more after purchase. They may include things like DATEM especially in combination with mono and di-glycerides, and enzymatic crumb softeners (enzymes). These are essentially never used in pizza production of any type. Lastly, there is a group of additives that are designed specifically to address rope and mold issues in bread that will have a shelf life of more than four days. Included in these additives are sodium and calcium propionate, potassium sorbate, tartatic acid (raisin juice concentrate), and blends of acetic, lactic and propionic acid. These additives would only have application in pizza crusts that might be packaged and sold at the local supermarket or through a distributor.

There is also one other type of dough improver that seems to be popular in the UK, and that is one which is designed to improve the performance (whatever that means) of the dough. These additives are typically a blend of enzymes, especially amylase for increased sugar production in the dough and some form of oxidation such as ascorbic acid. If you are using an un-malted flour this type of additive might provide some benefit, but if your flour is normally malted at the flour mill it will benefit only the person who sold it to you, it's really not necessary in that case. Probably more than you wanted to know.

Tom Lehmann/The Dough Doctor  
5550

### **Dough Clinic / Re: The type of water and oil used in dough mixing**

Tap water v/s bottled spring water. If you have decent tap water there will probably be little or no cost benefit to using the bottled version. The greatest impact of water will be between softened water and non-softened water. Non-softened water has a high calcium content as will typically produce a slightly tighter feeling, stronger dough than softened water. For this reason, if your water supply is not softened I suggest that you install a line and tap before your softener to draw un-softened water from for your dough. You will probably have softened water for everything else as it saves money on soap, cleaning effort and fixtures throughout the store.

As for the fat type, when used in the dough there is very little difference between using oil and shortening, but when used in a pan, like in a deep-dish pan, the use of oil will give you a slightly better crust color than shortening BUT the crust will feel slightly oily and have something of a fried appearance, whereas if shortening is used the crust will look dry, not oily and have a flatter color to it. As for flavor impact, that will depend upon the flavor of the fat that you are adding such as butter, lard, sesame oil, or olive oil. On the topic of olive oil, my opinion is that the high priced olive oil is just wasted when you put it into the dough, instead use a lower priced olive oil in the dough and use the good stuff on salads and as a dipping oil. The flavor impact will actually be more pronounced with the low cost olive oil than with the delicate flavored extra virgin olive oil. Brush a little olive oil (the cheap stuff) on the crust just before placing it in the oven to get a richer, better colored finished crust.

Sugar will impact the finished color of the crust when the dough is leavened with yeast. The more sugar used, the more color you will get, BUT there is a price to pay, due to the rapid color development the bake time will probably be reduced, thus potentially reducing the crispiness of the finished crust, AND the residual sugar in the crust will be further concentrated during baking so as the sugar exerts its affinity for moisture it will draw moisture from the top of the pizza (about 90% water) into the crust, potentially making for a softer or even soggy crust and it just gets worse in a DELCO operation where the pizza is placed in a box with all the steam/moisture being released from the pizza. The type of sugar can impact the flavor of the finished crust too, such as sucrose (sweetness), non-diastatic malt (malty flavor), molasses (molasses flavor) or honey (no flavor to a slight honey flavor).

On the topic of honey, the darker the honey, the lower the cost, and more intense the flavor is. If you want the greatest bang for the buck (\$\$\$\$) use a dark colored aka industrial or bakery grade honey, that's what the big wholesale bakeries do to impart a honey flavor in their baked goods.

Salt impacts the dough by making it stronger and less sticky, controlling the rate of yeast fermentation for consistent dough performance and finished crust flavor (fermentation flavor) and by impacting the overall finished crust flavor profile. Without sufficient salt the finished crust will have a starchy like flavor. A good salt level for pizza dough is anything between 1.75 and 2.5%, some like to go higher than this but the sauce will contain salt, as well as any meat toppings, and the cheese is a major contributor of salt, all combined this is a LOT of salt and really not needed. This is why I recommend the salt level range that I do.

If you make your sauce without salt, or use my own favorite which is nothing but fresh sliced tomato, and don't get too carried away with the amount of cheese use you can go up to about 3% salt in the dough if you feel you need to. No direct impact of salt on crust color except indirectly, the salt level will impact the fermentation rate, making for more or less residual sugar to participate in the browning reaction. More salt slows the fermentation rate leaving more residual sugar for slightly more crust color development while less salt allows for more vigorous fermentation leading to more of the sugar being metabolized by the yeast so there is less residual sugar for crust browning, additionally, with the more vigorous fermentation more acids are formed during the fermentation process which also act to inhibit crust color development. This is why sourdough breads and rolls are always so light in color.

Tom Lehmann/The Dough Doctor  
5549

**Dough Clinic / Re: The type of water and oil used in dough mixing**

Mitch;

In the UK they have both malted and un-malted flour available, probably much more so than here in the U.S. We have McDonalds to thank you that as the flour used by bakeries producing buns for them is or at least used to be malted at the flour mill. I was a member of the bakery products task team that traveled world wide when McDonalds went International showing bakeries, in countries that don't exist anymore, and just about everyplace else how to make a "McDonalds" hamburger bun. I worked with Golden West Bakery in Manchester on their bun program for McDonalds and by the way, that's where I was first introduced to Mr. Guiness, a pint sized fellow, (off the tap, never a bottle, or heaven forbid, a CAN), we have had a strong relationship ever since :)

Tom Lehmann/The Dough Doctor  
5548

**New Forum Members / Re: Crispy Chewy**

Since you already have a dough "recipe" stay with that for now, but if you are not using a high protein content flour (13+%) look on the bag for the protein content in grams protein per 100-grams flour, the magic number is 13 or higher.

Use a dough absorption of 58% to start with, manage your dough as you have been, to open the dough into pizza skins use a rolling/pie pin and trim it to the desired diameter. For a 12-inch crust you will probably want to use about 14-ounces of dough.

Bake the pizza on a pre-heated (at least 1-hour) pizza stone at the highest temperature setting possible (probably between 500 and 600F). Brush the edge of the crust with oil immediately before peeling it into the oven.

The combination of high protein flour and high baking temperature should give you something close to what you are looking for.

Tom Lehmann/The Dough Doctor  
5547

**General Pizza Making / Re: Pizza Pocket Dough Formula?**

When baking in your home oven do not use a pizza stone, instead use a cookie sheet with a piece of parchment paper as a liner.

Tom Lehmann/The Dough Doctor  
5546

**Shop Talk / Re: Baking temp and time for conveyer ovens**

I cannot answer that question as I do not know how your oven is set up, but probably figure on 6.5 to possibly 7-minutes (assuming dark colored pans) otherwise it could go to something closer to 8-minutes. Run three pizzas through the oven, one with the time set at 7-minutes, the next at 7.5-minutes and the third at 8-minutes, you should be able to make a pretty accurate assessment from the results.

Tom Lehmann/The Dough Doctor  
5545

**Dough Clinic / Re: Making pizza dough for my pizza shop, debugging**

Lidding/covering the trays too soon after putting them in the cooler creates a problem with the dough. It doesn't allow for the escape of moisture from the dough

as it is cooling and it is NOT conducive to efficient cooling of the dough which is imperative to successful and efficient dough management.

To cross-stack the dough boxes place each box on the stack perpendicular to the one below it. This leaves the ends of the boxes open for moisture and heat to escape. Then as you down-stack you can lid each box as you build the new stack. Remember oiling the top of the dough balls after you put them into the box? The reason for that is to prevent the dough balls from drying out during the extended cross-stack period.

If you do not cross-stack the un-lidded dough boxes you will not be able to achieve a level of efficient dough management that will prevent product variation as your dough ages in the cooler. The dough management procedure that I've outlined for you is similar to what all of the big box pizza chains use here in the U.S. as well as in the U.K., and you would be hard pressed to find many commercial independent pizzerias not following a similar dough management procedure. Remember, time and temperature control are the keys to effective dough management: Always mix the dough to the same temperature/temperature range, scale and ball it as quickly as possible (within 20-minutes of mixing), cool the dough as quickly/efficiently as possible, hold the dough at a constant temperature and you'll be rewarded with a consistently performing dough that produces a consistent quality pizza over a period of three to four days. Yes, you can hold it longer but you will be compromising on finished pizza quality.

Tom Lehmann/The Dough Doctor  
5544

**New York Style / Re: Having trouble stretching dough for Artichoke Basile's Margherita recipe.**

3P;

I'd suggest going straight from the mixer to the bench for scaling and balling, then into the bags and directly in the fridge. After you pull the dough out after 24 and 48-hours in the fridge, allow the bagged dough ball to set on the counter until the dough ball reaches a temperature of 50 to 55F, then turn the dough ball out of the bag into a bowl of dusting flour and proceed to open the dough into a pizza skin by your preferred manner. Whatever you do though, DO NOT work the dough after turning it out of the bag, just go straight to opening it into a pizza skin.

Let us know what your results are.

Tom Lehmann/The Dough Doctor  
5543

**Dough Clinic / Re: Flouring dough balls before rolling them out for pan style pizza's**

TAY;

Oh boy! Flour is not just flour, the flour that you use in making pizza depends upon a number of things:

- 1) Type of mixer/how the dough will be mixed.
- 2) Dough management procedure in use.
- 3) Type of pizza to be made.
- 4) Finished crust characteristics being sought.

We did a study on different types of "pizza flour" a number of years ago and what we found was somewhat amazing. "Pizza flour" is not a standardized product so there is nothing that defines what it is or should be. We found that "pizza flour" ranged from a low of 10.2% protein content to a high of 14%, that's just about the full protein spread of all non-pastry flours produced! We actually found much

better consistency between brands of "all-purpose" flour and "H&R flour" (hotel and restaurant) with excellent consistency between different brands of "bread flour", so much so that you could go to a flour supplier and request their counterpart to a competitor's specific flour by name and get a flour with very similar protein and performance characteristics. Why the great variation in pizza flours? Simple, pizzeria operators are all over the board in what they think they want in a flour, so if a company happens to sell a specific flour to pizzeria operators that flour eventually becomes their "pizza flour". This is why when I discuss flour it is always in terms of protein content which is easy to find out, it will either be shown on the bag as so many grams of protein per 100-grams of flour or a quick visit to their web site will give that information too.

Now, if you are referencing the flour that is used as a dusting flour, that's a whole different "kettle of fish", in that case anything but a pastry flour will work well. Pastry flours are not recommended as they exhibit a nasty habit of wanting to clump and cling to the dough rather than just lightly coating the dough. When I open the dough by machine as you are I just recommend using the same flour that was used in making the dough as it helps to keep things simple, but if the dough will be opened by one of the hand forming methods I typically recommend a blend of equal parts of your regular flour, semolina flour and fine corn meal this same blend also serves as my peel dust too, with that said, if you ask 50 different operators what they use you will get no less than 50 different answers.

Tom Lehmann/The Dough Doctor  
5542

### **Dough Clinic / Re: Dough Improver? Does it make a difference**

We typically don't think of sourdough as an improver since it alters so many of the dough/crust characteristics. We look at "improvers" as ingredients designed to address specific dough or finished product issues/problems without imparting significant extraneous taste, aroma or color characteristics to the finished product. One of our more common "natural" improvers is milk, either dry milk or liquid milk. The calcium content of the milk strengthens the wheat gluten making for a stronger and somewhat drier dough that is easier to handle. While milk does impact both flavor and color of the baked product, at the levels used in this specific application, 2 to 3% dry milk solids (liquid milk is seldom used anymore) there is essentially no impact upon the finished product characteristics.....BUT in pizza applications where we are baking at much higher temperatures than most other baked (bakery) products the mere presence of milk in a dough can result in a difference in crust color development, to a great extent, the same can be said for egg/egg yolk especially. In this case the improver effect comes from the lecithin content of the yolk which can help in the emulsification of fat and water which can be beneficial with high absorption doughs.....BUT again in pizza applications it will impact the finished crust color even at low levels, so while we do have a few "mighty few" so called "natural improvers" to work with, we have even fewer that are suitable for pizza applications. The main natural improvers that we see which have application in pizza are deodorized vegetable powders (onion and garlic) and "dead yeast" (glutathione) both of which function as dough relaxers to reduce dough memory/snap-back when it becomes a problem. I know that some will argue with me saying that we do have a lot more natural improvers, but then it all depends upon ones definition of "natural". I like to think of "natural" as something that has received minimal or no processing, probably much along your own views of "natural".

Tom Lehmann/The Dough Doctor  
5541

## [\*\*Dough Clinic / Re: Flouring dough balls before rolling them out for pan style pizza's\*\*](#)

TAY;

12.3% protein is a good protein content for the type of pizza that you appear to be making especially in a retail application. It's low enough to give you a tender eating crust while it's high enough to provide the necessary tolerance to abuse that the dough will receive in a retail setting. If you take the sum of the water and oil you get a total of 63.8 which some like to think of as the "total absorption equivalent" (TAE) meaning that your dough should be about as soft as a dough made without oil but with 63.8% water (absorption). I would think that this is about as soft of a dough as you might want to use in your application. The dough is sufficiently soft to rise/proof in the pan to provide the desired lightness and tenderness to the finished crust while still exhibiting sufficient strength to support the weight of the toppings. Since you are at what I would consider the maximum for dough softness, if you should find that the center of the pizza is or should begin to collapse under the weight of the toppings, reduce the water in 2% increments, you should correct the problem in one or two reductions.

Tom Lehmann/The Dough Doctor  
5540

## [\*\*Pizza Ovens / Re: Electric pizza oven\*\*](#)

Dahlen ? (Sweden) probably makes some of the best electric ovens that can be had. They are very popular in all sizes throughout Europe and because gas is such a rarity in Europe, they do a very good job with their electric ovens, I'm not even sure if they even make any gas ovens.

Tom Lehmann/The Dough Doctor  
5539

## [\*\*Pizza Ovens / Re: Electric pizza oven\*\*](#)

I've heard of Cuppone ovens, they seem to be a pretty reputable company but that's all I know about them.

Tom Lehmann/The Dough Doctor  
5538

## [\*\*Dough Clinic / Re: ice cold water to make dough\*\*](#)

G.R.;

What?

You don't measure the temperature of each dough before you take it off the mixer?  
:)

Tom Lehmann/The Dough Doctor  
5537

## [\*\*Dough Clinic / Re: A question about storing dough\*\*](#)

Tay;

No, it is not advised that you put the unused dough balls back into the walk-in after they have been allowed to warm to 50F or higher. Due to the change in density of the dough it will be all but impossible to slow the fermentation rate of the dough in the cooler, this is why it is recommended that you proceed with partially or completely opening the dough balls into skins, placing them on pizza screens which are then placed in a wire tree rack and stored in the cooler (be sure to leave the rack UNCOVERED for 20-minutes, then cover the rack with a food contact approved plastic bag. The skins can be stored in the cooler for the remainder of the

day in this manner. To use the skins, remove from the cooler, and allow to set at room temperature for 20-minutes, then begin using in your normal manner. Do not hold the skins over from one day to the next, instead incorporate them into your next batch of new dough at a rate not to exceed 15% of the total new dough batch weight. For example, if you make your dough with 50-pounds of flour, the total batch weight will be about 80-pounds, 15% of 80-pounds is 12-pounds, so you can add UP TO 12-pounds of old dough (pre-opened skins) to your new batch of dough. Just add the skins to the dough immediately after you add the oil and mix as you normally do.

Tom Lehmann/The Dough Doctor  
5536

### **Dough Clinic / Re: A question about storing dough**

Tay;

As for letting the dough set out at room temperature after removing the dough from the cooler, the correct length of time is not necessarily one hour, the correct length of time is whatever it takes in time for the dough balls to reach an internal temperature of 50 to 55F. Hate to say it but the solution is to find out what that time is and then have someone come in early, pull the dough out of the cooler and then begin prepping pans and toppings for the day. Once the dough reaches 50 to 55F open it into skins and place them into the pans to proof. It doesn't do any service to the dough or your customers to proof it at room temperature, sheet it and then place it in the pan for dressing and baking as the dough will be significantly more dense and chewier than it would if it were final proofed it the pan for the better part of an hour, or more before dressing and baking.

Another option that you might consider is, at the end of the day, proof the dough to a predetermined height in the pan (as P.H. used to do) and then place the pans of dough in the cooler overnight where they will continue to rise to your predetermined full proof height during the night. Use lids or pan separators if your pans don't self stack and seal. The dough should be ready to use the following morning. The down side to this method is that it takes more room in the cooler and a whole lot more deep-dish pans.

Tom Lehmann/The Dough Doctor  
5535

### **Dough Clinic / Re: ice cold water to make dough**

Danny;

IDY only needs to be hydrated, it will "self activate" about 20-minutes after that. ADY needs to be hydrated in 95 to 100F water for about 10-minutes for both hydration and activation. Compressed yeast is ready to begin fermenting once it is allowed to warm to 50F, but like IDY it also has a 20-minute lag phase between time of hydration and when it actually begins to vigorously ferment. You can get around the 20-minute lag phase common to IDY and CY (compressed yeast) by putting them into suspension in about five times its weight in warm (95 to 100F) water.

Tom Lehmann/The Dough Doctor  
5534

### **Dough Clinic / Re: Making pizza dough for my pizza shop, debugging**

Tay;

This is why I say to allow the dough to remain out of the cooler at room temperature until the dough balls reach an internal temperature of 50 to 55F. Once you have determined what that time is you can go by time after that, just checking

the dough ball temperature occasionally to make sure you're still on track. You really can't effectively speed up the conditioning of the dough after it is removed from the cooler. Solution: Find out how long it will take for your dough to rise to the 50 to 55F temperature after it's removed from the cooler, and then have someone come in and pull the dough at that time so it is properly conditioned and ready to use when the store opens. It usually takes at least a couple of hours to prepare the store for opening each day, final wipe down, box building, prepping the toppings, starting the oven, just getting things ready to go in general takes two hours or more so this really shouldn't prove to be a problem unless you have some mitigating circumstances.

Tom Lehmann/The Dough Doctor  
5533

### **Dough Clinic / Re: A question about storing dough**

Tay;

The procedure that you have outlined is similar to that used by P.H. when they made their first departure from making a thin, cracker type crust. This was their first venture into making a pan style pizza which they called their "Thick and Chewy" (this was back around 1969), I had that product and I can say for sure, it was NOT thick and chewy, it was thick and tough. How tough you ask? It was so tough eating that I had to take a break from eating the pizza after my first slice to rest my jaw muscles, other than that, it was a good pizza. Also, when making deep-dish pizzas you have to remember that the crust now has a much greater influence on the entire pizza since there is so much more crust with a deep-dish pizza than with a thin crust pizza. So in addition to textural properties the flavor of the crust is now more important too, and that flavor along with the desired tenderness comes from fermentation. When properly managed, you can keep dough balls in the cooler for three days in a pizzeria and four days in a pinch. The 24-hour cold fermented dough is also better leavened (for improved crumb porosity) and much easier to open than dough that is just out of the mixer, but once the dough has risen in the pan, it should be used within the same day or there will be a possibility that the dough could collapse under the weight of the ingredients on the following day. I've always believed that when you're operating a pizzeria failure is not an option, it happens at the most inopportune times and in almost every case it will cost you in either money (a replaced pizza) or consumer confidence, this is why I always hedge my bets against anything that can result in my pizza failing when I'm dealing with a pizzeria, as the old saying goes "better to be safe than sorry". There is never any need to waste dough, depending upon what the problem is with the dough it can always be made into something else, bread sticks, cinnamon sticks, cinnamon chips, garlic knots, etc. or incorporated back into fresh dough.....waste not, want not.

Tom Lehmann/The Dough Doctor  
5532

### **Sauce Ingredients / Re: Peeled tomatoes or pre made pizza sauce**

Tay;

All of the big chains use a custom made sauce, specific to their flavor profile and PRICE POINT.

When I'm interviewing a new pizzeria owner I always suggest that they do something different from what everyone else is doing. How do you compete with the bog box chains? You can't compete on price, consistency or consumers perception based on advertising, so how do you compete? Easy, you do something that they can't/don't do. Dare to be different! If everyone else has a smooth sauce,

offer a chunky sauce, if everyone else uses dried basil and oregano, use fresh basil/oregano, if everyone else puts the cheese on top, try putting it on the bottom, offer types of pizzas that are not otherwise offered, like a fish pizza on Friday, chicken BBQ pizza, how about a tropical chicken pizza with coconut and mango, offer a fresh fruit dessert pizza with cream cheese or Ricotta and egg mix for the sauce and add fresh fruit for the toppings (we do it all the time and everyone loves it), offer different types of pizzas to pick up business on your slow night (Monday?). On of my personal all time favorites for a sauce is to use nothing but thin sliced fresh tomato. Nobody else is doing it so the pizzas are perceived as being "different" not like everyone else's pizza, and in most places different is good. That's the strong point of pizza, it has been able to evolve over the years to meet the expectations of our changing population.

I realize that you might not have year around access to fresh tomatoes, but can you get whole crushed tomato with the skin? If so, give it a try just as it comes from the can. The greatest flavor contributor to the tomato is in what is referred to as the "Velvet" which is between the skin and the meat of the tomato. This is the good stuff that is responsible for the wonderful flavor you get when you bite into a fresh, vine ripened tomato. Here in the U.S. we can get this product from Stanislaus (sorry, they don't export) in the form of their 7/11 Ground Tomatoes, but you might be able to source a similar product to try.

Dare to be different!

Tom Lehmann/The Dough Doctor  
5531

### [\*\*New Forum Members / Re: Minimum capital required to set up a pizzeria in Canada\*\*](#)

Davomora;

You might also try posting in the PMQ Think Tank at [www.pmq.com](http://www.pmq.com) and address the post to "Daddio" Richard is an operator in Canada and I'm sure he can provide some additional insight too.

Tom Lehmann/The Dough Doctor  
5530

### [\*\*Dough Clinic / Re: I need a method to be able to make pan style pizzas straight from the cooler\*\*](#)

Tay:

Haven't we been discussing taking the pre-proofed dough (pan risen) directly from the cooler to the prep station and oven?

Tom Lehmann/The Dough Doctor  
5529

### [\*\*General Pizza Making / Re: Pizza Pocket Dough Formula?\*\*](#)

While you can just pull a piece from the bulk fermented dough the crust always comes out somewhat more dense and tougher/more chewy than if you ball it and more gently open the balls into skins for the pizza pockets/calzones, plus when you just "grab and form" you will need to trim the dough to get something resembling a circle but when you use a dough ball you can open it into a circle pretty easily without any trimming necessary, try it both ways to see what you're most comfortable with and to see which method gives a finished product most to your liking.

Tom Lehmann/The Dough Doctor  
5528

## [\*\*Dough Clinic / Re: I need a method to be able to make pan style pizzas straight from the cooler\*\*](#)

Tay;

Try this:

- 1) Take your mixed dough directly to the bench for scaling and balling.
- 2) Place into dough boxes and wipe the top of the dough balls with a little salad oil.
- 3) Take boxes of dough to the cooler for cross stacking (about 2.5 to 3-hours) just be consistent with the time.
- 4) Down-stack the dough boxes and kiss them good night.
- 5) On the following day remove a sufficient number of boxes of dough to fill all of your deep-dish pans.
- 6) Allow the dough boxes to remain covered at room temperature until the dough balls reach a temperature of 50 to 55F, then begin opening the dough balls into pizza skins.
- 7) Place opened skins into prepared (oiled or greased) pans.
- 8) If the pans are stack-able stack them or place a pan separator between the pans and stack them on the side out of the way.
- 9) Allow the dough to rise in the pan for the predetermined time that is correct for your dough and shop conditions (usually about 30-minutes or a little longer). Remember, we discussed how this is done previously.
- 10) Take the pans of partially proofed dough to the cooler for storage. The dough will continue to proof in the pans while in the cooler to a specific height and then tend to stabilize (not proof any more).
- 11) Check the height of the panned dough, once it has reached the desired height (about 1/2-inch or a little more depending upon how thick you want the finished crust to be).
- 12) As soon as the dough has reached the desired height, check the temperature of the dough, it should be around 45F. You can now begin using the panned dough right away, directly out of the cooler or at any time during the day.
- 13) Any unused (unopened) dough balls can be saved in the cooler for up to 3-days, four in a pinch. Any unused fully proofed dough in the pan(s) probably should not be carried over from one day to the next as there is a better than even chance that they will begin to collapse under the weight of the toppings on the second day. Since every shop is different, try it to see if they will work for you on the second day, if they do, go ahead and use them if you are happy with their performance, if not, strip the proofed dough out of the pans and add it back into new dough as you begin mixing. The old dough can be added to the new dough at the rate of 15% of the weight of your new dough. If you have more old dough than you can add to new dough just make something different from the old dough such as bread sticks, cinnamon sticks (great when served with a side of powdered sugar icing), or try rolling the dough out very thin, brushing with water and sprinkling on a cinnamon-sugar mixture, cut into squares and bake until crisp) I'm sure you get the idea.
- 14) Keep note of how many pizzas you are selling daily and at what time they're being sold then try to manage your dough in such a way so as to have a reasonable number of proofed pans in the cooler ready to go but not an over abundance.

Tom Lehmann/The Dough Doctor

5527

## [\*\*General Pizza Making / Re: Pizza Pocket Dough Formula?\*\*](#)

By the way, I should add that even when I'm opening the dough balls into skins for the calzones I like to use a pie pin as it is easier to get a uniform dough thickness resulting in better shaped pockets, and don't forget to cut one or two vent holes into the top just before baking. A scissors makes an attractive delta cut into the top

of the sandwich.

Tom Lehmann/The Dough Doctor  
5526

**New York Style / Re: How to achieve more browning and softness in my pizza dough**

Bake at a higher temperature?  
Tom Lehmann/The Dough Doctor  
5525

**New York Style / Re: How to achieve more browning and softness in my pizza dough**

Adding the additional malt plus the 4% sugar that is already in the formula will contribute to additional sweetness of the finished crust.

Tom Lehmann/The Dough Doctor  
5524

**New York Style / Re: How to achieve more browning and softness in my pizza dough**

If you exchange "sugar" for malt the impact upon the crust color will be essentially the same. Both are considered forms of sugar which contribute to crust color development. If you bake at too high of an oven temperature the crust color will form before the inside (crumb portion) of the crust has had a chance to thoroughly bake. Think of it like one would sear a steak on a hot griddle. The steak is nicely browned on the inside but still raw on the outside. This is why most thick crust/deep-dish pizzas are baked on some type of a baking platform in a deck or stone hearth oven. The bottom gets color before the inside of the pizza is properly baked. If the pan is placed on a screen in the oven there is an air gap between the deck and the pan to slow heat transfer which allows the center of the pizza to bake more thoroughly while controlling crust color development on the bottom of the pizza. Which ingredient is responsible for making a softer textured crumb? The fat. This can either be in the form of oil or shortening/margarine/butter/ lard, etc.

Tom Lehmann/The Dough Doctor  
5523

**Newbie Topics / Re: Dough Hydration**

Just for starters, the dough absorption is varied depending upon the type of pizza being made, classic examples are a New York style with dough absorption in the 60% range and a cracker style with dough absorption in the 30 to 40% range. Then there is the absorption property of the flour itself. Some flours will require that you use a higher absorption or lower absorption than others, all flour is NOT the same, if you use a dough "recipe" or formula from one source using a specific flour that same recipe/formula may not work using a different flour, this is especially true when we cross borders into different countries where different types of wheat are used to make the flour and there is also a good chance that the milling practices will be different which can lead to significant differences on dough absorption as well as consistency and texture of the resulting dough, and then there is the need to adjust the dough absorption to facilitate the method we're using to open the dough into pizza skins, for example, if you're using a pie pin or rolling pin the dough may be easier to manage if it is made with a slightly lower dough absorption while a hand tossed dough generally works better using a slightly higher dough absorption, a table/bench stretched dough is almost always easier to manage when made with a higher absorption.

In most cases though the dough absorption will be varied depending upon the style of pizza being made. The type/heat/baking surface of the oven can also play a roll in the dough absorption used, for example, a very hot oven with a stone deck can utilize a higher absorption dough better than a lower temperature oven while baking on a pan.

I don't mean to confuse or overload you with all of this but as you see dough absorption is highly variable and subject to change due to a lot of different factors. As a beginner I would suggest that you reduce the amount of water (dough absorption) you are using to a point where you can more easily manage the dough and then begin making pizzas. Once you have that mastered, you can begin experimenting with more or less absorption to see how it impacts YOUR dough. Keep in mind that in most cases a just mixed dough will be sticky and it may take an hour or so of fermentation time for the flour to fully hydrate thus reducing the stickiness. If you go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> I've got a home made pizza dough "recipe" posted there that you might experiment with too.

Welcome to the club!

Tom Lehmann/The Dough Doctor  
5522

### **General Pizza Making / Re: Pizza Pocket Dough Formula?**

Lookin' good.

Tom Lehmann/The Dough Doctor  
5521

### **Dough Clinic / Re: Cold ferment duration**

There is no way to predict the results as so much depends upon the quality/strength of the flour used as well as the finished dough temperature and how well the dough was managed over its time in the fridge. Best way to answer your question would be to say "try it". If the dough was well managed it will most likely still perform. If the dough balls collapse, re-round them and allow to rest until the dough balls are once again extensible enough to be opened easily. Due to the longer fermentation time you may find that the baking time might be a bit longer or the crust color might be a little lighter due to the additional acids formed during the extended fermentation period.

Tom Lehmann/The Dough Doctor  
5520

### **Neapolitan Style / Re: Improving the crust color?**

With excessive fermentation you get excessive acid formation in the dough which greatly inhibits crust color development....I think the problem is too much fermentation. I would either reduce the yeast level or reduce the total fermentation time. As an experiment I'd cut the total fermentation time by 50% just to see if that improves the overall crust color. If it does you at least know where the problem is.

Tom Lehmann/The Dough Doctor  
5519

### **Other Types / Re: calzone cook temp and time?**

We have done a lot of calzones over the years and have found that they generally need to be baked slower than pizzas if you want the center to be nice and hot with the cheese melted. For this reason when I'm baking on any type of deck I like to bake on a pizza screen or on a double pan so as to prevent the bottom surface from getting too dark while the center is still heating. How long to bake? The best way to assess when a calzone is fully baked is by internal temperature, when the

internal temperature of the calzone reaches 160F or more, and the crust is to your liking, the calzone is done, once you know the time for one calzone you can pretty well go with time for the rest of them if they're reasonably close in size and filling weight.

Tom Lehmann/The Dough Doctor  
5518

#### **Other Types / Re: calzone cook temp and time?**

I would start at 500F with a single calzone to bench mark with and then make adjustments from there as dictated by internal temperature and crust color. The double panning (like an AIR Bake pan) should work well. If your oven is hotter than this and you need to bake a few pizzas at the same time, keep the oven at your pizza temperature and tent the calzones with a piece of foil for a portion of the bake, then uncover just long enough to achieve a nice golden crust color.

Tom Lehmann/The Dough Doctor  
5517

#### **Other Types / Re: calzone cook temp and time?**

If you're going to be baking above the 500 to 550F range you may need to tent for part of the bake time but if you will be baking at 550F or less you probably won't need to tent. Crust color and internal temperature will dictate if you need to tent or not.

Tom Lehmann/The Dough Doctor  
5516

#### **General Pizza Making / Re: Baker's percentage for the flours**

For those not familiar with how to calculate the bakers percent of each flour when you have more than one flour, this is how it's done:

- 1) Add up the weight of all of the flours, and make a note of the weight.
- 2) Divide the weight of each flour by the sum weight of all of the flours and multiply by 100.
- 3) Repeat this for each flour. When you're finished the sum of the percentages should equal 100.

Example: My flour blend consists of 2-pounds of "pizza" flour, 8-ounces of whole-wheat flour and 6-ounces of rye flour. The total weight of all three flours is 46-ounces.

Pizza Flour: 32 divided by 46 X 100 = 69.56%

Whole-Wheat Flour: 8 divided by 46 X 100 = 17.39%

Rye Flour: 6 divided by 46 X 100 = 13.04%

Total/sum of all the flour percentages: 99.99 (if the decimals were taken further out it would have equaled 100%)

To express the dough absorption when these amounts of these flours are used you need to find the absorption of each flour independently (read my ramblings on whole-wheat flour/dough to see how it's done) then add up the weight of the water used for each flour and divide the sum be the total flour weight (sum of all three flours) this will be your dough absorption.

Tom Lehmann/The Dough Doctor  
5515

#### **General Pizza Making / Re: Baker's percentage for the flours**

Yael;

It is not recommended that the oil be included in the total absorption value BUT it should be kept in mind that it will affect the dough viscosity in a way similar to the

way water does, so the amount of oil being added to the dough can influence the amount of water (absorption) added, especially if one wants to keep the immediate rheological properties of the dough similar. The reason for not including the oil in the absorption value is because oil/fat has a far more reaching affect upon the dough and finished product quality characteristics than water does. With regard to flour blends, only gluten forming flours should be considered as "flour" or part of the flour blend, for example, corn flour would not be included in the flour blend, instead it would be shown as an ingredient just like salt, sugar, oil, etc.

Tom Lehmann/The Dough Doctor  
5514

### [\*\*Focaccia Style / Re: First time making focaccia\*\*](#)

Not a bad start, congratulations.

The next time you make it you might also try sprinkling some shredded Parmesan cheese over the dough just before placing it in the oven. I get a little carried away when I make mine by pressing such things as sun-dried tomato pieces, sliced black olives and garlic slices into the dough. The options are endless, a friend of mine even likes me to put anchovies on his...go figure!

One other thing, you might try a darker colored cookie sheet to enhance the bake, your's looks pretty good, but the dark colored pans just bake better in most ovens.

Tom Lehmann/The Dough Doctor  
5513

### [\*\*General Pizza Making / Re: Baker's percentage for the flours\*\*](#)

Excellent point Peter.

Two ingredients that are occasionally encountered where this needs to be done are when liquid milk (88% water) and liquid whole egg (75% water) are used in the formulation. While not really very common in pizza dough formulas these two ingredients are commonly encountered in certain types of bread formulas as well as most pastry dough formulas where we also see liquid sugars being used too which are mostly about 20% water all of which have to be accounted for and included (only the water content) in the dough absorption percentage. Kinda confusing at first, but when you step back and look at it, it begins to make sense. For me personally, I don't normally take the moisture content of an ingredient into account until the water contribution of the ingredient reaches or exceeds 2% of the flour weight....that said, if a formula has low percentage amounts of milk, eggs and let's say honey, you might want to calculate the total water contribution from all of those ingredients and if the sum equals or exceeds 2% take them into account when figuring the dough absorption percentage. The reason why I use the 2% rule is because in my experience, most doughs will tolerate a 2% variation in dough absorption without significant impact upon the dough or finished product, truth be known, normal variations in the flour that we use can easily account for a 2% or more variation in dough absorption. This is why commercial bakeries rely on Farinograph data supplied by the flour miller to calculate their total dough absorption.

Tom Lehmann/The Dough Doctor  
5512

### [\*\*Dough Clinic / Re: HELP! My pizzas are coming out the oven with heavy gum lines\*\*](#)

What do your pans look like? What color are they, bright and shiny or are they well seasoned and dark in color?

Do you oil or grease the pans in any way?

One thing that I'm a bit confused on is that you say you are trying to make a N.Y. style pizza but you are allowing the dough to proof/rise in the pan prior to baking which is more like one would do for a pan style thick crust pizza.

Tom Lehmann/The Dough Doctor  
5511

### [\*\*General Pizza Making / Re: Baker's percentage for the flours\*\*](#)

Yael;

Bran contains no gluten to speak of so it should not be counted as a flour, same for rice flour. In your example "Total Hydration" are you referring to milk 30% as 30% of the flour weight as milk? This would be incorrect as you only include the water content of the milk (not the total of the milk) in the absorption value. "Total Fat" is correct. "Other Addings" is also correct even though there is honey included in it since the total water content of the honey is less than 2% of the total flour weight, and yes, that is where the bran should be shown.

Tom Lehmann/The Dough Doctor  
5510

### [\*\*Prep Equipment / Re: The best tin/can opener in the world is?\*\*](#)

There are two different approaches to opening metal cans, one is from the top down and the other is from the side inward. Here in the U.S. there are significant food safety concerns over those that open from the top down as they can introduce micro-organisms into the contents from the top of the can and they are also known to introduce small metal particles too. Those that open the can from the side do neither of these nasty things. We have commercial side opening can openers and also recently they have been advertising on television electric side opening openers for the consumer market, "and if you order within the next 10-minutes we'll send you an additional opener absolutely free, just pay the additional shipping and handling" They might even be running the advertisements on your local TV stations too.

In any case, you should be able to find a side opening opener locally as they're really not all that new anymore.

Tom Lehmann/The Dough Doctor  
5509

### [\*\*Neapolitan Style / Re: Fermentation: a science-based look suggests RT is better for flavor\*\*](#)

The last paragraph in #3 should be noted as we have said many time that adding yeast to a sourdough formula can result in the loss of the desired flavor in the finished product. One other thing that was not mentioned is the fact that there are other acids formed during the fermentation process (primarily acetic and propionic) which also play an important part in determining what the finished flavor profile will look like. When fermenting doughs at different temperatures the balance between these acids can be changed resulting in different flavor profiles. This was somewhat alluded to in the discussion of the affect of temperature on LAB. When the LAB is taken out of the equation a different finished flavor profile is the result. What it all seems to boil down to is what flavor profile are you looking for, and if its that of a sourdough (especially a San Francisco sourdough) don't refrigerate the dough. It's also good to probably keep in mind that there are many different strains of LAB each one produces its own unique flavor (just look at what it does in cheese manufacturing and yogurt production) and exhibits different conditions for growth. This is why the study of fermentation is so fascinating. By the way, bread flavor is the one flavor that flavor scientists have NEVER been

able to manufacture, it's that complex.

Tom Lehmann/The Dough Doctor

5508

**Prep Equipment / Re: The best tin/can opener in the world is?**

I carry a P-51, it's bigger and easier on the thumb. :)

Tom Lehmann/The Dough Doctor

5507

**Prep Equipment / Re: The best tin/can opener in the world is?**

TexMex;

Send me your mailing address and I'll pick one up and send it to you.

Tom Lehmann/The Dough Doctor

<thedoughdoctor@hotmail.com>

5506

**Dough Clinic / Re: Dough is to sticky**

I am in full agreement with Pete on the ADY in cold water. I would suggest hydrating/activating the ADY in four to five times its weight of warm (100F/38C) water and allowing it to hydrate for about 10-minutes, then stir well and add it to the cold water in the mixing bowl.

Tom Lehmann/The Dough Doctor

5505

**Prep Equipment / Re: Scale that doesn't eat batteries?**

I have the KD-8000 described above. The "mode" button on top of the scale allows you to work between metric and U.S. measures with ease. I've had mine for almost two years now and have yet to replace the batteries, and when I do, they're cheap. The scale is durable and very portable(light weight), it even has a hard flip up cover over the key pad to protect it. Best of all, they're about \$40.00 from Amazon.

Tom Lehmann/The Dough Doctor

5504

**Dough Clinic / Re: Flavor Enhancing Flours**

Rather than just a couple of percent, go with 5% and add a number of different types of flour or grains, just remember to use a soaker to get your dough absorption right. What you are talking about is what we refer to as a multi-grain type flour, Internationally it is referred to as a "composite" flour.

Tom Lehmann/The Dough Doctor

5503

**General Pizza Making / Re: NORMA WON FIRST PLACE FOR CAPUTO CUP IN NYC!!!**

AWESOME!!!! :) :) :)

Congratulations Norma!!!

WAY TO GO!!!

Tom Lehmann/The Dough Doctor

5502

**Dough Clinic / Re: Low hydration, high hydration. How does it effect finished pizza**

Too much water can make the dough too soft and fluid to handle as well as making the dough more difficult to peel into the oven, and if the pizzas are baked on

screens the soft dough can flow into the screen openings causing the dough to bake into the screen openings making it impossible to remove the pizza from the screen. As dough absorption is gradually increased you will see that there is more oven spring and a more open porous crumb structure. Resulting pizzas will be progressively more crispy until a point of absorption is reached where the dough is so weakened by the additional water that it collapses in the oven.

Too little absorption can make the dough more difficult to open into skins as well as resulting in excessive snap-back/dough memory during and after forming. As the dough absorption is decreased the dough will become more difficult to open into pizza skins, oven spring will be decreased, you will see an increasing problem with bubble formation if the dough is not docked.

In the mixing bowl you will observe that the dough mixes better and faster to a point with increasing absorption but when the absorption becomes excessive the dough will not clean off of the sides of the bowl until the dough has been mixed significantly longer than normal, and even then, when the dough is removed from the bowl it will be a sticky mess to handle and work with. With decreasing dough absorption you will see that the dough cleans off of the sides of the bowl faster, but at the same time it will take longer for the flour in the mixing bowl to be fully hydrated and incorporated into the dough. As the flour continues to hydrate and gluten is formed the mixer will strain to drive the agitator through the dough, this can reach a point where the thermal overload switch is triggered and the mixer shuts off in an act of self preservation. Some mixers do not have this thermal overload feature and in that case the mixer can be damaged or the agitator broken as it tries to drive through a very stiff dough.

With regard to the finished pizza, excessive dough absorption can be a cause for developing a "dreaded gum line" but when the absorption is so high as to result in a gum line dough handling problems are a bigger issue. With decreasing dough absorption the restricted oven spring can result in insufficient bake out which is a major contributor to excessive toughness in the finished pizza. Additionally, the restricted oven spring can result in the finished crust being thicker than desired due to snap-back/memory which in turn results in the finished pizza having what some might term as a "bready" eating property.

This is not to say that pizza cannot be made from very high or very low absorption doughs, it can but those pizzas will be quite specialized and require possibly different formulations, baking methods, dough management and handling procedures to produce their representative types of pizza.

5501

### **Dough Clinic / Re: Dough is to sticky**

Depending upon your total mixing time you might want to add the oil a little sooner to ensure thorough incorporation. When added very late in the mixing process it is usually difficult to get the oil incorporated into the dough as the oil just coats the outside of the dough allowing the dough to cling to the agitator and just go for a ride around the inside of the bowl. I've found that the best time to add the oil is just as all of the flour is picked up off of the bottom of the mixing bowl (usually around 2-minutes), then just pour it all in at once and it will incorporate just fine.

Actually, plastic wrap or my personal favorite (plastic bags, like bread bags or "Food Bags") works fine, but the trick is to completely oil the dough ball just prior to wrapping in plastic or bagging it. Just invert the bag over a bowl of dusting flour and the dough ball just plops out, still nice and round. They are not as round when wrapped in plastic wrap as they tend to be deformed a bit when being unwrapped. Also, the dough looks to be very sticky when removed from the dough box, do you cross-stack your dough boxes?

Tom Lehmann/The Dough Doctor  
5500

**[Newbie Topics / Re: need to be pointed in the right direction](#)**

If you go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and look in the RECIPE BANK you will find a home made pizza dough "recipe" that I've posted there along with the complete procedure that might help you get started.

Tom Lehmann/The Dough Doctor  
5499

**[Chitchat / Re: Caputo Cup 2016](#)**

You did a great job Norma!

Congratulations!!!

Now you've got great pictures to hang up at your stand and a trophy to go with them!

Tom Lehmann/The Dough Doctor  
5498

**[Dough Clinic / Re: Pizza on steel](#)**

Sounds to me like the flour is too strong, insufficient dough fermentation, or a combination of the two.

How long is the dough being allowed to ferment? What is the finished dough temperature? And seeing the dough formula would help a lot.

Tom Lehmann/The Dough Doctor  
5497

**[Dough Clinic / Re: How to achieve a better spring/sponge in the pizza](#)**

I think what you are asking for is a firmer bite to the pizza. The easiest way to achieve this is to reduce the baking temperature and bake the pizza longer. I would suggest reducing the baking temperature by 25F and baking longer. How much longer I cannot say, just bake the pizza until it looks right.

Tom Lehmann/The Dough Doctor  
5496

**[Shop Talk / Re: Pizza Restaurant Opening Soon, Need your opinion of my dough recipe and more!](#)**

How are you managing your dough? Dough formulation and dough management are tied in together to a great extent.

Tom Lehmann/The Dough Doctor  
5495

**[Dough Clinic / Re: Is this what Normally the dough looks like at day 3?](#)**

Did you cover the container right away after putting the dough in it and placing it in the fridge? If so, that might explain what appears to be excess fermentation. Try leaving the container uncovered for 3-hours in the fridge before covering it. With that said, What is correct fermentation? My definition is the amount of fermentation the dough needs to provide the desired usable refrigerated dough life, handling properties, baking properties, finished crust characteristics, and flavor profile. In short, if it works for you, and gives you a finished crust that you like/want, it's right for what you are doing the way you are doing it. Just make sure you have documented what you did so you can come back to it and make it again later, now you can begin experimenting with different levels of fermentation (if you want to) to see how it impacts the dough and finished crust, you never know, you

might find something that works even better for you and that you like even more.  
That's the fun of experimenting with pizza.

Tom Lehmann/The Dough Doctor  
5494

**New York Style / Re: My process to cook my pizzas. I am not getting the expected results. Help.**

I would also suggest adding 2% sugar to the dough formulation to help get the browning reaction started in the dough. This will not impact the flavor of the finished crust, especially with 24-hours or more fermentation, but it will help to improve the crust browning characteristics.

Tom Lehmann/The Dough Doctor  
5493

**Dough Clinic / Re: How can I avoid the overly puffy crust?**

Try working the dough out so there is less dough at the outside edge of the skin. I normally work mine so there is no more than 1/4-inch of dough at the edge forming a bead which becomes the raised edge when baked. If you go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> I believe I have a video showing the dough being opened from a dough ball.

Tom Lehmann/The Dough Doctor  
5492

**Dough Clinic / Re: Is this what Normally the dough looks like at day 3?**

Using a lower protein content flour or fermenting the dough more will reduce dough memory/snap-back.

Tom Lehmann/The Dough Doctor  
5491

**Dough Clinic / Re: How to achieve a better spring/sponge in the pizza**

Probably not, unless your dough is collapsing, then going to a higher protein flour might help. If your dough is not collapsing going to a higher protein flour will actually reduce oven spring.

BTW: If your dough is collapsing it is better to find out why it is collapsing and address that issue rather than going to the expense of changing over to a higher protein flour.

Tom Lehmann/The Dough Doctor  
5490

**Dough Clinic / Re: How to achieve a better spring/sponge in the pizza**

If the dough is collapsing it will not support the weight of the toppings resulting in a very dense, heavy finished crust.

You're correct as to why the garlic bread is rising more than the pizza crust. Next time you go to make a pizza just open the skin and pop it in the oven like a pita, you will see a lot more oven spring, probably too much. That will give you an idea of how the toppings are impacting oven spring.

Tom Lehmann/The Dough Doctor  
5489

**Shop Talk / Re: Pizza Restaurant Opening Soon, Need your opinion of my dough recipe and more!**

Derek;  
The only changes I might suggest to the formulation based on your dough

management would be to reduce the salt to 1.75 or 2% and reduce the IDY to 0.375 to 0.4% and take the dough directly to the cooler as opposed to letting it set out for 10-minutes.

BTW: You didn't mention dough temperature, remember, without time and temperature control you cannot have effective dough management. You should be looking for a finished dough temperature of 80 to 85F immediately after mixing. You may need to experiment a little to find the exact temperature range that works best for you, but once you find it do everything possible to keep every dough as close to it as possible. I like to use the 80 to 85F range and target the 80F temperature that way when you begin to see the temperature rise above 80F you know you've go to decrease the temperature of the dough water to stay under the upper limit of 85F in this case. When changing water temperature in response to increasing dough temperature decrease the water temperature in 5F increments and you should be able to stay in the target temperature range.

Tom Lehmann/The Dough Doctor  
5488

### **Pizza Ovens / Re: Help: Conveyor Belt Oven Not Working!**

As with essentially all of the commercial oven manufacturers you should be able to contact the manufacturer and ask to speak with a field service technician or someone who walk you through the troubleshooting procedures and tell you what the code that you're getting means. In the meantime you might also go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and log into the Think Tank and make a post to George Mills. George is an equipment man and he might be able to shed a little light on the problem. George is also pretty quick to respond to posts directed to him so you should be able to get an answer from him pretty quickly.

Tom Lehmann/The Dough Doctor  
5487

### **Dough Clinic / Re: Is this what Normally the dough looks like at day 3?**

A dough that is weak due to over fermentation is VERY RELAXED, so much so that it can be difficult to pick up a formed skin without distorting it or having it just stretch all out of shape. If the dough is REALLY over fermented the dough will just begin to fall apart, in some circles this is also referred to as "rotten" dough. It should also be remembered that dough which is slightly over fermented is usually rather "bucky", meaning that it exhibits resistance to any kind of deformation and when it is forced out the dough appears rather rough and some what "knotty" (bumpy).

Tom Lehmann/The Dough Doctor  
5486

### **Pizza Ovens / Re: DIY PIZZA TRAILER**

When it comes to suspension on a trailer I've found that independent torsion block suspension is far superior to a solid axle with leaf spring set-up as it handles rough roads and bumps much better with less impact transferred to the load in the trailer due to less trailer bounce.

You might also check with your regulations to see if there are any special licensing regulations for trailers carrying over a specific weight. Here in the U.S.(Kansas) if the trailer is carrying over a specific weight (I don't know what that weight is)and if it is used for work licensing of the trailer is required.

Tom Lehmann/The Dough Doctor  
5485

## [\*\*General Pizza Making / Re: Take and bake fail\*\*](#)

Charles;

What is L-DMP?

Fairly thick screen?

You might try this:

Place the prepared dough skin on a piece of baking parchment paper before dressing. This way all the end used will need to do is to slide the pizza out of the box (fold down the front of the box) and place the pizza in the oven rack for baking. Decrease the dough absorption to not more than 62%

Increase the IDY to 0.375 to 0.4%

Good T&B pizzas typically have around 5% sugar to give the desired browning properties in a home type oven. If you don't want the sweetness imparted by the sugar try using dairy whey at about 7%, you will get the crust color development but without the sweetness.

After you open the dough into a pizza skin, place it on the parchment paper and then onto a pizza circle or piece of cardboard, brush the surface of the dough very lightly with olive oil and place in the cooler/fridge for about 45-minutes to thoroughly cool (you can leave it in the fridge for up to several hours if necessary or more convenient).

Remove preshaped skin from the cooler/fridge and immediately dress to the order, slide into pizza box and send home with the consumer.

Be sure to provide good baking directions for both gas and electric ovens.

I've got a number of dough formulas for T&B pizza dough posted in the PMQ Recipe Bank <[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor

5484

## [\*\*Newbie Topics / Re: Should I heat up my pan/oil?\*\*](#)

Doing it like P.H., just put plenty of oil (peanut) in the pan, fit the dough to the pan, allow the dough to proof/rise in the pan for about 45-minutes (exact time will vary) dress to the order and bake at 475F (exact temperature may vary in different home ovens).

Tom Lehmann/The Dough Doctor

5483

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Which 14 inch American Metalcraft deep pizza pan?\*\*](#)

I would suggest going with the HC-9000 series pan since they are dark colored hard coat anodized and do not require any special seasoning or washing care as the plain bright colored pans. However, if I was the one buying, I'd personally opt for the HC-5000 pan in dark colored anodized finish. I really like these pans because they are designed to be stacked one on top of another (self stacking) which is a great space saving feature when you start having pizza parties and want to make several pizzas. The stock number of this pan is HC5014 (this is a 1.5" deep pan).

If you don't want the self stacking feature go with HC9000 dark colored anodized finish pan with tapered sides (nesting) pan number HC90142 (this is a 2" deep pan).

You will probably want to pick up a round separator (to cover the pan(s) with. For the self stacking pans you will only need one separator but if you go with the nesting pan(s) you will need one for each pan that you purchase. I'd suggest going with the 15" round separator for the 14" diameter pans. The item number is #18915.

I hope this helps.

Tom Lehmann/The Dough Doctor  
5482

## **Dough Clinic / Re: How to achieve a better spring/sponge in the pizza**

The short answer is to:

- 1) Use a higher protein content flour.
- 2) Reduce the amount of fermentation the dough is subjected to.
  - a) Target for a lower finished dough temperature (at least 5F lower).
  - b) Reduce the yeast level by 20%.
  - c) Ferment the dough for a shorter time.
  - d) Reduce the dough absorption in 2% increments until you see an improvement.

Tom Lehmann/The Dough Doctor  
5481

## **General Pizza Making / Re: Take and bake fail**

Also, if the dough skins are opened and stored in the cooler on screens it is highly advisable to remove the skin from the screen, I just place a screen over the skin and invert it removing what was the bottom screen, which is now on top. This works well if you have a persistent problem with the dough flowing into the screen openings. When I open a T&B pizzeria we typically open the dough into skins, place on screens and take to the cooler where they are placed into a wire tree rack for cooling. Once cooled (about 30-minutes) the skins are removed from the screens and stacked five high on a metal pan with a piece of parchment paper separating each crust, a piece of parchment paper is placed over the top skin to reduce drying. When an order is received a skin is removed from the stack, the top of the skin is lightly brushed with olive oil and dressed to the order. Some places like to use ovenable paper board trays like those from Pactiv <[tmabus@pactiv.com](mailto:tmabus@pactiv.com)> or M-Press <[www.mpresspac.com](http://www.mpresspac.com)> (think Papa Murphy's) while others prefer to use a piece of baker's parchment paper and a pizza circle. The parchment paper/ovenable tray stay with the pizza throughout the baking process. Note: The ovenable trays release the baked pizza better if lightly oiled before the dough skin is placed in the tray. It is also a good idea to use a fully prepared sauce or a thick sauce that has not been watered down. When you add water to the sauce it has a propensity to separate from the sauce upon standing through a process called syneresis. This free water will migrate down through the sauce where it will puddle at the sauce dough interface resulting in the development of a gum line upon baking. If you want to get a measure of how much different sauces are separating just put a tablespoon of different sauces on identical china saucers and allow them to set undisturbed for 60-minutes, you will see the water forming a ring around the sauce, the more water you see the greater the problems will be with a gum line.

Tom Lehmann/The Dough Doctor

By the way: The fat encapsulated leavening system used by the big chains is there to provide a back-up leavening system in the event the yeast leavening fails. How does the yeast fail you ask? When a consumer buys the pizza, gets it home and places it in the fridge for use on the following day, or several days later....it happens more often than you might think it does, and when it does happen the customer shows up at the store with the failed pizza, so we end up giving them another pizza (free). When the back-up encapsulated leavening system is used it pretty well eliminates this problem.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Proofing dough**

Tay;

Going back to one of our earlier discussions, what you need to do is to experiment with allowing the dough to proof to different heights in the pan and then take the partially proofed pan of dough to the cooler for chilling. The dough will continue to proof in the cooler to some point and then slow down to the point where the dough will be stable for the day. What you need to do is to determine how much to proof the dough prior to taking it to the cooler (experimentation required). Once you find out what the "magic" time is you can proceed to proof the dough to that point and then put it in the cooler and use the dough directly out of the cooler this way the dough will always be correctly or nearly correctly proofed all the time during the day. This is the best way I know of to manage deep-dish doughs. Keep in mind that these now fully proofed pans of dough do not keep well overnight so you will need to incorporate the proofed dough into your new dough at the end of the day, or use it in some other manner so you won't need to throw it away.

Tom Lehmann/The Dough Doctor

5479

**New York Style / Re: How long?**

The thing to remember is that pizzas bake from the bottom up. This is why you will often see oven tenders at some of the larger pizzerias, especially those with wood fired ovens, but with regular deck ovens too, lifting an edge of a pizza to peek under it to see if the crust is done. Generally, by placing the pizza lower in the oven you encourage the crust to bake faster resulting in less color on the cheese and by placing the pizza higher in the oven (further away from the bottom heat) the crust bakes a little slower while the toppings, especially the cheese get more heat and more color. To achieve the desired balance of bottom bake and top color (cheese color) you can manipulate the baking time and/or the baking temperature either with or without a baking/pizza stone or some other hearth material under the pizza.

I know that a lot of the frozen pizza manufacturers suggest baking their pizzas at a specific temperature until the cheese bubbles but that's not a very good measure for the bake of a pizza, then too, remember this is a frozen pizza we're talking about so expectations will probably be different.

Tom Lehmann/The Dough Doctor

5478

**General Pizza Making / Re: Take and bake fail**

The fat encapsulated leavening system (sodium aluminum phosphate and soda) are encapsulated at the rate of 100%, meaning that equal weights of the SALP and soda blend are encapsulated in an equal weight of fat. Said another way, 4-ounces of the encapsulated leavening system contains 2-ounces of active leavening and 2-ounces of fat. The fat encapsulation prevents the soda portion from being prematurely reacted with acids formed as a result of fermentation, this would result in unreacted leavening acid (SALP) in the finished crust which will have a significant impact upon the flavor of the finished crust. During baking the encapsulating fat melts off of the SALP and soda allowing them to begin reacting and forming carbon dioxide as the dough temperature reaches about 120F, since this is still before the starch is beginning to gelatinize (about 140F) it does contribute to oven spring when the yeast is in good condition, if the pizza (dough) has been temperature abused (freezing the pizza is the most common abuse

encountered)and the yeast is damaged to some extent the chemical leavening system is still there to supplement the yeast in achieving a desired level of oven spring/leavening of the crust, at least to a point where it doesn't totally fail resulting in the customer bring it back to the store (customer is NEVER wrong) at least not the first time.

I've got a Technical Bulletin that I wrote on take and bake pizza that is available from AIB International <[www.aibonline.org](http://www.aibonline.org)>

Tom Lehmann/The Dough Doctor

5477

### **[Stones/tiles/steel, Pans & Accessories / Re: Which 14 inch American Metalcraft deep pizza pan?](#)**

Here's my take, the tapered side (nesting) pans make it easier to hold the dough up against the sides of the pan and they nest together taking up little more space than a single pan but the down side is that you need to have a pan separator to cover each pan. The straight sided (stacking) pans only need a cover for the top pan in a stack but dough absorption plays a bigger role in getting the dough to stay up against the vertical sides of the pan. You pays your money and takes your pick.

Tom Lehmann/The Dough Doctor

5476

### **[Dough Clinic / Re: Unsatisfying crumb](#)**

How long did you pre heat the oven for? If you pre heated the oven for the better part of an hour and you're still getting a lot of heat loss you will probably need to do two things:

1) Double the amount of IDY you're using to get more oven spring.

2) Increase the dough absorption in 2% increments to achieve a softer dough which will exhibit better oven spring characteristics.

As for the dough balls that you still have left, I'd let them go for another day or so before using them. The additional fermentation will give you a softer, more extensible dough that should give better oven spring characteristics resulting in a more open crumb structure.

Tom Lehmann/The Dough Doctor

5475

### **[New York Style / Re: Screen Test](#)**

Additionally, screen marks like you are getting result from either allowing the dough skin to set too long on the screen before baking, or the dough is too soft for use on a screen. When we "deck" a pizza, what you are doing, we typically bake the pizza about 2 to 3-minutes on the screen and then transfer the pizza to the oven deck to finish baking. The reason why you had such a problem getting the pizza off of the screen was because the dough had not yet been seared on the bottom which might have been aggravated by a very soft dough. Seasoning your screen to a golden brown color will also help.

Tom Lehmann/The Dough Doctor

5474

### **[Neapolitan Style / Re: Too delicate hand kneaded dough with Caputo pizzeria flour](#)**

Fagilia;

What you are seeing is biochemical gluten development. We have discussed it here many times over the years, to bring you up to speed, there are two ways to develop gluten, one is by mechanical agitation of the dough either by machine or by hand.

In both cases this typically results in a more elastic dough. Biochemical gluten development takes a minimum of several hours of fermentation time to accomplish and the resulting dough has good gluten development while also being very relaxed and easy to open into a pizza skin. When making bread and pizza dough at home I typically stir (can't really call it mix) the ingredients together for just a minute or so or until the "dough" takes on the appearance of oatmeal. I then scrape the dough mass out of the bowl onto a lightly floured counter top, lightly oil the mixing bowl, lightly oil the dough and place it back into the bowl to ferment. If I'm going to cold ferment overnight or more I like to put the dough into bread bags as they are easier for me to manage in the fridge and I don't need to worry about forgetting to cover/lid the containers after several hours.

Tom Lehmann/The Dough Doctor  
5473

### **Dough Clinic / Re: Unsatisfying crumb**

Since all ovens are a law unto itself you will need to experiment with shelf position in the oven. The closer to the top of the oven that you position the shelf the more top heat you will give to the pizza. If the top is getting too dark move the shelf down a bit, if you have a problem getting enough bake to the bottom crust moving the pizza to a lower shelf position will bring it closer to the heat for a stronger bottom bake.

Tom Lehmann/The Dough Doctor  
5472

### **Dough Clinic / Re: Any Rules of Thumb**

If I remember correctly we just covered something along these lines, maybe Peter remembers where it's at better than I do.

Peter, can you please weigh in?  
Tom Lehmann/The Dough Doctor  
5471

### **Dough Clinic / Re: What scale to weigh ingredients on?**

I really like the KD-8000 electronic digital scale. It will weigh up to 8000-grams in 1-gram increments which is usually close enough for me. This scale is available the Internet for about \$35.00.

Tom Lehmann/The Dough Doctor  
5470

### **Pizza Cheese / Re: Importing Grande cheese?**

I'm not sure that Grande Exports their cheese but you might call Julie Gruber/Grande Cheese Sales & Marketing to see what they can do for you. If they do not export you will need to make arrangements with an export broker to have them purchase the cheese, or have someone else purchase the cheese and forward it to your export broker for exporting it to you.

Julie Gruber can be reached at: <[Julie.Gruber@grande.com](mailto:Julie.Gruber@grande.com)>  
Tom Lehmann/The Dough Doctor  
5469

### **Specialty-Grain Pizzas / Re: So, rancid is a bad thing?**

It's the germ oil in the whole wheat that the culprit here. Since the rancid flavors are easily distilled off during baking we rarely detect the rancidity in fresh baked product (think pizza) or in bread for that matter, but the rancidity returns with a vengeance after the product sets a while after cooling (think bread). With this in

mind you might be just fine using the flour to make your pizzas if you're planning to eat them while they're still hot, but take a pass on the bread since it is typically consumed over a day or more during which time rancidity will raise its ugly head. Not a problem consuming rancid product so don't bank on someone cashing in on your life insurance just yet.

I agree that freezing whole-wheat flour is the best way to go...it keeps forever in the freezer. Since rancidity is an oxidative reaction, hence its name "oxidative rancidity" putting your fresh whole-wheat flour in the freezer as soon as possible will slow the reaction preventing the development of the characteristic flavor in the flour so you could break the large bag down into smaller bags for freezer storage, then when you want to use the flour just remove some from a bag (I scale it into bowl) reseal the bag and put it back into the freezer, the flour in the bowl should be covered and set aside (I do it overnight) to warm-up. If your flour was fresh when you put it in the freezer you don't need to worry about it becoming rancid over night, it could take weeks for the rancidity to develop to a detectable level, so if you're planning to do a lot of baking during the week you could also take out a whole weeks supply.....but, don't put any unused flour back into the fridge, and never put it back into the bag from which you removed it as this can result in the entire bag going rancid faster than the others.

Tom Lehmann/The Dough Doctor  
5468

### **Pizza Cheese / Re: Importing Grande cheese?**

You might need to have a U.S. export broker assist you. He is licensed to export legal goods outside of the U.S. You may also need to have a broker on the receiving (your) end to help in getting it through your customs department and making sure any import fees/taxes are paid before the product is released.

Here is the way it typically happens:

- 1) You hire a U.S. buyer to purchase the product, they have it shipped to your export broker.
- 2) Your export broker does all of the paper work and has the product transported to your broker who will receive the product.
- 3) Your broker will follow the product through your customs and notify you of the import/duty fees incurred.
- 4) Your broker will ensure that the product is released for you to pick up.

Note: Do your home work, get some idea of what the import duty fees will be, refrigerated shipping, boat or air cargo, fees and services provided by both of your brokers, will you need a buyer or will your U.S. export broker provide that service.  
I hope this helps.

Tom Lehmann/The Dough Doctor  
5467

### **Stones/tiles/steel, Pans & Accessories / Re: Which 14 inch American Metalcraft deep pizza pan?**

If you go with a 5000 series pan try to get the hard coat black anodized finish, if you can't get that the pans will be bright aluminum colored which just means that you will need to season the pans well before using them, and NEVER EVER soak them in hot soapy water, to do so will ruin the seasoning on your pans and you will need to strip off all of the remaining seasoning and start all over again. Have you looked around locally for cake pans? Cake pans can be either aluminum, steel or tin plate. All three work well, sometimes the steel and tin plate pans already have a dark or green colored finish which would mean that you won't need to season those pans, but if they are bright colored you will need to season them prior to baking.

You might even look around for a 2-inch (50-mm) deep skillet to use as a deep-dish pizza pan, just be sure to remove the handle if it is made out of plastic, there are some folks here (myself included) who have made pizzas in a cast iron skillet with excellent success.....it's gotta be cheaper than \$70.00.

Tom Lehmann/The Dough Doctor  
5466

**[General Pizza Making / Re: When cold-fermenting dough, is there a difference in tanginess between cy & IDY?](#)**

When used at the correct substitution levels and added to the dough in the correct manner there should be no discernible difference in flavor impact from any of the yeasts assuming the compressed yeast (CY) is fresh.

Tom Lehmann/The Dough Doctor  
5465

**[Stones/tiles/steel, Pans & Accessories / Re: Which 14 inch American Metalcraft deep pizza pan?](#)**

It should work just fine.  
Tom Lehmann/The Dough Doctor  
5464

**[Stones/tiles/steel, Pans & Accessories / Re: Which 14 inch American Metalcraft deep pizza pan?](#)**

There is essentially no difference between the pans that you linked and the one that you are presently looking at, just a different manufacturer. They are both of aluminum construction, most likely the same weight aluminum too, both are hard coat dark colored anodized finish. While this type of finish will give less sticking it is still not a non-stick finish as PSTK is, but if you remember to use a little oil or shortening in the pan you shouldn't have any problems with it. Just for the record, deep-dish pizzas bake better if oil or shortening is used in the pan anyways so it should be a moot issue. Just be careful of what you use when removing the pizza from the pan as you CAN damage the anodized finish. My favorite tool for that job is a flexible, cake decorating spatula with a rounded tip. Don't use one with a square tip as the corners are prone to digging into the pan and ruining the finish, and above all, NEVER use a knife to dig the pizza out of the pan. To remove the pizza from the pan use a deep-dish pan gripper to hold the pan, run the spatula around the edge of the pizza to free it from the pan just in case it might be adhering someplace, with a quick flip of the wrist to raise the pizza in the pan, slide the spatula under the pizza to guide it out of the pan and onto a cutting surface. Cut your deep-dish pizza with a rocker knife (you can probably make one yourself by looking at pictures) or a French knife, pizza wheels don't work especially well on deep-dish pizzas.

Tom Lehmann/The Dough Doctor  
5463

**[Pizza Ovens / Re: Help identifying pizza oven. Guess that oven...](#)**

The person you really want to share this with is George Mills at the PMQ web site. <[www.pmq.com](http://www.pmq.com)> Login to the Think Tank and post this to George, he is the resident oven and equipment guy with many years of experience under his belt.

Tom Lehmann/The Dough Doctor  
5462

**[General Pizza Making / Re: When cold-fermenting dough, is there a](#)**

## [\*\*difference in tanginess between cy & IDY?\*\*](#)

The problem with freezing CY has to do with the formation of ice crystals within the yeast cells which damage a good number of the cells to the point where some are killed and others are damaged to the point where they can no longer participate in the fermentation process. This is why commercially frozen yeast leavened products typically have a frozen shelf life of only 16 to 22-weeks. Home freezers are not nearly as cold or efficient as commercial freezers so the ice crystals formed are even larger than those formed in a commercial freezer (-35F to -50F) and are even more damaging to the yeast cells. When frozen in a home freezer we typically begin to see damage to the yeast cells in as few as two to three weeks and it keeps getting worse as time progresses in the freezer. Dry yeast, whether it be ADY or IDY has a much lower moisture content than CY so it is not damaged to any great extent when stored in the freezer (this applies only to unopened bags of ADY & IDY). Years ago I did a study on IDY that was stored for two years in their unopened bags. The storage conditions were freezer (-10F), walk-in cooler (36F) room temperature (ambient 70F) and in a south facing window. Gasograph results revealed that the bags stored in the south facing window lost roughly 25% of its activity as compared to the activity when fresh, the bags stored in the cooler and freezer were nearly identical to each other showing only about a 6% loss in activity while the sample stored at room temperature fared nearly as well with only a 10% loss of activity. At one time most IDY manufacturers used to have a two year room temperature shelf life in their literature, I think that has been amended now to only one year.

Once the bag has been opened the yeast immediately begins to absorb moisture from the air and shelf life is dramatically reduced no matter how it's stored.

Tom Lehmann/The Dough Doctor  
5461

## [\*\*Dough Clinic / Re: Pizza nirvana; trying to get closer to the crust at Sam's\*\*](#)

Your yeast is at 0.4%, but what kind of yeast are you adding? The salt at 1.6% is a bit on the low side, typically we see salt levels closer to 2% with a minimum of 1.75% for optimum flavor development in the finished crust. Depending upon how you are managing your dough, all of the sugar might be metabolized by the yeast before baking leaving little if any residual for crust color development. If the sugar is being added to help with crust color development you will probably want to be in the 2% sugar range, but again, it all depends upon how you are managing the dough.

Tom Lehmann/The Dough Doctor  
5460

## [\*\*Prep Equipment / Re: Correct Use of Plastic Bags For Fermenting\*\*](#)

Here's my 2-cents worth;

If you use lidded containers you really should leave them un-lidded after placing them in the fridge for at least 2-hours or more to promote consistent cooling of the dough without forming condensation in the container....this can be a real pain. When using plastic bags, I just oil the dough ball and drop it in the bag, ponytail, tuck and place in the fridge. The bags can be reused any number of times. I just use one of our empty margarine tubs and pack the bags into the tub and lid, store in the fridge until the next time you're ready to make dough, I've used the bags countless times this way. In a commercial setting (pizzeria) we put them into a 5-gallon bucket and store them in the walk-in. We reuse them for a full week if we can. It's only oil in the bags so there is nothing to spoil or go bad especially when stored in the cooler.

Tom Lehmann/The Dough Doctor  
5459

**[Prep Equipment / Re: Bottle fridge for proofing dough advice](#)**

What temperature is the fridge operating at? A good cold ferment environment is between 36 and 40F.

Tom Lehmann/The Dough Doctor  
5458

**[Prep Equipment / Re: Bottle fridge for proofing dough advice](#)**

If by "more constant air distribution" you mean that it has a fan to move the air around, that's the one I would opt for.

Tom Lehmann/The Dough Doctor  
5457

**[General Pizza Making / Re: no-yeast cold fermentation, possible?](#)**

Or.....it might have been caused by wild yeast strains which are present in the air, on our hands, utensils, etc.

Tom Lehmann/The Dough Doctor  
5456

**[Shop Talk / Re: help with "cure baking" steel pans please](#)**

There is not much you can do for a pan that is expanding and contorting/warping as a result of heating. It looks like someone tried to address the problem by putting those creases in the pan (actually it looks like something that a heating and air conditioning company might make as part of their duct work). Even the popular 18 X 26 aluminum sheet pans warp (bow) as a result of heating. There are some steel 18 X 26 sheet pans made with sharp creased corners and a heavily reinforced top rim that are designed specifically to resist warping. I think square shaped pans are especially troublesome with warping. Round pans or pans made with a wire reinforced top rim and sharp bottom corners as well as round shaped pans resist warping pretty well.

Tom Lehmann/The Dough Doctor  
5455

**[Prep Equipment / Re: Correct Use of Plastic Bags For Fermenting](#)**

That is why it is so important to oil the dough balls either before or after you place them into their containers. You will see that when we use dough boxes in a pizzeria we place the dough balls in the box un-oiled as this prevents the dough balls from sliding around in the box during handling we then lightly brush or wipe the tops of the dough balls with oil prior to taking them to the cooler, this is what prevents the dough balls from developing a dry skin or crust on top.

Tom Lehmann/The Dough Doctor  
5454

**[Shop Talk / Re: Serving Peel to Table](#)**

Plus, in a restaurant setting the peel would need to be washed and sanitized each time it was used in that manner. Hot pizza being balanced on a peel is bad enough behind the counter but in front of the counter with people walking around, kids running around and whatever, words you don't want to hear are; excuse me (after being bumper into), oh my gosh! (after planting the pizza in someones lap), or oops! (as the pizza slides off of the peel and lands on the floor). If a restaurant can be sued over the stupid actions of a lady with a cup of coffee, a pizzeria can be

sued when a lady burns the roof of her mouth on a hot pizza (nobody told her it was HOT!), or a man get sued by a person for whom he opens a door and that person hits their shoulder on the door frame and gets an "owie", I can see your future from a mile away. As the others have said, maybe a good idea, but it is not recommended that you do it for any number of reasons.

Tom Lehmann/The Dough Doctor  
5453

**[Prep Equipment / Re: Correct Use of Plastic Bags For Fermenting](#)**

Been there, done that, without oil either in the bag or on the dough ball the dough sticks to the plastic. When I lightly oil the dough ball and drop it into the bag it comes out with very little encouragement from me. BTW: Oiling the dough ball doesn't create as much of a mess in the bag as spraying oil in the bag and it still gets the job done.

Tom Lehmann/The Dough Doctor  
5452

**[General Pizza Making / Re: no-yeast cold fermentation, possible?](#)**

Peter;

Years ago I did a rather extensive literature search on how dough/bread (if you want to call it that) was fermented back in the glory days of Rome and earlier. Essentially what I found as a common denominator was that ground grains would be mixed with nuts and berries (or whatever was available or could be found) and at some point mixed together to form something of a dough, this was placed on a flat stone in the middle of a campfire and heated until it was baked. There are some references to the "bread" being leavened but remember yeast wasn't even discovered/identified until Louie Pasteur did his research, it has been speculated that the wild yeasts found on grains, nuts, and especially fruit and berries was the driver of the leavening (fermentation) as it was too rapid for bacterial fermentation. In modern days when we make dough without added yeast we are still getting a dose (though probably not as great) of wild yeast, but then too, we generally hold the dough longer between mixing and actual baking so in all probability there is a very good chance that as you stated, bacterial fermentation is also playing a part in the leavening of the dough which was made without any added yeast. Operative word being "added".

Tom Lehmann/The Dough Doctor  
5451

**[Dough Clinic / Re: Pizza nirvana; trying to get closer to the crust at Sam's](#)**

I would suggest making a trial batch of dough with the salt and sugar bumped up to 2% and see if that brings any improvement.

Tom Lehmann/The Dough Doctor  
5450

**[Dough Clinic / Re: On Mixing](#)**

Roy;

The two main things responsible for getting water into a dough when using a mechanical mixer are mixing time and fermentation time which allows time for the flour to fully hydrate. As for a dough giving off water during baking as long as you have a manageable dough it will bake off to about 32% moisture content during baking regardless of how much water (dough absorption) was used in making the dough. The only way that you can alter this is to put something into the dough that will hold onto the water during baking such as fiber, gums (actually a form of fiber),

glycerol, gelatin, etc.). If you go back to the late 1970's you might remember the New Horizons (Continental Baking Co.) high fiber bread that was all the rage. The dough contained roughly 30% microcrystalline alpha cellulose (cellulose for short) and the total dough absorption was up around 105%. The finished bread has the mouth feel of a wet sponge....now that's water retention!

With that said, once a dough is fully developed further mixing can have a degrading effect upon the flour proteins causing them to begin breaking down and releasing water. This is why an over mixed dough becomes soft, extremely extensible and very sticky. A pizza dough should never be mixed beyond the point where it just begins to take on a smooth, satiny appearance.

Tom Lehmann/The Dough Doctor  
5449

### **Dough Clinic / Re: On Mixing**

Roy;

When mixing a pizza dough the extensibility/feel of the dough is a bell shaped curve, meaning that it goes from very soft to very tight and elastic as the gluten is developed to very soft and extensible again as the dough reaches breakdown. This is one of the reasons why pizza doughs are best when mixed only to the point where it begins to take on a smooth, satiny appearance, more mixing than this does two things, it makes the dough tighter (more elastic) and difficult to handle and it puts undue wear on your mixer. The gluten will be developed through biochemical gluten development during the cold ferment period with the added advantage that biochemically developed gluten is much drier and more extensible than mechanically developed gluten. Allowing the dough to sit out on the counter too long before going into the fridge can easily result in over fermentation of the dough while it's in the fridge. This is why in my Dough Management Procedure it calls for the dough to be taken directly from the mixer to the fridge. Blisters on the bottom of the crust are perfectly normal for a well fermented dough with a very soft consistency. In fact, I developed a baking disk (Hearth Bake Disk, Lloyd Pans) that was designed specifically for use in air impingement ovens when combined with the recommended formula modifications and oven baking parameters gives those same small bubbles/blisters to the bottom of the pizza so the finished pizza has the appearance of having been baked in a hearth type oven.

Tom Lehmann/The Dough Doctor  
5448

### **Specialty-Grain Pizzas / Re: So, rancid is a bad thing?**

Atta flour is a typical flour used for making flat bread type products. It is actually a durum type flour so I would suggest doing a little experimenting with it to see how it impacts the pizza after it has had a chance to sit around for 20 to 30-minutes after baking. The gluten is somewhat different in durum flours than what we find in our more typical patent grade flours that we commonly use, it is this difference that can cause the pizza crust to become quite crispy when first baked but as the pizza cools it becomes so tough that you have to gnaw off a piece to eat it. You can always blend it with your regular flour too, a blend of 75% regular flour and 25% durum flour is probably as high as you will want to go if you have to blend it.

Tom Lehmann/The Dough Doctor  
5447

### **New Forum Members / Re: Leathery!**

As a "south sider" growing up in Tinley Park (175 th. street) I know exactly what you are talking about. Ed and Joe's in Tinley Park is my "go to" pizza place when we

visit family there. The characteristic you are referring to is the result of sheeting the dough from edge to edge and then sealing the top of the pizza with a layer of cheese and baking it for roughly 25-minutes at 500 to 525F. And don't forget, you have to use raw sausage or you'll never achieve the flavor so characteristic of these pizzas. Since you probably don't have access to a sheeter, you will need to get a workout using a good, sturdy rolling pin, not one of those silly home type rolling pins. Keep your dough absorption around 50%. Allow the dough to bulk ferment for about 5-hours or more, roll out thin (1/8-inch thickness) and trim to size. Dress as desired and bake. BTW: You forgot to mention that the pizzas are party slices only and the corners are the first pieces to go, then we go after the soft center pieces. No crispiness here folks, just all good.

Tom Lehmann/The Dough Doctor  
5446

### **New Forum Members / Re: Leathery!**

I have never seen one of those bags opened from the end, always torn apart from the center, when the pizza is but a recent memory, fold the pizza circle in half and toss it in the trash along with the remnants of the bag and any napkins.

Tom Lehmann/The Dough Doctor  
5445

### **Dough Clinic / Re: On Mixing**

Roy;

Commercial planetary mixers are much more powerful than most home type mixers unless you are one of the few fortunate ones who happen to have a Hobart A-120 or A-200, or even a Hobart N-50 (a gear driven 3-speed 5-quart mixer like a K5-A on a double dose of steroids). With that said, a food processor will mix a dough much in the same way as a vertical cutter mixer (VCM) so it is possible to achieve greater levels of gluten development with a food processor than with a home type planetary mixer. As the gluten continues to develop during mixing the dough goes from a very rough appearance to a smoother appearance which appears to be lighter in color (actually no color change at all, just the dough's smoother skin reflecting more light), as the dough approaches this level of development it becomes noticeable less sticky/tacky, as mixing continues the gluten film develops extensibility, allowing it to stretch without tearing (remember I showed this in the video), The "egg test" is designed to assess dough development to this point. When this level of gluten development is achieved the dough can be taken to the bench for cutting, scaling and rounding/balling without the dough skin continually tearing resulting in greater difficulty in handling the dough. In a pizzeria we have only a 20-minute window of time during which the dough must be taken from the mixer, cut, scaled, rounded/balled, boxed and placed into the cooler so when you are dealing with upwards of 80-pounds of dough you do not want to have a sticky or tacky dough as it will only serve to slow down the operation. When making pizzas at home where only a few dough balls are in play, this is not an issue unless you want to have a dough that is easier to work with. Above all, remember that pizza dough is best under mixed, how much under mixed? Try mixing a dough just until the ingredients are fully incorporated and you have a homogeneous dough mass. The resulting dough will be sticky but it will make a great pizza if you give it a minimum of 18-hours cold fermentation time. This same rule is followed by most pizzerias, they just mix it longer to make the dough easier to handle on the bench, ditto for the large box store commissaries where they mix the dough just enough to allow for ease of processing through their equipment and to control the spread of the dough while it is stored in the large dough boxes.

Tom Lehmann/The Dough Doctor  
5444

**Dough Clinic / Re: How is my recipe??**

It's a lot easier to review a dough "recipe" if you can put it into a "formula" based on bakers percentages. But then before we can suggest any changes we need to know what you think needs to be changed/how it needs to be made different. However, as I always tell my clients, when you operate a pizzeria you don't have a vote in the matter, it's your customers who dictate what they like or don't like about your pizzas so before you go making any big changes you need to get some customer input, remember, if you look at quality on a scale of 1 to 10 with 10 being the best possible, and your pizza ranks 7, any change either higher or lower on the scale might adversely impact the quality of your pizza in their eyes. You think the pizza is too chewy, they think it's just great, you make the pizza less chewy, they don't like it...and so it goes.

Tom Lehmann/The Dough Doctor  
5443

**Dough Clinic / Re: How is my recipe??**

QJ;

Your dough formula as converted by Peter looks to be in good balance for a very typical American style pizza crust. The specs on the RHAP flour appear to be on the low side to support a long (3-day) cold ferment period in a restaurant/pizzeria environment. If you can provide us with your dough management procedure and baking parameters we can offer more information on flour performance and crust quality.

Tom Lehmann/The Dough Doctor  
5442

**Chitchat / Re: How pizza IS NOT a junk food on Dr. Oz tomorrow**

Norma;

I have zip, zero, no respect for the guy. Agreed, he's a QUACK!  
I refuse to even watch his show, for any reason whatsoever.  
That's just my own personal opinion of him.

Tom Lehmann/The Dough Doctor  
5441

**Chitchat / Re: How pizza IS NOT a junk food on Dr. Oz tomorrow**

Essentially all, if not all of the box manufacturers have already addressed the problem, if anyone still has concerns just put one of those plastic pizza mats under the pizza so it doesn't contact the box. Will Doctor OZ just capitalize on on the hype or will he be honest and say that the problem has already been addressed? I know where I'd place my bet!

Tom Lehmann/The Dough Doctor  
5440

**General Pizza Making / Re: Trying to get the taste of 4-5 day dough into a 3 day cold ferment**

You might also try increasing the finished dough temperature by a few degrees too, or if you don't want to go that route experiment with letting the dough sit out at room temperature before going into the fridge. If you go that route use test increments of 15-minutes.

Tom Lehmann/The Dough Doctor

5439

**Pizza Ovens / Re: Best electric oven for 900°; 1/2 bakes in the US?**

Someone might look into this to confirm but a number of years ago I looked into why this type of oven was not available and what I was told at the time was because it would not qualify for the UL certification/seal if the operating temperature was above (I think it might have been 700F but don't remember anymore).

Tom Lehmann/The Dough Doctor

5438

**Dough Clinic / Re: Cracker crusts with higher oil percentage**

Brad;

A saltine cracker formula isn't all that different from a cracker type pizza dough formula and it typically contains 8% or more fat.

Tom Lehmann/The Dough Doctor

5437

**Dough Clinic / Re: On Mixing**

Roy;

When conducting the "egg" test do not manipulate the dough any more than necessary to form it into a ball about the size of an egg, if you knead the dough it will toughen, just like re-rounding a dough ball and then expecting it to open easily....it won't. If you knead the dough before or as you are forming it into a ball it will tear every time.

Tom Lehmann/The Dough Doctor

5436

**Chitchat / Re: How pizza IS NOT a junk food on Dr. Oz tomorrow**

Avoiding too much sugar in a pizza?

If a pizza has a major fault it is probably in the sodium content which comes from the dough, cheese, and processed meat toppings. This is why I have always been an advocate of using only 1.75% salt in the dough as opposed to 2.5 - 3% as we have seen used in the past. Can't do much about the cheese, but for the past 4-years I've been a strong advocate of using less or a more flavorful cheese/cheese blend in conjunction with less dried herbs to allow the cheese flavor to come through, the sodium contribution in the processed meats is another thing, but easily addressed by using non-processed meat toppings, or some of the new low sodium meat toppings, or just have your pizza with vegetable toppings, anyway you look at it, pizza really isn't all that bad if eaten in MODERATION. When someone sits down and eats a whole 12-inch pizza, just think of this....that's the same as eating half a LOAF of bread, a quarter pound of cheese or more, not to even mention the meat toppings. We'll call the vegetable toppings a small side salad to go with that cheese sandwich.

If they want to go after "junk" foods, they should start with dry breakfast cereal, granola bars (what a joke), and how about the hot dog?

Sorry about the outburst.

Tom Lehmann/The Dough Doctor

5435

**Dough Clinic / Re: How is my recipe??**

QJ;

You want to have a protein content that is at least equivalent to a bread flour. The

AP flour is shown as being a blend of hard red spring wheat and soft wheat for a protein content between a cake/pastry flour and a bread flour. If you can get a "bread" flour it will perform better overall for you.

Tom Lehmann/The Dough Doctor  
5434

### **Pizza Toppings / Re: Gray/White Storage Spots on Pepperoni**

Sounds like oxidation. Given time, even in the freezer, pepperoni will turn a beautiful battleship gray. This is why the commercial pizza manufacturers use MAP (modified atmosphere packaging) when packaging their pizzas.

Tom Lehmann/The Dough Doctor  
5433

### **Dough Clinic / Re: pizza box**

The one thing that I didn't hear you say was anything about putting something under the pizza in the box to allow the bottom of the pizza to ventilate. You might contact Ed Noe <ed@colonyfoods.com> and ask him for a few samples of Pizza Savors. These are a plastic mesh that you place under the pizza when you place it in the box. They work quite well in DELCO operations such as yours.

Tom Lehmann/The Dough Doctor  
5432

### **Chitchat / Re: Where were you in 1976?**

Most of my summer of '76 was spent between getting the baking research department moved from Chicago to Manhattan, Kansas and getting our labs installed in our then new facility while directing research at the Manhattan, Kansas facility. I felt like I was on a Yo-Yo between Chicago and Manhattan.

Tom Lehmann/The Dough Doctor  
5431

### **Newbie Topics / Re: Dough is Too Elastic**

The advice from Mitch Dog is spot on, additionally you don't want to punch the dough down before you begin opening or trying to open it into a skin. When I use a process of straight from mixer to a pizza I normally place the dough in an oiled bowl as you do but then I allow it to

ferment for at least 6-hours before opening it into a skin. You will get the best results by just allowing the dough to rise, if it falls on its own, not to worry, that is normal and is referred to as the "first full rise" if you make a note of the fermentation time the dough took to get to the first full rise and then multiply that time by 50% you will know what the full fermentation time for your flour, in your dough is. At full fermentation time the dough will have the best combination of elasticity and extensibility for opening into a pizza skin. It will also produce a crust with a pretty decent flavor profile as opposed to only a 2-hour fermentation period. When opening the dough into a skin just turn the dough out of the bowl into a bowl of dusting flour, flour the dough ball on both sides, pat off most of the excess dusting flour and open into a skin for your pan following the advice from M.D.

Tom Lehmann/The Dough Doctor  
5430

### **Dough Clinic / Re: Warm rise dough going now**

I would suggest increasing the IDY to 0.375%. You can add the difference directly to the dough and then mix at low speed or knead for about 5-minutes and you'll be good to go.

Tom Lehmann/The Dough Doctor  
5429

**[Newbie Topics / Re: so the dough is made now what?](#)**

Your pan doesn't like like it has been seasoned yet, if that's the case you want to season the pan by wiping it with salad oil and baking it at 400F for about 20-minutes. Then bake a second time to darken the seasoning finish. By seasoning the pan before use you will get a better bake and the pizza won't stick to the pan either. DON'T wash your seasoned pans, just wipe them down and put them (it) away when you're finished making pizzas. If you wash the pan, especially if you allow it to soak the seasoning finish will come off like a bad sunburn which will result in the need to strip the entire finish off of the pan and start over again or get a new pan and start over again.

Tom Lehmann/The Dough Doctor  
5428

**[Pizzeria & Restaurant Reviews / Re: Blaze Pizza](#)**

I've had it. It's the new concept in pizzerias, I've helped to open two of them already and have more on the schedule for this summer.

Tom Lehmann/The Dough Doctor  
5427

**[Newbie Topics / Re: so the dough is made now what?](#)**

Yep, as you continue to bake in the pan(s) they will continue to darken giving a better overall bake. A well seasoned pizza pan is like a well seasoned frying pan, something to be cherished and never washed.

Tom Lehmann/The Dough Doctor  
5426

**[Home Ovens / Re: Costs to operate a typical home Gas oven](#)**

Since the cost of gas varies across the country the easiest thing to do is to contact your local utility company and ask them what the cost is to operate a gas kitchen range is.

Tom Lehmann/The Dough Doctor  
5425

**[Commercial Ovens / Re: Help With Pizza Oven](#)**

I'm guessing that the cost might be more than what it would cost to buy a used gas oven. You might want to run this across George Mills at the PMQ Think Tank.  
<[www.pmq.com](http://www.pmq.com)> George is the resident expert on such things.

Tom Lehmann/The Dough Doctor  
5424

**[Newbie Topics / Re: first pizza failure, 2nd try same day ehhh u tell me](#)**

What does the bottom of the pizza look like? Can't tell from the pictures. The crust appears to be rather thick, what was your pizza diameter and scaling weight? Also, what was your exact procedure that you used to open the dough ball into a skin? That can impact your finished crust too.

Tom Lehmann/The Dough Doctor  
5423

**[Stones/tiles/steel, Pans & Accessories / Re: inserts](#)**

Aluminum is an issue but not stainless that's why all of the prep-table trays are

stainless. You also want to make sure that you are mixing your sauce in a stainless bowl as opposed to a tin plated bowl as the acid in the tomato will remove any oxidation from the tin plating giving the sauce a distinctive metallic taste. The aluminum alloy agitators such as the flat beater (commonly used to blend sauce) do not pose such a problem ,but some of the newer mixers are coming out with stainless mixing attachments too.

Tom Lehmann/The Dough Doctor  
5422

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Chicago Metallic deep dish pizza pans\*\*](#)

If you buy the pans from Lloyd Pans don't forget to spend a couple of extra bucks on their deep-dish pan gripper, it works great for holding the pan and flipping the baked pizza up in the pan so you can slide a spatula under the pizza to guide it out of the pan.

By the way, the finish on those pans is INDESTRUCTABLE.

Do keep in mind that while oil is not needed in these pans for release you will probably still want to use some oil in the pan to achieve the desired fried crust characteristic common to deep-dish pizzas, then after using the pan it can be either wiped out with a clean towel and put away for future use, or it can be washed in the sink along with your other dishes without harm or damage (don't try this with a seasoned pan as it will soon destroy the seasoning causing it to peel off)

Tom Lehmann/The Dough Doctor  
5421

### [\*\*Dough Clinic / Re: Chicago deep dish dough gum line\*\*](#)

23% oil is at the very top end of the amount of oil that can effectively be used in making pizza crusts where the fat is incorporated into the dough. Many of the frozen pizzas that we see on the supermarket shelves contain oil in excess of 16%. This is why you really need to have a strong flour to carry all that oil weight. When mixing a dough with that much oil in it it can get to be somewhat problematic getting the oil incorporated into the dough if it is added correctly (after the flour has absorbed the water) since it takes considerable mixing action with a planetary mixer to incorporate that much oil. If the oil is added too soon, that amount of oil is very well capable of rendering a very sizable portion of the flour unable to develop gluten resulting in an overly weak dough structure with a pronounced tendency to collapse at the slightest provocation, especially in the oven when the structure is under pressure as the dough begins to expand (oven spring), then as the baked crust cools, the weight of the oil and the over lubricated structure cause the crust to settle (collapse) during cooling.

Tom Lehmann/The Dough Doctor  
5420

### [\*\*General Pizza Making / Re: Brie ideas?\*\*](#)

Years ago we used to use Brie cheese in making pizzas during our annual pizza class at AIB. It worked well but don't use too much of it, I think it goes best with a lightly topped pizza much as you have described using caramelized onion, walnuts, dried figs, and DATES (they were made just for a brie topped pizza), if you want a little color add some fresh spinach and a few pieces of sun dried tomato. Forget the mushrooms as brie has a mushroom like flavor already and the added mushrooms just work to cover over the brie flavor.

I think you're on track to a great tasting pizza!

One other thing....gotta be made on a very thin cracker crust.

Tom Lehmann/The Dough Doctor  
5419

### **Dough Clinic / Re: Pizza Box vs Sheet Pans**

No real downside at all, it is a fairly common practice to store dough balls on sheet pans in the cooler. It is not so much of a space saver since you will need to have a rolling rack with a shelf spacing of about 6-inches to accommodate the sheet pans ((NAI/New Age Industries, Bob Brackle: <bob.newage@windstream.net> can get you set up with racks at a very reasonable cost. The advantages of storing your dough on sheet pans is that you can store them in a moveable rack (but then too the stacks of dough boxes are moveable too), the sheet pans do not need to be cross-stacked as the dough boxes do (advantage to the sheet pan). The sheet pans will require a food contact approved plastic bag to slip around the pan of dough but keep in mind that the bags can be reused to minimize cost. Sheet pans are easier to clean than dough boxes for the most part. Sheet pans when not being used require very little storage space (advantage to the sheet pan). Both the dough boxes and sheet pans are softer than steel so use only plastic type scrapers to remove dough balls and any remaining dough from the surface. Sheet pans are cheaper to purchase than dough boxes (advantage to the sheet pan). Since the sheet pans are lighter than the dough boxes they are easier to handle and when the last dough ball has been removed the empty sheet pan is easily stored on a shelf or table near the prep-line (advantage to the sheet pan). If you ever find that you need to transport dough balls to another location the bags covering the sheet pans will become a single use item and do not provide much protection for the dough balls so boxes are the only way to go in this situation.

Now that you have the information, the choice is yours. Pick up a few used sheet pans and a box of bags and give it a try for a week or so, then make your decision based on YOUR experience.

By the way, DO NOT tie/knot the bags to close, instead, the correct way to close the bag is to pull the bottom of the bag up over the nearest row of dough balls and then bring the top flap of the bag down to cover the front of the sheet pan and tuck the edges under the sheet pan to secure. When using a wheeled rack this means that you will only need to secure the end of the bag on the two supporting rails under the sheet pan, and be sure to lightly oil the top of each dough ball after you place it onto the sheet pan, it will do wonders to keep the plastic from sticking to the dough. When you are using the dough balls from a sheet pan leave the plastic bag in place allowing it to drape over the remaining dough balls on the pan to protect them from drying out (advantage to the sheet pan).

There you have it.

Tom Lehmann/The Dough Doctor  
5418

### **Shop Talk / Re: Help preparing many pies in advance**

New York;

If you give me a call at 785-537-1037 I will be more than glad to help you sort things out. Please e-mail me so we can establish a time and date for the call, that way I'll be here in my office to take your call <thedoughdoctor@hotmail.com>

Tom Lehmann/The Dough Doctor  
5417

### **Dough Clinic / Re: Chicago deep dish dough gum line**

Feeling wet but not sticky is an indication that the oil level is excessive for your specific formulation or dough management procedure. You might want to cut the

oil level by 50% to see if that will give you better results.

Tom Lehmann/The Dough Doctor

5416

**General Pizza Making / Re: Brie ideas?**

JPB;

Any thin crust should work well, the thicker type crusts just don't cut it with this type of topping. I like to think of it like this: Does Brie cheese go better on a cracker or on a slice of white bread?

Tom Lehmann/The Dough Doctor

5415

**Dough Clinic / Re: Chicago deep dish dough gum line**

C.P.;

Your combination of 14% oil and 60% water seems to be a might on the high side for a deep-dish pizza, especially one made with an all-purpose flour. I think you would be better to bench mark off of not more than 50% absorption. Otherwise the procedure and dough management look to be OK.

Tom Lehmann/The Dough Doctor

5414

**Dough Clinic / Re: Fast Casual - Only 2 dough options?**

Billy;

The dough press does not partially cook/bake the crust, instead the heat (hot press forming method) just helps to relax the gluten in the dough for improved pressing and to reduce snap-back/dough memory after pressing. The hot press forming method has become popular in this application because it allows for fast and easy forming of the skin, it effectively creates a thin dough skin without degassing the dough as a sheeter/dough roller would meaning that you still get some edge rise during baking, of less critical importance is the fact that the dough balls are lightly oiled and the heat of the press forms a dry skin on the surface of the dough skin which allows the formed (pressed) skins to be immediately stacked one on top of another to save space in the reach in cooler under the prep-station.

Tom Lehmann/The Dough Doctor

5413

**Stones/tiles/steel, Pans & Accessories / Re: Sicilian Pizza Pan Search - I have nearly given up - Can you help?**

Just to add another "log to the fire", pan seasoning is not safe either. Some states do not look favorably on the use of seasoned pans as there is some indication that the carbon is carcinogenic as are some of the compounds formed during the seasoning process. This is one of the things that has lead to the widespread popularity of the anodized aluminum pans, but then there is an issue with aluminum too. I'd suggest that you look around for a square steel cake pan (popular in the '50's and 60's) and then have it sand blasted to remove all trace of any finish, then just season the OUTSIDE of the pan (non food contact area) and oil the inside of the pan when you want to use it, then thoroughly clean any residual oil out of the pan when you're finished using it. This should work reasonably well for you.

Tom Lehmann/The Dough Doctor

5412

**Stones/tiles/steel, Pans & Accessories / Re: Where to buy Pizza Peel in**

## [Canada ?](#)

You might also try <[www.mrpeel.com](http://www.mrpeel.com)>.

Tom Lehmann/The Dough Doctor

5411

## [Shop Talk / Re: Question for store owners](#)

A good way to access pizzeria owners is by going where they go, Pizza Expo and the NAPIC Show and setting up shop (booth) or seeing if you can get on the seminar schedule.

Tom Lehmann/The Dough Doctor

5410

## [Dough Clinic / Re: First commercial operation in the world using soft durum for pizza](#)

This work reminds me what was done a number of years ago with developing hard white wheat varieties, which at one time were actually considered dockage in the grading of the wheat, now it is something of a main stream product. (White wheat varieties are popular as the bran portion has less tannins than the more conventional HRW and HRS wheat varieties making it a favored wheat to use for whole-grain breads due to the reduction in bitterness). They still have a "long row to hoe" though, before the wheat can be successfully commercialized. For example, they will need to develop pest resistance, drought tolerance, sprouting tolerance, not to mention increasing yield potential. I was involved with U.S. Wheat a good number of years ago and I noticed that while a good durum wheat or flour was always sought, it was seldom purchased in any quantity due to its premium cost (they just don't have the money to spend on things like that). This lead to the work at K-State University many years ago on making "decent" pasta from hard wheat varieties. They were successful in making a fairly decent pasta but rather than that wonderful yellow color it has more of a muddy, brown/gray color. You can buy this at your local supermarket as it has been commercialized for many years now. I say all of this not to take anything away from those who have successfully developed a soft wheat durum, but to underscore just how much work actually goes into developing and commercializing a new strain of wheat. What you will probably see is some contract growing with limited availability through small milling companies (whatever that is, they're all very big) but maybe it will present new opportunities for a specialized cottage scale milling industry where they will market the new durum flour through some type of a co-op milling facility. This is along the lines of how the hard white wheat varieties have been marketed for many years (Farmer Direct Foods/<[farmerdirectfoods.com](http://farmerdirectfoods.com)>). This is yet another chapter in the ever evolving saga of PIZZA. New and better things brought to you through independent innovation!

Tom Lehmann/The Dough Doctor

5409

## [Dough Clinic / Re: What to do about burning flour on the stone when making multiple pizzas.](#)

In a commercial pizza oven we just rake the debris loose and then broom it out of the oven, but a home oven presents a totally different story. I have a suspicion that you might be using too much peel dust when peeling the pizza into the oven.

Another option is to have a sheet pan or large piece of foil handy to place on the shelf below the one you are baking on, then sweep the residual peel dust onto the foil/sheet pan. This is the procedure that I use and it works well for me. For my broom I use a brass bristle tire brush that I got from one of our local auto supply

stores, it works quite well at cleaning the stone. Before I found the tire brush I used a steel bristle brush that I pirated from my arc welding tool box.

Tom Lehmann/The Dough Doctor  
5408

### **Dough Clinic / Re: The taste of the dough**

You have more going on there than a lack of sugar, you have a boat load of dry milk, sugar and butter in your dough "recipe" already. If your IDY level is already high it doesn't make sense to add more salt and sugar to slow down the yeast activity, just reduce the yeast level. Typically, IDY is used at around 0.375 to 0.5% of the total flour weight, then plug the salt in at 2%, ditto for the oil. Sugar is optional but questionable with all that dry milk. The main sugar in dry milk is lactose which contributes greatly to crust color development but since lactose is not fermentable by baker's yeast sucrose would possibly be needed for yeast nutrient out at 48-hours or more. One other thing to consider is the finished dough temperature, the warmer the dough the faster it will ferment. A good temperature to start with is around 80F. Can you share with us how you manage the dough? This is everything you do to the dough from the time it is mixed until it is used (be sure to provide all pertinent times and temperatures) Baking time and temperature? What do you bake on/in?

Tom Lehmann/The Dough Doctor  
5407

### **Shop Talk / Re: Selling Pizza**

Danny;

First you will need to work at developing an effective dough management procedure, which in this case will include the sequencing of ingredients into the mixing bowl, then developing a fixed dough mixing procedure which will include specifications for a finished dough temperature (in your case I'd recommend 70 to 75F). Then take the dough directly to the bench for scaling and balling, use bread of "food" bags rather than individual plastic containers as the bags are easier to use and are more effective in helping you achieve your end goals. Just be sure to wipe the entire dough ball LIGHTLY with oil before dropping it into the bag. Twist the open end to close, forming a pony tail and tuck the pony tail under the dough ball as you place it in the cooler. Allow the dough to ferment for 24 to 48-hours in the cooler before use. To use the dough, remove about a 2-hour inventory of dough balls from the cooler and place on a sheet pan in an out of the way place (under the prep-table), allow the dough to warm to 50F, then turn the dough ball(s) out of their individual bags allowing them to drop into a bowl of dusting flour. Save the bags for reuse by placing in a clean (food safe) lidded container. The bags can be reused many times over. Begin opening the dough into pizza skins as you need them. The dough will remain good to use for a period of 2-hours in a shop temperature of 100F. Any unused dough balls at room temperature for more than 2-hours should be opened into skins, placed on pizza screens and put into a wire tree rack in the cooler for 30-minutes uncovered, then slip a bag over the rack to prevent drying. These pre-opened skins can be used during the "off-peak" periods or during the "slammed" periods when they will come in handy to help you stay on top of the orders. When using these pre-opened skins just remove from the screen and place top down on your prep-peel, you might need to clean-up the shape or diameter a little as you do this, but trust me, it is a real time saver when the chips are down. From there, dock if necessary, dress to the order and bake as usual.

Tom Lehmann/The Dough Doctor  
5406

[\*\*Stones/tiles/steel, Pans & Accessories / Re: Sicilian Pizza Pan Search - I have nearly given up - Can you help?\*\*](#)

Viva;

I mentioned seasoning the outside (non food contact area) of the steel pan and using oil in the pan with each use to facilitate release. The seasoning on the outside of the pan will continually darken with use thus improving heat absorption properties of the pan...remember, you were adamant about using a steel pan. As for aluminum pans, unless the finish is stated as being a non-stick finish, it will still require some seasoning to ensure a consistent release from the pan. The thing about the dark colored anodized pans is that they are already dark in color so they bake well right from the get-go, where as the non-colored (clear-coat) anodized finish will require outside seasoning to darken the pan for improved heat absorption. Literally translated, you can expect the clear-coat anodized finish pans to bake somewhat differently until they develop that prized dark finish on the outside. Without a seasoned finish they will always require the use of oil in the pan for satisfactory release properties.

Tom Lehmann/The Dough Doctor

5405

[\*\*Dough Clinic / Re: Is my understanding of this technique correct..or am I off?\*\*](#)

Bill;

Remember that you will develop a different flavor between cold fermentation and room temperature fermentation. My experience is that if I start with an extended room temperature fermentation that sorta sets the stage for the flavor regardless of how much cold fermentation I give the dough afterwards. I'd move the re-ball process to the day before opening the dough into skins, that way the dough will be plenty relaxed. Day prior to opening: re-ball the dough, then on the following day bring dough balls from the cooler and allow to temper (warm) at room temperature until the dough reaches at least 50F, turn the dough ball out of its container into a bowl of flour, immediately open into skins, dress and bake.

Tom Lehmann/The Dough Doctor

5404

[\*\*Dough Clinic / Re: Is my understanding of this technique correct..or am I off?\*\*](#)

You will get more dough conditioning with the RT first, the CF then allows you to hold the dough for a longer period of time without getting a huge impact in flavor as you would if you held the dough for 72-hours at room temperature. You will get continued flavor development during the CF period, but it will not be the dominant flavor in the finished crust. During the initial RT period the dough will become acidified more than it would if CF during that time, as a result the acids formed during that initial RT fermentation period will have more time to work their magic on the flour proteins making the dough softer and more extensible while also denaturing proteins (acids do that sort of stuff) which are responsible for a good deal of the flavor in the finished crust.

Tom Lehmann/The Dough Doctor

5403

[\*\*Dough Clinic / Re: The taste of the dough\*\*](#)

Tomme;

Don't sweat the "window pane" test, we're making pizza dough not bread dough.

That test is appropriate for determining correct mixing when making bread, not pizza dough. Pizza dough only needs to be mixed until smooth, it is not even desirable to mix the dough more than this unless you want the finished crust to have a bread like internal crumb structure. 1-hour is not enough fermentation time for any dough except for an emergency dough. After putting your dough up in the bowl, drape (do not seal closed) with a sheet of plastic. Be sure the bowl is fairly large too as this will allow the dough to develop a head of carbon dioxide gas over the dough which will help to keep the dough from drying out while allowing release of pressure due to the gas generated by the yeast. I would suggest going with at least a 4-hour room temperature fermentation period. Use a thermometer to measure the finished (mixed) dough temperature, for starters, you will be looking for something close to 80F/27C. After the fermentation period turn the dough out onto a floured work surface and using a pie pin or rolling pin CAREFULLY roll the dough out to fit the baking pan. If you use shortening or butter/margarine in the pan it will be easier to fit the dough to the pan. Once fitted to the pan, cover again with a sheet of plastic and allow the dough to proof for 30 to 60-minutes if you want to have a thicker crust or if you want a thin crust immediately dress and bake the skin after fitting the dough into the pan. Agreed, getting a stone for your oven will be a tremendous help in getting the crust to color up. As a rough rule, allow the stone to heat up in the oven for at least an hour before placing the pizza on it for baking.

If you find that you're getting too much crust color, especially on the bottom of the crust begin reducing the milk powder to get the color back under control.

Tom Lehmann/The Dough Doctor  
5402

### [\*\*Dough Clinic / Re: First commercial operation in the world using soft durum for pizza\*\*](#)

Craig;

I know you are well tuned into this, but I think a lot of people are confused over GMO. When it comes to wheat, unless we're dealing with Turkey Red (certified pure plasma stock) and even then it's only 95+% pure, all wheat is genetically modified in one way or another to achieve a whole raft of desirable, and some times not so desirable, characteristics, such as yield, drought resistance, sprouting resistance, stem height, resistance to rust, insect attack, the list goes on and on. Now that we don't have the pesticides that we once had to protect our crops we have turned to genetic selection for characteristics which will help a crop exhibit a natural resistance to things which plague the crop. Anymore we can't afford to lose a crop (we all remember the crop issues of just a few short years ago when world wheat stocks were diminished to DAYS, not weeks, months or years. Our flour prices when through the roof. Genetic selection of favorable characteristics is a major tool in our arsenal to help prevent a reoccurrence of that catastrophe again, or at least in the near future (don't take any bets though). To some, they see anything that is genetically modified as being GMO, heck! I'm even genetically modified (part German and part Italian) and I don't even know anyone who isn't walking, talking, breathing and genetically modified. Genetically modified doesn't mean bad things are about to come (natural selection is genetic modification at work). I think where genetically modified gets to be a sticking point is when there is an un-natural selection such as genes from one plant being artificially transferred to another different type of plant where that transfer would have never taken place in nature. Is GMO good or bad? That's for each of us to decide for ourselves, but for my, my personal stand is that I think it is good, but with the reservation that it DOES leave the door wide open for abuses and that's what

worries me. Here's an example of GMO at its best: Mexico, diet based on corn, many people suffering from Lysine deficiency (not just the animals in Jurassic Park), so U.S. develops a genetically modified corn variety (known as high Lysine corn) for growing in Mexico....problem solved. Don't ya just love this stuff? :)  
Tom Lehmann/The Dough Doctor  
5401

### **Dough Clinic / Re: The taste of the dough**

Don't sweat your lack of a "pizza stone" find a piece of fired clay floor tile, or several pieces depending upon size. Anything that will hold latent heat (1/4-inch/6.5 mm) steel plate will also work. If you can find a thicker steel plate go for it, within reason, the thicker the better, especially when you're dealing with a rather cool oven.

Tom Lehmann/The Dough Doctor  
5400

### **Shop Talk / Re: Serving Peel to Table**

There are now some composite peels that address any flavor transfer issues as well as cleaning and sanitizing. Being of a composite material they withstand exposure to moisture/water MUCH BETTER than a wood peel, and you can get them with a short, stubby handle.

Tom Lehmann/The Dough Doctor  
5399

### **Dough Clinic / Re: Papa John's, Dominos, and Pizza Hut make their dough in the morning**

As for the big box chains, they have all have large commissaries where the dough is made and shipped to the stores either refrigerated or frozen. Most have a dough shelf life of 5 or 7-days from day of manufacture to control delivery costs.

Tom Lehmann/The Dough Doctor  
5398

### **Dough Clinic / Re: how to store dough?**

If you will go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> and enter into the Recipe Bank I've got a dough management procedure posted that covers all of your questions, or if you wish you can e-mail me ay <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)> and request a copy of my Dough Management Procedure and I'll be glad to send it to you.

Tom Lehmann/The Dough Doctor  
5397

### **Dough Clinic / Re: A question about dough formula and temperature range.**

The first thing that I would do is to delete the sugar from the dough formula. If that provides you with the quality of bake that you want you're home free, if it doesn't I would suggest trying an organic flour (especially an un-malted flour) as this type of flour will be better suited for the high temperature baking. As for the dough weight, my best advice is to experiment by increasing or decreasing the dough weight in 1/2-ounce increments until you see a finished crust that meets your expectations.

Tom Lehmann/The Dough Doctor  
5396

### **Dough Clinic / Re: What makes dough very elastic?**

Clark;

Some of the most common reasons why a dough will come out overly elastic are insufficient fermentation due to a colder than normal dough temperature, over mixing (mechanical mixer only) or use of a flour with excessively high protein level. Too much (over scaling) salt can also result in dough that is overly elastic, and reballing the dough prior to opening it into a pizza skin without allowing sufficient time for the dough to thoroughly relax can also cause the problem. If you can provide us with more information we might be able to better define the causative factor.

Tom Lehmann/The Dough Doctor  
5395

**Dough Clinic / Re: Change in bread flour, why so different?**

Carl;

The All Trumps flour is the highest protein content flour available, hence all things equal, it will give you a stronger, tougher, more elastic dough than just about any other flour commonly available. If you want to continue using the All Trumps flour (14.2% protein content) you will need to ferment your dough somewhat longer than what you have been to mellow the protein/gluten to make it more extensible and less elastic. A good "all-purpose" pizza flour is the Pillsbury brand "Bread" flour available at most supermarkets. It is packaged for use with bread machines and has a protein content of around 12% which should be much easier for you to work with.

Tom Lehmann/The Dough Doctor  
5394

**Dough Clinic / Re: What makes dough very elastic?**

Clark;

Additionally, it is the protein that is primarily responsible for the amount of water that the dough requires (absorption) so with the higher protein level in the All Trumps flour the dough would require more water (higher absorption) so if you didn't make any changes you are taking a double hit, significantly more protein for a stronger, tighter dough and a higher dough absorption requirement.

Tom Lehmann/The Dough Doctor  
5393

**Dough Clinic / Re: Change in bread flour, why so different?**

Short time room temperature ferment does not allow for the consistent flavor development that is achieved with a long cold ferment period. You also get better mellowing of the gluten for improved dough handling/opening and to some extent oven spring. If you are looking for more of an acidic finished flavor work with the room temperature fermentation but if that is not your targeted flavor profile I think cold fermentation is the way to go. Keep in mind that room temperature fermentation can be greatly influenced by the finished dough temperature as well as the room temperature itself, dough that is cold fermented is not as sensitive to variations in finished dough temperature and actual room temperature is not an issue during the fermentation process.

Tom Lehmann/The Dough Doctor  
5392

**Starters/Sponges / Re: Reviving a Sourdough Culture**

Riccardo;

I would continue to keep it warm and continue feeding it. This should allow it to

return to normal potency over time. Hopefully you haven't lost the culture. In cases like this I've found it to be a good idea to split the existing culture into two sourdoughs, that way if one should be lost you will still have the other one to continue working with.

Tom Lehmann/The Dough Doctor  
5391

**Dough Clinic / Re: How does oven temp and time affect the dough?**

Iceman;

Generally just increasing the dough weight will provide a thicker finished crust, but then too, depending upon your dough formulation a change in the formulation might also provide a thicker finished crust. Without more information it is hard to say.

Baking for a longer time at a lower temperature typically results in a crispier finished crust providing the top of the pizza holds up (toppings don't dry out, char, etc.). Now, with that said, if you are getting some char on the bottom of your existing crust which is contributing to the finished crust flavor you stand a good chance to lose it when baking at a lower temperature so this may impact the finished crust flavor. Best thing to do is to experiment with baking at progressively lower (25F) temperature increments while increasing the baking time to see how it impacts your specific pizza.

One other thing with regard to achieving a thicker finished crust, sometimes just allowing the pizza skin to ferment for 10-minutes or so before dressing and baking will also result in a thicker finished crust, sorta like letting the bread dough rise prior to baking.

Tom Lehmann/The Dough Doctor  
5390

**Dough Clinic / Re: How does oven temp and time affect the dough?**

To achieve a more toasted pepperoni have you tried moving the pizza to a higher rack position in the oven, if not for the entire baking time perhaps for the final couple minutes. You might also see if you can find a higher count pepperoni, the thinner slices will exhibit a greater tendency to curl and toast.

Tom Lehmann/The Dough Doctor  
5389

**Dough Clinic / Re: Extensibilty tweak needed**

From your description it sounds like insufficient yeast. Try increasing the IDY by 0.2% to see if that gives better results.

Tom Lehmann/The Dough Doctor  
5388

**Dough Clinic / Re: How does oven temp and time affect the dough?**

Iceman;

There is only one way to find out, try it to see what happens. There is a point where you achieve the best possible bake in a specific oven and only experimentation will tell you where that point is. Baking on a stone or steel will provide the bottom bake but it does little for the top bake, so removing the pizza from the deck and placing it on a higher rack position if even for a minute or less can impact the top bake of your pizzas. We do this quite often with stone hearth ovens where we peel the pizzas off of the hearth and hold them up into the crown of the oven to achieve a darker/stronger top top bake just immediately prior to removing from the oven. Most of the time this procedure only takes around 30-seconds but the impact is

significant.

Tom Lehmann/The Dough Doctor  
5387

### **Prep Equipment / Re: peels**

I was recently at an Ace Hardware store near my son's home in Olathe, KS, and guess what I found hanging by their selection of BBQ tools? Yep, wood pizza peels (only 12"), but if you're looking for a 12" wood peel you might be able to pick one up at your local Ace Hardware. BTW: These peels are identical to those sold at <mrpeel.com>

Tom Lehmann/The Dough Doctor  
5386

### **General Pizza Making / Re: How does dough strength factor into extended cold fermentation**

John;

The type of gluten development that the dough is receiving prior to fermentation is very gentle and very slight, because of this I would speculate that the effects of biochemical gluten development would dominate over any pre-fermentation gluten development in this case. If you are using a mechanical mixer with a dough hook we typically mix the dough just until it begins to take on a smooth appearance. This is done only to improve the way the dough handles at the bench but due to biochemical gluten development it really doesn't matter if the dough is mixed for 2 to 3-minutes or 8 to 10-minutes, BUT we have seen where if the dough is mixed to the point of developing a strong gluten film (as for bread production) even with the biochemical gluten development there are changes in the finished crust characteristics, namely the crumb structure begins to close up resulting in a finished crust with an internal cell structure somewhat more like that of bread than pizza, this is more than likely the result of over gluten development (mechanical gluten development + biochemical gluten development = too much total gluten development).

Tom Lehmann/The Dough Doctor  
5385

### **Dough Clinic / Re: Cold Proof to Freezer**

Bob;

Actually, if the end goal is to freeze the dough you are much better off freezing the dough as quickly after freezing as possible then managing the dough for fermentation after you slack it out (thaw it).

Tom Lehmann/The Dough Doctor  
5384

### **General Pizza Making / Re: How does dough strength factor into extended cold fermentation**

John;

A number of years ago I used to spend my weekends teaching bread and pizza making to local farm families and they were always totally amazed at how easy it was to make dough using biochemical gluten development as opposed to working the dough like the "village blacksmith". In these mini-classes I used to have everyone "mix" their doughs using a wooden spoon (can't over mix a dough using a wooden spoon), then turn it out of the bowl, lightly oil the bowl, turn the dough a couple of times in dusting flour to get some shape to it and place it back into the oiled bowl and covered it with a piece of plastic to ferment for a couple of hours

(would have liked to go longer but we only had so much time). Then we would sit around and talk about how we will make the bread and pizza and finally prepare the pizza toppings then we would turn the dough out of the bowl and pin it out and roll it to make our bread loaves. After the dough was panned and set aside to proof we would begin working on the pizza dough by hand stretching it into a pizza skin, dressing it with their chosen toppings (sometimes they were just leftovers taken from the fridge) and baking them usually two at a time in the hosts oven. By the time we were finished eating pizza it was time to bake the bread, usually 6 to 8-loaves went into the oven at once, we baked them at 425F for about 25 to 30-minutes, depanned the baked loaves and set aside to cool on a wire cooling rack, the loaves were ready to use at dinner time which the rest of their families greatly appreciated. It was always a lot of fun and very rewarding to see those ladies taking so much pride in their new found baking skills.

Tom Lehmann/The Dough Doctor  
5383

**Dough Clinic / Re: Could you take a look at my dough/bake and give me some advices?**

I'm always a big fan of doing the simple things first so I'd begin by reducing the weight of the dough ball. Remember that pizzas which are crispy on the outside and soft on the inside are best made in a very hot oven.

Tom Lehmann/The Dough Doctor  
5382

**Dough Clinic / Re: Could you take a look at my dough/bake and give me some advices?**

330-grams of dough for a 10-inch pizza calculates out to 330 divided by 75.8 (square inches in a 10-inch circle) = 4.35-grans of dough per square inch of surface area. This extrapolates out to 491.9-grams (over a pound of dough) for a 12-inch diameter pizza. That would be considered to be a lot of dough for anything short of a deep-dish style of pizza. I normally look at something around 2.5-grams of dough per square inch for the type of pizza you are making. Try using 190-grams of dough for your 10-inch format to see if that brings you closer to where you want to be.  
Let us know if that helps any.

Tom Lehmann/The Dough Doctor  
5381

**Dough Clinic / Re: Hot kitchen, dough is too sticky, and rising too fast - help!**

Here is what your dough looks like in bakers percent:  
Flour 100% Water 62.7%  
Oil 1.63%  
Salt 2.6%  
Sugar 0.37%  
Yeast 0.326% (this is the correct amount for IDY)

Here is a recommended ingredient staging sequence:

Put water (65F) in bowl, add salt and sugar  
Add flour.  
Mix about 2-minutes in low speed, and add the oil.  
Continue mixing as you normally do until the dough just takes on a smooth appearance.  
Take dough immediately to the bench for scaling and balling.

Place dough balls into plastic dough boxes and oil the top of the dough balls with a little salad oil.

Take to the cooler and cross-stack for 3-hours, then down-stack and kiss the dough good night.

Dough will keep for up to 72-hours in the cooler.

Dough will be best to use after 48-hours.

To use the dough, remove dough from cooler and allow to warm AT room temperature until the dough balls reach 55F, then begin pressing to shape the dough skins.

NOTE: In many cases dough that will be formed by pressing is easier to press and does not exhibit problems with shrinkage/memory if a reducing agent such ad "dead yeast" RS-190 or PZ-44 is included in the dough formulation.

Be sure to have the press temperature set at around 250F and use a 7-second dwell time.

One other thing, if you are not already doing so, consider changing over to a flour with 12% or less protein content as a high protein content flour isn't doing you any favors when it comes to press forming the dough skins.

Tom Lehmann/The Dough Doctor

5380

### **Dough Clinic / Re: Hot kitchen, dough is too sticky, and rising too fast - help!**

Derek;

The key is "finished dough temperature", if the dough is too hot (in the 90F range it can result in a dough consistency more like wallpaper paste than a pizza dough.

Also, dough absorption is directly keyed into the absorption properties of the flour that you are using (this is greatly influenced by the protein content but there are also a number of other factors). If it were me, the first thing that I would do is to get my dough temperature into the low to mid 80's and then begin experimenting with the dough absorption to see what works best with my dough formulation, ingredients and shop conditions.

Tom Lehmann/The Dough Doctor

5379

### **Dough Ingredients / Re: UK Pizza Flour.**

That bread flour certainly looks like something to seriously consider using.

Normally bread type flours run in the 11.5 to 12.5% protein content range. Can you get the average protein content of this flour from their website or do they have a nutritional label on the bag?

Tom Lehmann/The Dough Doctor

5378

### **Dough Ingredients / Re: UK Pizza Flour.**

Try making a dough with a small amount of yeast and NO sourdough culture to see if the dough performs any better. If it does you will need to adjust the amount of starter used downward.

Tom Lehmann/The Dough Doctor

5377

### **Dough Clinic / Re: Temperature for Reactivating a Culture**

Riccardo;

That is impossible to say as we don't have any idea of what the micro-flora is,

additionally, if you begin holding at a different temperature you might upset the balance of micro-flora presently in the culture and that could have a significant impact upon how it functions. The best advice I can offer you is to start another sourdough by using a portion of your existing culture and store it at the new (higher) temperature to see how it impacts the culture both performance and flavor wise. There is a good chance that nothing will happen but you don't want to risk losing what you already have either.

Tom Lehmann/The Dough Doctor

5376

### **Dough Clinic / Re: 4day Cold Rise Question**

If the dough feels like it can be easily opened into a pizza skin go ahead and open one of them and make it into a pizza. From your description it sounds like the dough will make a great pizza.

Tom Lehmann/The Dough Doctor

5375

### **Newbie Topics / Re: Thick dough**

It looks like you have too much dough with just two pizzas from your "recipe", I'd suggest going with three pieces and continue opening each piece up to 12-inches.

Tom Lehmann/The Dough Doctor

5374

### **Newbie Topics / Re: Thick dough**

What I see in the pic is a crust that was made from too much dough for a thin crust presentation. The crumb structure looks more like what I expect to see in a thick crust深深-dish type of pizza.

Tom Lehmann/The Dough Doctor

5373

### **Dough Clinic / Re: Carbs stink**

If you will Google "no carb pizza crust recipe" you will be rewarded with a plethora of different low carb recipes as well as your requested cauliflower recipe.

Tom Lehmann/The Dough Doctor

5372

### **Newbie Topics / Re: Thick dough**

Acott;

The 65% absorption might be too high for YOUR flour. Remember that dough absorption values are generally accurate only for the flour or a very similar flour to the type used in making the dough for which the absorption value is cited. There can be/are huge differences in flour across the board which will impact the amount of water (absorption) a dough made from that flour will carry before handling or performance characteristics are compromised. If the dough is too soft and/or sticky with 65% absorption, by all means experiment with lower absorption values, in this case I would drop it back to 60% to see if that improves the dough handling properties and bench mark from there for further adjustments to the dough absorption.

In addition to the above, the dough formulation as well as the dough management procedure used can also impact how the dough responds to the amount of water added. If you can share your dough formulation and how you manage the dough from mixing to the time you open the dough into pizza skins it would help in determining what the problem might be.

Tom Lehmann/The Dough Doctor  
5371

**[Dough Clinic / Re: Hard to close dough ball after bulk CF?](#)**

Actually, it is not all that important to pinch the bottom seams, instead, it is much more important that the dough balls all be formed to roughly the same tightness, you can then just place the dough ball back into the container and the weight of the dough ball will do the rest for you.

Tom Lehmann/The Dough Doctor  
5370

**[Dough Clinic / Re: Hard to close dough ball after bulk CF?](#)**

The tightness/firmness of the dough ball is what I'm referencing. The tighter a dough ball is made the longer the rest period required before it can be opened into a pizza skin. One of the more common problems that I see is where the dough is over worked when it is formed into a dough ball which can lead to difficulties in opening the dough ball up into a skin later on.

Tom Lehmann/The Dough Doctor  
5369

**[Stones/tiles/steel, Pans & Accessories / Re: What exactly is a pizza pan separator and why would I need one?](#)**

Pan separators are flat disks of aluminum which are placed over each individual pan to act as a cover and to allow the pans to be stacked one on top of another. The correct size pan separator to use is 2-inches larger in diameter than the outside top diameter of your pan(s). Pan separators are not needed if your pans are of the self-stacking design. Also, make sure your pans have a dark colored anodized finish as opposed to a "bright" finish.

Tom Lehmann/The Dough Doctor  
5368

**[New York Style / Re: All Trumps gluten development at home can't be done?](#)**

Well, Tim is partially correct, with most mixers available to home bakers you really cannot fully develop all of protein in All Trumps flour into "gluten", however, it can be developed very efficiently through biochemical gluten development, it just takes longer. When I was working at AIB we did literally hundreds of mixing series each year where we tried to mix the dough to the point where we could break down the gluten. A few interesting observations:

- 1) As you continue to mix some of those very strong flours the dough heats up to the point where the heat is breaking down the protein rather than the mixing energy input. If you can keep the dough cold during the long mixing time by injecting carbon dioxide into the dough it is not uncommon to see mixing times of over 30-minutes.
- 2) As you continue to develop the gluten you also begin to expose it to increasingly greater amounts of oxygen (in the air) which oxidizes the gluten as fast as it is breaking down (much like adding ascorbic acid, azodicarbonamide, or potassium bromate to the dough) this action in itself results in what used to be an unexplained extension of mixing time as the dough begins to break down. This concept was commercialized back in the early 70's by Continental Baking Company (Rye New York) in what they referred to as the "fatigue" dough method. By this dough mixing method the dough was mixed at high speed in an enclosed mixing chamber (horizontal mixer with a capacity of 2,500-pounds of dough). By keeping the mixer closed the carbon dioxide released from the dough created a somewhat

anaerobic environment in the mixer which prevented oxidation of the gluten bonds during mixing thus enabling the development of an over mixed dough condition. The over mixed dough has a capacity to carry more water than other doughs so it was an economical advantage to use this mixing method. Since the over mixed dough was too soft and way too sticky to be processed in their bread making equipment they found that if they opened the mixer door (bowl) slightly the carbon dioxide would be expelled and replaced with air, with the mixer now tumbling the dough at low speed the gluten bonds were strengthened and the dough became firmer and less sticky so it could now be processed normally through their equipment. The Chorleywood bread making process employs this same principal but here they mix the dough under a vacuum to exclude air/oxygen from the mixing chamber. If you have ever mixed a dough in a VCM you know that it really isn't hard to over mix a dough with all of the earmarking characteristics (soft, sticky and weak dough with extensibility that just won't quit) we used to refer to it as "elephant snot"

Tom Lehmann/The Dough Doctor  
5367

**New York Style / Re: All Trumps gluten development at home can't be done?**

Jackie;

You answered your question when you said "combined with biochemical gluten development) aka fermentation. High gluten/protein flour will almost always achieve a better and finer gluten film than most lower protein flours. When you increase the absorption of a dough it receives less mechanical mixing action from the dough hook so it indeed does not heat up as much or as fast due to bowl friction during mixing, BUT because of the diminished action of the hook in the dough it can easily take 30-minutes or quite frequently more to get the gluten to develop to a point where it forms a ball in the mixer, and when it does finally pull free from the bowl you will have a composite dough made of more developed gluten (from there the hook was in contact with the dough) and that which has been sitting on and clinging to the bottom of the bowl which has very minimal gluten development, at this point (we refer to this as "clean-up") the dough will begin to act in a more normal manner in the bowl and begin slapping the sides of the bowl, this is where the dough now begins to heat up again due to heat of friction generated during mixing so we are again back to square one. While air temperature (room temperature) has an impact upon the finished temperature (it is even included in the calculation for desired water temperature/ 3 X desired dough temperature minus room temperature, flour temperature and friction factor) it is not the main driving factor in achieving the desired finished dough temperature (air is pretty poor at such things) instead it is the flour temperature and the water temperature that have the greatest impact, and of those two, the water has the greatest impact upon dough temperature.

Tom Lehmann/The Dough Doctor  
5366

**Stones/tiles/steel, Pans & Accessories / Re: What exactly is a pizza pan separator and why would I need one?**

Think of it as a lid for the pan. Sure, if you want you can just do as I do and cut open a Walmart bag and lay it over the top of the pan to keep the dough from drying out while it's proofing (pan pizzas are best when allowed to proof/rise in the pan for a period of time (generally 45 to 75-minutes) prior to dressing and baking.

Tom Lehmann/The Dough Doctor  
5365

## [\*\*Dough Clinic / Re: Hot kitchen, dough is too sticky, and rising too fast - help!\*\*](#)

It all depends upon what the finished dough temperature is. If you are using a cold fermentation process with effective dough management and the dough is cold (60 to 70F) you might slow the fermentation process enough to see a difference in the way the dough handles after 24-hours, but it is unlikely that you would see any difference from 48-hours on out. If the dough is too warm (anything at 90F or more) you will find that the dough will be difficult to control in the cooler and blown dough is a possibility, you will also see that the finished dough is going to be softer and more extensible than probably desired, this is due to the degrading effect of the heat on the flour proteins as well as excessive mellowing of the gluten due to excessive acid formation and accelerated effect of the enzymes present in the yeast on the flour proteins.

Tom Lehmann/The Dough Doctor  
5364

## [\*\*New York Style / Re: All Trumps gluten development at home can't be done?\*\*](#)

Jackie;  
What you have described is what is referred to as "clean-up". Sufficient gluten has been developed to provide the elasticity needed for the dough to pull off of the sides of the mixing bowl and begin to cling to the dough hook. Full gluten development is achieved just before the dough begins to let down a stage just before break down. We seldom mix doughs to full gluten development as at that stage of mixing the dough is usually too extensible to handle in any type of processing. The one type of product that is usually made from a highly hydrated dough with close to full gluten development is chibatta (sp?). These doughs are so soft that they essentially cross the line to becoming a batter.

Tom Lehmann/The Dough Doctor  
5363

## [\*\*Dough Clinic / Re: How long leave in fridge\*\*](#)

Fermentation creates flavor and aroma in the finished crust, it is also responsible to some extent for development of crispiness in the finished crust too. Try it, see what your customers think about it.

Tom Lehmann/The Dough Doctor  
5362

## [\*\*Shop Talk / Re: Making a fool proof pizza shop. How do I find good help?\*\*](#)

I've written a number of times about using a sheeter to open the dough to about 2" less than full diameter and then finish opening by hand. The procedure works great. We developed it a number of years ago as a means to train those individuals who are "toss challenged". If you will contact me at

<thedoughdoctor@hotmail.com> I'll be glad to send you a video showing the process being used in a local pizzeria. With this process training people in hand tossing the dough is not the issue, finding good manager material is now the biggest challenge.

Tom Lehmann/The Dough Doctor  
5361

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: What exactly is a pizza pan separator and why would I need one?\*\*](#)

The 1" deep pans are good for making a moderately thick crust pizza (about 1/2"

thick) or if you keep the dough skin thin enough you can also make a thin crust pizza in it. For the money, I'd opt for a 1.5 or 2" deep pan as it will allow for baking pizzas with just about any desired crust thickness, from very thin to an inch thick or more. Thin crust pizzas baked in a pan are not necessarily the best pizzas on the block but they're not especially bad either.

Normally when one buys pans of that type the intent is to make deep-dish pizzas. It all depends upon what you want to make.

Tom Lehmann/The Dough Doctor

5360

**[Dough Clinic / Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)**

When the question of refrigerated dough life was raised by my students I used to make two marks on the board behind me about a foot apart, I would then use a pencil to represent 4-days of shelf life, you can place the pencil anywhere you want between the two lines but you cannot get the pencil to span the entire 12-inches representing about 8-days of refrigerated shelf life. You can manage the dough for use on days one through four using a slightly higher finished dough temperature but the dough will not be very user friendly after day four. Then again you can lower the finished dough temperature so the dough is not ready for use until day five but it will remain good to use through day eight, but again there is a price to be paid as the dough will not be at its optimum before day five. It's all in the finished dough temperature.

Tom Lehmann/The Dough Doctor

5359

**[Stones/tiles/steel, Pans & Accessories / Re: What exactly is a pizza pan separator and why would I need one?](#)**

When making deep-dish pan pizzas I only make them in 14" size.

Here is a trick that I learned a long time ago when making deep-dish pizzas, grease the sides of the pan with shortening like Crisco and use oil in the bottom of the pan. The oil will give the pizza a crispier bottom crust while the shortening on the sides of the pan will make fitting the dough into the pan a lot easier.

Tom Lehmann/The Dough Doctor

5358

**[New York Style / Re: All Trumps gluten development at home can't be done?](#)**

You have to understand where Tim Huff is coming from, while I don't know the full context of what he said, or who he was directing his statement to, what he said was, in essence, correct, but as you also pointed out it has little or no relevance to home pizza makers. It's a case where he was technically right but from a practical stand point....who cares since we, as home pizza makers or even pizzeria operators, never strive to mechanically achieve full gluten development anyways.

Tom Lehmann/The Dough Doctor

5357

**[Dough Clinic / Re: Sprouted Spelt Flour Similar to Diastatic Malt?](#)**

IF the sprouted spelt flour hasn't been heat treated to inactivate the enzyme activity the answer is yes, it would act in a similar manner. I'm guessing that it has been inactivated to allow its use at higher levels (different application).

You might need to check with the manufacturer to see if all enzymatic activity has been inactivated or not. If the answer is no, then see if you can find out what the Lintner value (diastatic activity) is. If it is enzyme active I would begin testing in

5% increments to see what the upper limit to its use is.

Tom Lehmann/The Dough Doctor

5356

### **Neapolitan Style / Re: Caputo 00 - Exposure to Humidity? What does a bag weigh?**

Most flour after milling is very close to 14% moisture content, in a very humid environment it will certainly pick up some additional moisture (typically only a couple of percent) while in a dry environment it will dry down to a maximum of about 10.5% moisture content, after that you've got to add some real dry heat to the flour to get it to dry out anymore. During the winter months when the air is very dry and the bags are stored indoors in a non-humidified room the outer bags which are not covered by the stretch wrap will always dry out more than the bags in the center of the pallet or bale. With a single 50# bag of flour (directly from the mill) you can expect to see some bags as much as 8-ounces under weight and a hand full overweight too but if you weigh twenty bags the weight will average out at 50# per bag. This is due to the way the bags are weighed, the bags are first weighed on a fill scale (expect some variation) but then when a pallet is completed the entire pallet is weighed and the target weight for the palleted flour cannot be outside of the target weight range. I would assume that the same might be true of flour packaged in individual small bags as well as in bales. One of the last projects I was working on before my retirement from AIB International was a system that would provide real time, moisture content of the flour and automatically adjust the amount of flour delivered to the mixer to give a fixed weight of flour at 13% moisture content (typical for flour delivered in tank trucks and off loaded into a flour silo). This is why we always advise that the flour be weighed, it eliminates just one more variable.

Tom Lehmann/The Dough Doctor

5355

### **New York Style / Re: All Trumps gluten development at home can't be done?**

I think you are over thinking your dough mixing. Just put the water in the mixing bowl first, than add any salt / sugar, then the flour and the IDY, begin mixing at low speed just until you don't see any dry flour in the bowl, pour in the oil and mix for about 1-more minute in low speed, then increase the mixing speed if you can and mix the dough just until it begins to take on a smooth, satiny appearance....no need to mix it anymore than that. With but a few exceptions (commercial application and emergency doughs) pizza dough is best when under mixed, all you really need is a homogeneous dough but mixing it as described makes it easier to handle. Then let biochemical gluten development do all the work for you. When I make my pizzas at home I always mix the dough using nothing but a large spoon, after a few minutes with the spoon the "dough" looks more like cottage cheese than what we think of as a dough, I turn it out of the bowl, oil the bowl, roll the dough ball a couple of times in a little dusting flour and roughly shape it into what one might, in abstract, call a dough ball, then place the dough ball back into the bowl, cover with a piece of plastic, and let nature run its course for the next several hours, then turn the dough out of the bowl, portion and form into better shaped balls, oil each dough ball and place into a plastic bread bag to cold ferment for 24 to 48-hours. To open the dough balls, remove from the fridge and allow to temper AT room temperature for about 2-3-hours, then turn out of the bag onto a flour dusted counter top and begin opening each dough ball into a pizza skin. You can add your own twists to the procedure, but this is my basic dough making procedure.

Tom Lehmann/The Dough Doctor

5354

**Dough Clinic / Re: How long leave in fridge**

If the dough balls are opened into skins (for thin crust pizza) and placed on screens then stored in a wire tree rack in the cooler, uncovered for 30-minutes, then a food safe plastic bag slipped over the rack(s) the pre-opened skins can be kept in the cooler for up to 48-hours. If we are talking about deep-dish pizza where the dough has been proofed in the pan and then stored in the cooler it is not recommended that the pans of dough be stored for more than 1-day.

Tom Lehmann/The Dough Doctor  
5353

**New York Style / Re: All Trumps gluten development at home can't be done?**

Nope, not well developed at all, when you have a well developed gluten film such as a baker might want to have when making hamburger buns, the film will be so thin and clear that you can actually read through it, and it will be so extensible that you really don't need to pull on the dough at all, just let gravity do the work for you and you should be looking at a gluten film that looks like an over blown balloon.

There is a point in dough mixing where the gluten comes together and exhibits maximum resistance to extension (stretch) if you look at a Farinogram this will be shown as the peak mixing time. It is not the point of maximum gluten development but rather just a reference point which is used to help sort out differences in mixing properties between different flour types.

Tom Lehmann/The Dough Doctor  
5352

**Dough Clinic / Re: Hot kitchen, dough is too sticky, and rising too fast - help!**

Clark;

When the dough is properly managed:

A finished dough temperature in the 80 to 85F range will give you up to 3-days refrigerated shelf life, with the dough ready to use after 24-hours.

A finished dough temperature in the 70 to 75F range will give you a dough with up to 4-days refrigerated shelf life with the dough ready to use after 36-hours.

A finished dough temperature in the 60 to 65F range will give you a dough with up to 6-days refrigerated shelf life with the dough ready to use after 48-hours however this dough can be used up to day 8 but the performance may be somewhat inconsistent.

In each of these cases the idea is to strive to hit the lower end of the target range thus allowing you to make water temperature adjustments before exceeding the top end of the temperature range.

It is REALLY difficult to produce pizza dough that is much lower than 60F as the dough just becomes too stiff/tight to mix.

Tom Lehmann/The Dough Doctor  
5351

**Dough Clinic / Re: Minimum time for reballing?**

Normally an hour of rest after re-ball the second time is not sufficient to allow the dough to fully relax for opening. Every dough seems to have a sweet spot for opening if you re-ball, so you might want to allow the re-balled dough piece to set out until the dough is sufficiently relaxed for easy opening, then make a note of that time and that should be close to the "sweet spot" for your specific dough. As for re-ball a "shaggy" dough, it is not recommended. Shaggy doughs are best

made by placing the dough into a suitable container (round bowl or plastic bag) and allowing it to hydrate and ferment undisturbed, it is then turned out of the container onto a dusted counter top and rolled out to size using a rolling pin or pie pin. I've never been able to open a shaggy dough by hand as it just continually tears.

When I hear that a dough is too soft or extensible for ease of handling I normally think of too much fermentation or too much sourdough starter as both can really weaken the dough.

Tom Lehmann/The Dough Doctor  
5350

### **New York Style / Re: All Trumps gluten development at home can't be done?**

Through biochemical you can indeed achieve full gluten development. No, a 14% protein content really isn't needed to make pizza. The only thing that the higher protein level provides is a level of tolerance to over fermentation or greater tolerance to the acid content of a sourdough starter, or should I say the use of too much starter.

Tom Lehmann/The Dough Doctor  
5349

### **Dough Clinic / Re: How long leave in fridge**

The only problem with leaving them in the cooler unwrapped for that long is the drying out of the skins. That doesn't necessarily have to be a bad thing. If you like the finished crust.....go for it!

Wrapping them in some way, like slipping a bag over a wire tree rack will reduce the possibility of the dough skins of drying out. Just don't wrap them right away, leave them uncovered in the cooler for an hour or so to cool uniformly, then cover. I think double wrapping is over kill though. For a thin crust application I would think that a 4 to 5-day shelf life in the cooler would be a reasonable expectation if your dough has been effectively managed.

Tom Lehmann/The Dough Doctor  
5348

### **General Pizza Making / Re: Cheese "breaking"?**

Another option for par-baking the crust is to apply about half of the sauce just before you par-bake, that will normally do a lot to control the bubbling, and what it doesn't control you should be able to handle easily using a BBQ fork as a bubble popper. After par-baking you can apply the remainder of the sauce and continue building your pizza in the normal manner.

Tom Lehmann/The Dough Doctor  
5347

### **Dough Clinic / Re: Pizza Box vs Sheet Pans**

New York;  
Add to that the fact that you can occasionally snag used aluminum sheet pans for just a couple dollars each, and I can't come up with a good reason to opt for plastic over aluminum if buying for the first time. I'm with you man! But do use plastic scrapers (those made by <WRH.net> are GREAT) for either the dough boxes or aluminum sheet pans which can be gouged by using metal scrapers to clean them.

Tom Lehmann/The Dough Doctor  
5346

### **Dough Ingredients / Re: Whole wheat**

The trick to making a GREAT whole-wheat or multi-grain pizza is to use a soaker to achieve full hydration of the whole-wheat flour or multi-grain mix.

I've covered this in depth in my column in PMQ Magazine (In Lehmann's Terms) and in the Think Tank too and I'm sure a number of times here also. Peter, can you reference my response to the use of a soaker? Let me know if it cannot be found and I'll outline it for everyone. Keep in mind as a commercial pizzeria you might want to follow the guidelines which call for "whole-wheat to contain nothing but whole-wheat flour (no white flour at all), "wheat" crust can be made with only a portion of the flour as whole-wheat flour, and multi-grain can be made with a blend of different grains blended with white flour.

Tom Lehmann/The Dough Doctor  
5345

### **Dough Ingredients / Re: Whole wheat**

Thank you Craig.

I appreciate your digging that out.

Tom Lehmann/The Dough Doctor  
5344

### **Dough Clinic / Re: Changing type flour**

All purpose flour can be all over the board protein content wise. What is the protein content of the A.P. flour you're using? It will usually give that information as grams protein per 100-grams flour on the bag, or a quick trip to the manufacturer's web site can also give you the information too.

Tom Lehmann/The Dough Doctor  
5343

### **Dough Clinic / Re: Changing type flour**

That works out to 13.32% protein for the Robin Hood and 9.99 for the store brand. That's what I mean when I say that it is all over the board. Since most bread flours come in at between 11.8 and 12.4% protein content that seems to be splitting the difference so it should work, the only real way to see if it will work for YOU is to try it, I think the odds are in your favor for it working.

Tom Lehmann/The Dough Doctor  
5342

### **Dough Ingredients / Re: Whole wheat**

Just be sure to use a well seasoned or dark colored pan for the best bake, use oil or shortening in the pan, oil will give you a crispier crust. Allow the dough to rise in the pan to about double thickness or perhaps a little more.

If you can give us your dough formula and procedure we might be able to provide more specific suggestions.

Tom Lehmann/The Dough Doctor  
5341

### **Prep Equipment / Re: Overhauling a Hobart Mixer**

If you Really Have To Repaint It be sure to use a paint that is approved for such applications. Your local health department can provide you with direction in this regard.

Tom Lehmann/The Dough Doctor  
5340

### **Dough Ingredients / Re: Whole wheat**

Sara;

Here is a dough formula that you can begin working with.

Flour: 100% (All Trumps)

Water: 62%

Yeast: IDY/ .187% (24 to 48-hours cold ferment)

Salt: 2%

Olive oil: 2%

Tom Lehmann/The Dough Doctor  
5339

### [\*\*Dough Clinic / Re: Moldy base?\*\*](#)

A fully baked crust is free from mold when it exits the oven as the heat of baking destroys any mold that might be present. Once the crust is out of the oven it may be infected with mold spores due to contact with unclean (non-sanitized) surfaces or just exposure to the mold spores in the air however on average it will take approximately 4-days for any mold to colonize into what we commonly recognize as "mold". I think it would be safe to say it is not mold, especially two hours after baking. It could be some carbonized material from your baking platform or possibly a post baking transfer of material onto the crust.

Tom Lehmann/The Dough Doctor  
5338

### [\*\*Dough Clinic / Re: How long leave in fridge\*\*](#)

Absolutely!

36 to 42F is the ideal range, but your local health department has already told you that. If the temperature is at 32F the dough may freeze and that is not good for the dough/yeast and if it is much higher than that it will be difficult to control the rate of fermentation while the dough is in the cooler.

Tom Lehmann/The Dough Doctor  
5337

### [\*\*Pizza Ovens / Re: Il Fornino Ovens\*\*](#)

Very good ovens. I've not had any problems while working with them except for a couple of minor set-up problems which were quickly corrected.

Tom Lehmann/The Dough Doctor  
5336

### [\*\*Sauce Ingredients / Re: Adding water to sauce mix\*\*](#)

Some of the reasons why pizzerias add water to their sauce.

- 1) To extend the sauce for greater economy of the sauce. I truly believe this is the main reason why it's done. Several years ago when there was a significant spike in tomato products across the board, we saw an awful lot of operators adding more water to their sauce to extend it for greater economy. In my opinion, bad idea.
- 2) For ease of application, some operators like a sauce that they can spread easily with something like a Spoodle while others just plop a ladle of sauce onto the top of the dough skin and tip it from side to side allowing the sauce to flow out and cover the skin.

- 3) Some operators put garlic and/or onion into their sauce which results in the sauce gelling and making it so thick that they must add a significant amount of water to the sauce just to be able to spread it. In this case all they have to do is to pre-boil the onion/garlic before adding it to the sauce which prevents the sauce from gelling. You would be surprised at how few operators know about this little

known fact.

4) I don't know why we add water to our sauce, we have always added water to our sauce, doesn't everybody???

5) Some operators use a highly concentrated tomato product to which they add water to achieve the desired consistency. Highly concentrated tomato products typically are lacking in flavor or have an "off" flavor due to the application of heat during the concentrating process. If you have to do this your sauce may not be all that great to start with, so why worry about a little water?

6) Commercial pizza manufacturers essentially all use some type of concentrated tomato product in their sauce, the reason why is 100% economics, it is cheaper to ship 2,000-pounds of concentrated tomato product and add water to it making almost 4,000-pounds of sauce at roughly 10% solids content than it is to ship 4,000-pounds of tomato product at 10% solids content which will not require the addition of water.

Tom Lehmann/The Dough Doctor  
5335

**Dough Clinic / Re: Calculation to predict the effect of diastatic malt on the falling number?**

Craig;  
Yes there is, but it is something that I've never had to do. The person that I would suggest that you contact is Tim Huff, Manager, Flour Technical Services Quality and Regulatory Operations at General Mills. You can contact Tim at <huffx000@mail.genmills.com> or 1-800-426-2760. Please tell Tim that you are calling him at my direction. You might recognize Tim from Pizza Expo as he runs the Pizza Boot Camp at P.E. each year.

Tom Lehmann/The Dough Doctor  
5334

**Chicago Style / Re: Recipe reads "cornmeal" - does that mean the flour?**

Corn meal and corn flour are essentially the same with one significant difference, corn flour is just as its name implies, a very fine, floury material while corn meal is particulate (gritty) and available in different grinds from fine to coarse. When used in a Chicago type dough formula a fine or medium grind corn meal is preferred, but be aware that it is slower to hydrate than your regular flour so you will need to experiment with the dough absorption (higher than normal) to find what works best for you. On average, 10 to 15% corn meal is used and total dough absorption is around 62 to 64%. The dough might feel wet at first but it will dry up after about 30-minutes rest time.

Tom Lehmann/The Dough Doctor  
5333

**Dough Ingredients / Re: 00 Flour - I'm confused**

The soft varieties of wheat are used primarily in making cake and pastry flours. The protein is both too low for making decent pizza and doesn't exhibit the necessary strength characteristics for making pizza, this is why the hard wheat varieties (hard red spring, hard red winter and hard white) are the go to varieties for making the stronger flours used in making pizza, bread, rolls, etc.

Tom Lehmann/The Dough Doctor  
5332

**Stones/tiles/steel, Pans & Accessories / Re: where to get deep dish pizza pans in Germany or Austria?**

Sure, use cake pans. Readily available at a very reasonable cost. If they are not dark in color you will need to season the pans but other than that they work just fine.

Tom Lehmann/The Dough Doctor  
5331

### **Dough Clinic / Re: Crunchy / tough crust**

It sounds as if the crust in question might be a New York style crust (nice raised edge, crispy edge and chewy center section), even the char on the edge fits in. There is quite a bit of discussion here on making New York style pizza crust so it should be easy to get some recipes/formulas to work with.

Tom Lehmann/The Dough Doctor  
5330

### **Dough Clinic / Re: Crunchy / tough crust**

G.R. said it perfectly. While a typical N.Y. style pizza might be baked at 700 to 800F or more, many pizzerias don't have those kinds of ovens so they do the best they can with what they have in their store. Since many stores use deck ovens I'm guessing that your pizza was probably baked in a deck oven at a lower temperature than what might be considered correct for a N.Y. pizza, hence the baking time was most likely longer resulting in a crispier edge and with an overall darker finished color. Then too, regardless of the type of pizza being made many pizzerias add sugar to their dough as a matter of habit rather than necessity and like G.R. said, the sugar will contribute to browning during baking. You also mentioned that the pizza wasn't round, some pizzerias make what is referred to as a "free form" crust, this is where the dough is opened into a rough round, or oval shape with no attention paid to achieving a round shape, the appeal of this type of crust is that it looks different from other pizzas.

Tom Lehmann/The Dough Doctor  
5329

### **Newbie Topics / Re: More crust than I bargained for**

A lot of it might be where the dough was made (geographic location). For example where you had the lesson, it it was warm (not hot) and humid this would not be conducive to the formation of a crust on the dough balls especially in view of the fact that they were covered by a damp cloth, but IF you are now trying to make the dough is an area with a lower relative humidity (drier climate or higher altitude) that would significantly increase the rate of evaporation from the dough resulting in the development of a dry crust. If the relative humidity on the day that you made the dough was less than 85% you would have to expect potentially significant evaporative loss from the dough. One possible way to address the problem is to create a micro-climate for the dough balls, this is done by preparing the dough balls just as you have done BUT instead of placing them out in the room, place a wet towel under the container which the dough balls are on, then cover the dough balls and the towel with (I use a large dish pan) but anything (large Walmart plastic storage tub with a cover) will work. It doesn't need to be air tight as you just want to control the environment under the container (think sauna). The wet towel will be a source of moisture to put and keep humidity in the air preventing the crust formation.

Tom Lehmann/The Dough Doctor  
5328

### **Dough Clinic / Re: Staging Topped pizzas for service**

I'm not sure about the perforated pan idea. In 3 to 4-hours you might find that the dough is trying to flow into the perforations making the dough and crust all but impossible to separate. The one exception to this might be the Lloyd Pans Hex Disk. The perforations in these pans are smaller than on other pans which might restrict the dough from flowing into the openings. Another possibility is to place the dough onto a piece of baker's silicone paper, then you could use any pan as the paper will inhibit any dough flow into the pan openings. Lastly, an old trick that I used many years ago is to flip the formed dough skin over on the bench or on a wood peel, then use a heat gun or hair dryer to form a dry skin over the bottom of the skin, flip the skin over into you perforated pan and you have a decent chance that the dough may not flow into the openings.

Tom Lehmann/The Dough Doctor  
5327

**Stones/tiles/steel, Pans & Accessories / Re: where to get deep dish pizza pans in Germany or Austria?**

Ulli;  
The temperature that you refer to is the pan temperature. When you have dough in the pan it will not get to much over 400F. Just don't put any empty pans into the oven.

I've got some old tin plated cake pans from the 1950's that I use all the time for making 6" individual deep-dish pizzas (bake temp.525F) I don't remember the temperature that tin melts at but I think it is around 430F and to this date I've not damaged the pans so I know they have never gotten to that temperature.

Try one, see if it works for you.

Tom Lehmann/The Dough Doctor  
5326

**Shop Talk / Re: Dough Trays**

I've used the dough boxes from WRH <[www.wrh.net](http://www.wrh.net)> for many years and they're very popular in the pizza industry too. I've never had any problems or issues with them. Just be sure to buy a couple of their scrapers for cleaning the boxes, they're radised to fit the inside corners of the box making it a snap to clean them.

Tom Lehmann/The Dough Doctor  
5325

**Dough Clinic / Re: Staging Topped pizzas for service**

"Holding at room temperature " is a pretty broad statement. Assuming we have a fully topped/dressed pizza skin that is at refrigerated temperature you should be able to allow those dressed skins to remain at room temperature for about an hour before it warms up sufficiently for the dough to begin proofing/raising, thus changing the character of the finished pizza. That said, before going any further down that path, I would check with the local health/food safety department to get their views on allowing the dressed skins to be exposed to "room temperature" for any period of time.

Tom Lehmann/The Dough Doctor  
5324

**Shop Talk / Re: Dough Trays**

Absolutely right, there has been a lot of discussion on that holding method too.

Tom Lehmann/The Dough Doctor  
5323

## **[Dough Clinic / Re: Staging Topped pizzas for service](#)**

Are we now discussing commissary dressed skins being delivered to the stores? Please feel free to call me at 785-537-1037 so that we may discuss this in greater detail. Just e-mail me with a time and day that you would like to talk so I can be here at my desk to receive your call, or you can call me at any time taking a chance to catch me at my desk. I'm an ex Chicago boy (south sider/175th street).

Tom Lehmann/The Dough Doctor  
5322

## **[Dough Ingredients / Re: What affects hydration rates of flour?](#)**

Things that will influence flour absorption are the grist (mix of wheat varieties) that the flour is milled from, the quality of that wheat, the age and storage conditions of the wheat, physical characteristics of the wheat (some varieties do not demonstrate the same absorption with all other factors equal as other wheat varieties, then add to that particle size of the wheat and to a lesser extent (U.S. flour only) the damaged starch content, and especially true for bag flour users how long the flour has been stored and the conditions of storage since the flour was milled and bagged. In large scale production these differences are measured by Farinograph and reported to the end used in a Farinograph report so the dough absorption can be adjusted accordingly while for small scale and home bakers the margin of error in our dough formulas is typically greater than the absorption variation so it can be hard to detect the difference, also with smaller scale production we can handle the dough accordingly to its rheological/physical properties using more or less dusting flour, re-ball, adjusting processing times, etc. which cannot be done in large scale production situations. In short, there are differences in flour absorption which we almost sub-consciously make adjustments for, but once in a while those differences are of a sufficiently great magnitude that we will see the differences for whatever reason. It is perfectly normal to make adjustments in dough absorption. I might also add that specialty flours such as "organic" seem to demonstrate greater differences in absorption than the non-organic flour due to the rather limited supply of wheat and wheat varieties to blend into the grist to blend out undesirable characteristics in the wheat being milled.

Flour is a lot more variable than most people think and when you consider what the flour miller gets in the form of wheat to mill, it's a wonder that they are able to do such a great job as they do in giving us a product as consistent as it is.

Tom Lehmann/The Dough Doctor  
5321

## **[New Forum Members / Re: Chrunchy Pizza Hut Crust](#)**

To which P.H. crust are you referring to?  
Tom Lehmann/The Dough Doctor  
5320

## **[Dough Ingredients / Re: What affects hydration rates of flour?](#)**

From everything that has been said I'm guessing that we're dealing with a production lot of flour that has a different absorption from the other production lots that you've been using in the past. It is common for flour to change in absorption by 2 to 3% just as a characteristic of the flour alone, then add to that external influencing factors such as humidity and you can easily end up with a flour with a fairly wide absorption swing. In cases like this it is best to mark the absorption for your bread and pizza on a piece of tape placed on the container so you can use the correct absorption value until the flour is depleted, then when you get a new bag of flour start out where you left off with the last bag of flour

absorption wise remember that it is easier to add water than it is to remove water from the dough, once you find the correct absorption for the now new flour post it on the container and you're good to go. When I taught the pizza class at AIB I would explain to my students that flour and hockey pucks were direct opposites. Flour is always different and changing while hockey pucks are always the same and consistent.

Tom Lehmann/The Dough Doctor  
5319

### [\*\*Cracker Style / Re: Blisters\*\*](#)

I agree that the crust looks like it might have been made with a high oil/fat content but because the ingredient deck shows both oil and shortening I'm guessing that the shortening might be in the form of fat flakes which would typically be used at about 15% of the total dough weight. The shape and the edge of the crust shown in the photograph highly suggest that it was made using sheet and die cut equipment, this would mean that the dough absorption was most likely between 50 and 55% (probably closer to 50%). Yeast levels for commercial crusts are normally on the high side for flavor (what little there is of it), so I would put the yeast level at 2% IDY. Salt will come in at around 2%. Since ingredients MUST be listed in descending order with the sugar coming after the salt it must be used at the same or lower level than the salt so I'd use 1.5% for the sugar. For oil, use 2%. Mix the dough with a finished dough temperature of 75F (typical for sheet and die cut production lines), take the dough directly to a sheeter and sheet to 3/16-inch thickness, cut to diameter, give the dough about a 10-minute rest period before baking (400F for about 3-minutes), invert for cooling.

You might want to experiment with varying fermentation/rest times between mixing and sheeting (0, 15, 30, 45 and 60-minutes) to see if you like any one over the other.

Tom Lehmann/The Dough Doctor  
5318

### [\*\*Cracker Style / Re: Blisters\*\*](#)

Craig;

Yes, 15% for those fat flakes, sounds crazy but that's what is typically used.

Kreskin;

The dense structure is due to the sheeting process, the aroma that you're picking up is characteristic of the high yeast level and no fermentation. I'm not sure about the gray color that you are referring to but if it is the entire skin that is gray the high fat along with an unbleached flour will give it that appearance, but if you are seeing spots of gray on the dough/crust it is most likely areas of incomplete bake if the skins are par-baked (incomplete at the time of par-baking) which is a fairly common problem with some par-baked crusts, many times those areas of incomplete bake/collapse are mistaken for oil spots since they look a lot like oil spots on the crust.

Tom Lehmann/The Dough Doctor  
5317

### [\*\*Dough Clinic / Re: Whats the pizza's top and bottom when its a ball and is that a rule?\*\*](#)

Most operators of pizzerias orient the bottom of the dough ball so it becomes the top of the dough skin. In cases where the bottom of the dough box is oiled it doesn't seem to make any difference between the top or bottom of the dough ball. I personally open my dough balls by either partially sheeting the dough to about

3-inches/75mm less than full diameter and then finish opening to full diameter by table stretching and a toss or two to remove excess dusting flour, or if I'm doing it at home I might use a rolling/pie pin to accomplish the partial opening, or I also open the dough ball completely into a skin by table stretching.

Tom Lehmann/The Dough Doctor  
5316

### **Cracker Style / Re: Blisters**

Kreskin;

The Crisco won't work in the same manner as fat flakes but you can come close by making your own fat flakes. Use unsalted butter or margarine (not the soft spread type margarine), place it in the freezer for a few hours (over night will do) you just want it to be thoroughly frozen. using a knife or similar tool carve or chop the butter/margarine into flakes (like soap flakes) and immediately place back into the freezer once you have the amount needed. When you're about 4-minutes from the completion of mixing add the frozen fat flakes. At the end of the mixing time they should be uniformly incorporated into the dough (like chocolate chips in a chocolate chip cookie dough). Immediately scale into desired weight pieces, form into balls, and let rest at room temperature until you can open into pizza skins.

If you want to research a similar dough making process look at the "Blitz" method for making pastry dough, it's very similar.

Tom Lehmann/The Dough Doctor  
5315

### **American Style / Re: Pizza hut regular pizza dough not pan pizza reciepe.**

I'll toss my hat in the ring. The only real way to even get close to where you want to be is to make a pizza and then ask yourself how is this different from the P.H. pizza I'm trying to reverse engineer? Make the changes you think are appropriate and test again, in time you should be able to get something similar. Here is a starting dough formula, once you have evaluated the finished pizza let us know what changes you feel need to be made and we will try to help you achieve those characteristics.

Flour: 12% protein content (strong bread type flour) 100%

Salt: 2%

Sugar:2%

Oil: 3%

IDY: 0.4% or ADY: 0.6% or Fresh/compressed yeast: 1.25%

Water: 56%

Mix; scale; ball; allow to rest at room temperature 60-minutes or until the dough can be easily formed into a skin; Place skin in the cooler and hold for at least 3-hours, remove from the cooler and use to make your pizzas. Note: if the pizza will be a pan style pizza, fit the dough to a well oiled pan, allow to rest for 60-minutes, re-fit the dough to the pan; allow the dough to rise in the pan for 60-minutes; place in the cooler for approximately 2-hours; dress and bake.

Tom Lehmann/The Dough Doctor  
5314

### **American Style / Re: Pizza hut regular pizza dough not pan pizza reciepe.**

As you said you were not making the deep-dish pizza we can concentrate on the thin crust which used to be more of a cracker type crust but is now less of a cracker type crust and more of a thin crispy type crust. You will want to use the skin right out of the cooler, just be sure to dock it. If you're baking on a

"perforated" disk it should be dark colored or well seasoned for best baking results, or if you are baking on a pizza screen aka wire screen it must be seasoned prior to use or it will weld itself to the dough during baking making separation all but impossible plus the bottom bake will leave something to be desired.  
Tom Lehmann/The Dough Doctor  
5313

### [\*\*American Style / Re: Pizza hut regular pizza dough not pan pizza reciepe.\*\*](#)

For about a 1/2-inch thickness I'm guessing that the dough loading per square inch will be around 0.12389-ounces per square inch. So a 9" round pizza would require 7.88-ounces of dough (call it 8-ounces) and a 10" round pizza would require 9.72-ounces of dough (call it 9.75-ounces). This should get you pretty close to where you want to be.

Tom Lehmann/The Dough Doctor  
5312

### [\*\*Other Types / Re: How to make stromboli/calzone?\*\*](#)

There are two options.

1) Use your regular pizza dough, roll it out into a flat disk about 8" in diameter (adjust the diameter to give you the size calzone you want). Brush the edges lightly with water, add filling of ricotta cheese, mozzarella cheese or your favorite cheese blend, add desired vegetable/fruit filling along with pre-cooked meat if desired. Fold in half taking care to line up the edges, tightly crimp the edges together, transfer to a baking sheet, using a sharp knife or scissors cut a few steam vents into the top, brush with egg wash or cream/whole milk/melted butter and sprinkle with shredded parmesan cheese, bake at 450F until golden brown, brush or spray with garlic butter to which you have added a small amount of dried basil/oregano, set aside to cool for a minute or so before serving. This is one of our all time favorites.

2) Make a "special" calzone dough. Starting with your regular pizza dough formula, add unsalted butter or Butter Flavored Crisco to bring the total fat content up to 5%, add 5% whole egg (be sure to reduce the water content by 75% of the weight of whole egg added). Prepare the dough by your normal manner and follow the steps above for forming, filling, sealing and baking the calzones. This second method makes a richer, more pastry like dough.

Tom Lehmann/The Dough Doctor  
5311

### [\*\*Dough Clinic / Re: Frozen Dough Balls\*\*](#)

Peter;  
Glad to help.  
If you add up all of the percentages in the formula (164%) (bakers percent) and divide it by 100 (1.64) then divide that into the known dough weight (20-ounce dough ball) you will find the weight of flour in that specific dough weight. In this case 20-ounces divided by 1.64 = 12.19512-ounces of flour in 20-ounces of Norma's dough.

Let me know if you need any further help.  
Tom Lehmann/The Dough Doctor  
5310

### [\*\*Dough Clinic / Re: Anyone know of High Protein Bread Flour with 14 percent protein\*\*](#)

The only commercially available flour that I'm aware of that breaks 14% protein

content is General Mills All Trumps. To be perfectly honest with you I have never seen much if any difference between All Trumps and the more readily available flours with protein content in the 13% range and when it comes to making pizza dough with a lot of fermentation don't discount the strong bread flours with a protein content in the 12.2 to 12.8% range, the wheat varieties that these flours are made from typically exhibit excellent tolerance to fermentation.....it's not all in the protein content when it comes to both strength and fermentation tolerance.

Tom Lehmann/The Dough Doctor

5309

### **Dough Clinic / Re: Frozen Dough Balls**

Peter;

In two words: You can't.

If they were creating sugar through the conversion of damaged starch with amylase enzyme they would need to add additional damaged (pre-gelatinized) starch as a dough ingredient which SHOULD show up on the label. Even if they were using reclaimed product that had been baked and ground to a meal like consistency (may not show up on the label) they would still need to add supplemental amylase unless they are looking at it as a processing aid in which case it might not need to be shown on the label.

Then too, sugar is an ingredient on the GRAS List (generally recognized as safe) so they COULD leave it off or show it at an incorrect level in which case the worse thing that could happen to them would be a Federal order to show the sugar at the correct level, add to that, if they are using pre-printed labels they might be granted a 90-day extension to use up the labels they have in their inventory. I've seen this "trick" used with new pizza introductions before so it would be nothing new.

This is why I only use the ingredient declaration as a starting point when reverse engineering a product or mix, I always bench mark off of the finished product for making my final ingredient adjustments.

Tom Lehmann/The Dough Doctor

5308

### **Dough Clinic / Re: Frozen Dough Balls**

Peter;

All food products not sold at the site of manufacture must have an ingredient declaration. The only exception that I'm aware of to this is what is referred to as the "cottage industry exception". Under this exception if the total income generated by the business is less than \$50,000.00 a year you don't need to jump through all of the regulation hoops. This is the regulation that allows people to sell baked goods at the flea market and farmer's markets. While a vendor may not have the ingredient data the manufacturer will have it. I suggest that anyone dealing with a supplier who will not provide the ingredient panel for their product think twice, maybe more about it. If that product contains a known allergen how would you know? Even more so, how would your customer(s) know? If someone were to get sick from eating the product the person using the dough to make pizzas would be the first line of litigation, then it would come out that you didn't know what was actually in the dough (negligence), and finally it would filter back to the original dough manufacturer. Think of buying a gluten free crust without knowing what the ingredients were? A few years ago we began looking at GF crusts made by small local bakers and home bakers selling their GF crusts. The crusts were indeed great crusts...too bad they were made with spelt and rye and that explained why they were so good at the time.

Tom Lehmann/The Dough Doctor

5307

**Shop Talk / Re: Our new pizza box, with anti soggy/sticking technology haha**

How does the function of this differ from a Ripple Sheet (looks a lot like one) or a Pizza Savor (plastic mat)?

Tom Lehmann/The Dough Doctor  
5306

**General Pizza Making / Re: Hydration, how high is too high?**

When the dough absorption is increased the dough becomes softer and to an extent, more extensible the results in the dough exhibiting more oven spring during the first minute or so of baking which results in a more open crumb structure which in turn promotes improved crispiness in the finished crust. The down side to increased dough absorption is that it can make the dough more difficult to handle. I've seen doughs made with absorption so high that the only way the operator could handle the dough was by first oiling his hands. Think of an English muffin and Ciabatta bread where the crumb structure is very open, the doughs that these products are made from are more like a batter than a dough as we know it.

Tom Lehmann/The Dough Doctor  
5305

**Dough Clinic / Re: starter + 00 flour, water, and salt = worst pizza I've ever made?**

The potato culture has been commonly used in the baking industry to achieve a San Francisco type of sour. I total agree with Craig. You might also just mix equal parts of flour and water together in a wide top bowl and let it set out at room temperature for 24-hours, then begin the culturing process.

Tom Lehmann/The Dough Doctor  
5304

**Dough Clinic / Re: The secret to perfect pizza dough (according to a certified pizzaiolo)**

I agree with both of the above, but knowledge that is gained and NOT SHARED is knowledge lost. Many of us have given a lifetime to gaining our knowledge, and a lot more than \$2,000.00 and we share it freely, a couple of weeks and \$2,000.00 and not sharing is arrogance, plain and simple.

Tom Lehmann/The Dough Doctor  
5303

**Shop Talk / Re: Where to buy conveyor pizza oven in China?**

You might want to contact Steve Green (PMQ/Pizza Marketing Quarterly Magazine) at <sg@pmq.com> and ask him if he can put you into contact with their contact in China. Steve has hosted some pizza training in China and he has some contacts there that might be able to help. Tell Steve that I sent you.

Tom Lehmann/The Dough Doctor  
5302

**Dough Clinic / Re: Dough Management**

GT36;

The reason for different temperatures is due to different types of coolers and different cooler temperatures. For example, reach in coolers are not nearly as

efficient as walk in coolers so we reduce the finished dough temperature to make up for the lack of cooling efficiency when using a reach in cooler. Also while the "legal" operating temperature range for a commercial cooler is 34 to 40F all coolers do not hold that temperature during the busy part of the day when there is a lot of traffic in and out of the cooler so in this case again we might need to decrease the dough temperature. In home baking, it is rare that we find a refrigerator operating efficiently at this temperature range due to the small size and Energy Star Rating (high star rating comes at the price of operating efficiency) so cooler dough temps are needed here too. For a commercial pizzeria with a decent size walk in cooler (not overly crowded) a finished dough temperature of 80 to 85F performs best, BUT because all shops are different it is not uncommon to find that a different temperature might perform better in some shops.

Actually, our goal is NOT to cool the dough as fast as possible, but instead to cool it at a CONSISTENT rate. Some fermentation is desired in the cooler, that's why it is referred to as "cold fermentation". This allows for the yeast, enzymes and yeast by-products to work on the dough and soften/mellow the gluten for improved dough handling properties and to set the stage for flavor development and crumb porosity at the time of baking. The crumb porosity is important as it is a key component in the development of crispiness. The only time when we really want to mix the dough as cold as possible and get it cold as quickly as possible is when we are making either frozen dough, or a highly specialized dough for use in an application where the dough will be made at a commissary operation, shipped to the store(s) and then managed as a just mixed dough at the store level.

The finished dough temperature is absolutely critical in order to have effective dough management. If the dough is too warm more fermentation than desired will take place potentially resulting in blown dough or dough that will perform differently 2, 3 or more days down the road. The same can be said for a dough that is too cold, it may be difficult to open on day one but then fine on day two or three. As for using a generic spray oil as opposed to brushing the dough balls with a generic salad oil sure, not a problem, it will work fine, but in the long run it will contribute to eroding your profit margins at the same time due to its greater expense.

I hope this has answered your questions.

Tom Lehmann/The Dough Doctor  
5301

### **Dough Clinic / Re: Freezing scratch dough balls - process and flavor question**

I'm not sure I'm understanding your question correctly. But here goes: When freezing the dough the objective is to get the dough frozen as quickly as possible after mixing, so letting the dough set out for 20-minutes at room temperature prior to freezing is not beneficial to the end product quality/performance. The dough balls are best flattened into "pucks" as they are placed in the freezer since the puck shape freezes more efficiently than a ball shape (poorest shape for efficient freezing). The dough can be considered thoroughly frozen after about 18-hours in a home type freezer. It will keep for a maximum of 15-days providing decent performance, after that time the dough will become inconsistent in performance. The best way to use frozen dough is to remove it from the protective packaging/wrap, oil the dough ball lightly, and place it in the refrigerator to slack out/thaw for 18 to 24-hours, then bring the dough out of the cooler into room temperature for 1-hour, then place it back into the refrigerator for at least 24-hours before using. We have found that commercially made frozen dough performs quite well after 24-hours, but because reducing

agents (L-cysteine/glutathione) are commonly used to reduce dough mixing time and enhance dough handling prior to freezing it rarely performs as well after 48-hours. Dough made without the reducing agents do not exhibit the continued softening effects of the reducing agent so they will generally exhibit pretty good performance at 48 and some times 72-hours as well. As you can see the dough is getting quite a bit of cold fermentation by this method so there will be a decided flavor improvement over frozen dough that is just slacked out and used right away.

Tom Lehmann/The Dough Doctor

5300

**Dough Clinic / Re: Freezing scratch dough balls - process and flavor question**

Jeff;

No, there would be no benefit but there would be issues with yeast mortality during the freezing process. Think of yeast cells as water filled balloons, prior to fermentation those balloons have just a little water in them but as fermentation progresses the yeast feeds and plumps up (now it's like a balloon filled with as much water as it can hold), during the freezing process ice crystals form inside the yeast cells, since we are not talking about blast freezing the dough (-35 to -65F) large ice crystals are formed, just look at your ice cubes in your home freezer as compared to commercially made ice. The small ice crystals created during blast freezing are very small but those created during static (slow) freezing are very large and angular in shape. As the crystals form inside the expanded yeast cells they puncture the cell wall allowing the plasma material inside to escape the cell. A good deal of this material is the amino acid glutathione (a reducing agent) in fact it's the same material found in "dead yeast" which is used to make dough more extensible. The loss of the plasma material from the yeast cell can severely damage the yeast cell(s) plus the glutathione causes an unwanted softening of the dough. This is why we NEVER want to allow the dough to ferment prior to freezing. There is one exception to this in the process referred to as pre-proofed frozen dough. By this method the dough is fully formed into the final product, allowed to proof to full size and then blast frozen and maintained in a frozen state until it is ready to be baked straight from the freezer to the oven. You've seen product made by this process at your local supermarket it's called Freschetta Pizza. Additionally a lot of the rolls used by restaurants are made by this process due to the ease/convenience of use.

Tom Lehmann/The Dough Doctor

5299

**Dough Clinic / Re: Freezing scratch dough balls - process and flavor question**

Peter;

You can freeze dough even after a period of cold fermentation but the tests that we did at AIB showed that consistency of dough performance was all over the board and after about 15-days we never knew how the dough was going to perform. When freezing dough at home, as you know, there is a lot that you can get away with that wouldn't "fly" in a pizzeria. For example, if the dough gets too soft just re-ball it, give it time to relax so it can be opened into as pizza skin and life is good, works at home but not at your local pizzeria. Same thing if the dough proofs/rises very slowly, just give it more time to rise and life is good. This doesn't mean that the dough is responding any differently at home than at a pizzeria but it's how we are responding to the differences in the dough to make it work in a satisfactory manner. What I'm trying to do is to educate readers on what is actually happening

to the yeast when the dough is frozen, then based on that knowledge they can engineer their dough or use it in such a way so as to get the best performance possible out of a dough that has been subjected to such adverse conditions as home freezing.

In Jeff's article he actually addresses some of the same issues I touched upon such as the diminished frozen shelf life (2-weeks without any real problems, but after that, up to about 4-weeks there is inconsistency in dough performance that has to be accounted for in the way we handle the previously frozen dough). It should also be noted that Jeff specifically mentioned freezing dough that went straight from the mixer to the cooler which helps to significantly limit/retard yeast activity, even after 48-hours, prior to freezing the dough. With all of this said, also keep in mind that when we are referencing "coolers" we are referring to commercial, high efficiency walk in coolers, placing dough in a home fridge allows for significantly more fermentation to take place within the same period of time so to avoid disappointment one probably should not expect the same level of dough performance after more than 2-weeks in the home freezer.

When I made reference to the energy star rating of home refrigerators and freezers I was referencing the fact that in order to achieve the energy rating they cycle on and off 24/7/365 to remain frost free. That part is good, the part that isn't so good is the fact that this temperature cycling has a very deleterious effect upon everything stored in the freezer. Just consider ice cream, when you buy it the ice cream is smooth and creamy but after a week or so in a home freezer there are ice crystals on the inside of the lid and the ice cream is beginning to look somewhat curdled. This is the result of home freezers performing more like a freeze drier than a food preservation chamber. The mechanism for this is as follows: Coils warm up to defrost, causing air to warm up, causing packaging to warm up, causing the air within the package to warm up, since warm air holds more moisture than cold air the moisture in the product moves into the warm air; then the defrost cycle ends and the coils cool down, the air cools down, the packaging cools down and the moisture in the air within the package condenses and freezes to the inside of the packaging. Repeat this 12 to 24 times a day and now you know why that loaf of bread you put into the freezer a couple weeks ago now has ice in the bag along with the bread. We just call it "freezer burn" at home. This is why I cherish my chest freezer in our basement that doesn't even have an energy star rating (too old)since it doesn't have any automatic defrosting features we experience very little, if any freezer burn on any meat coming out of that freezer (stored for close to or even more than a year), BUT the down side is that yearly we have to empty the chest freezer and manually defrost it, a small price to pay for not having all the problems with food quality associated with freezer burn.

Tom Lehmann/The Dough Doctor  
5298

### **General Pizza Making / Re: Tom Lehmann NY dough question?? help**

Freddy;

With so many variables coming into play it is difficult to say much about the performance of your dough, but as you know, we all encourage experimentation as a way of fine tuning our dough to our specific conditions and to learn more about dough in general as well as ingredient function and dough management. With this in mind I would encourage you to make your dough as you normally do or have been doing (make sure to have enough dough for two dough balls) then use one dough ball from the fridge after 12-hours and the other one after 24-hours and if you make three dough balls you could even try one after 36 or 48-hours. To use the dough, remove the dough container from the fridge and place it on the counter top

until the temperature of the dough in the container reaches 50 to 55F. I don't like to say "room temperature" because that could be anything from 60F to 100F or more, and trust me, there will be a huge difference in the dough between those two temperatures. This is why I recommend using 50 to 55F as your target temperature indicating when it's time to begin opening the dough into pizza skins. OK, does the dough need to be in the 50 to 55F range before you begin opening it? No, but for most of us it works, but a different temperature might work better so this is something to experiment with, just be sure to take notes so you can track your results and when you do find what works best for you strive to be consistent and you'll be rewarded with consistent and predictable dough performance, not to mention great pizzas. Have fun, don't be afraid to experiment (remember that even bad pizza tastes pretty good), keep good notes and share your findings. Welcome to the club!

Tom Lehmann/The Dough Doctor  
5297

### **General Pizza Making / Re: Tom lehmann NY dough question?? help**

For your peel dust you might try equal parts of corn meal and semolina flour (both readily available at any supermarket). The semolina flour has a larger particle size so it doesn't absorb moisture making peel release easier and the corn meal acts as little ball bearings further helping the release/transfer from peel to baking stone. You really don't need very much at all on the peel. After you place the skin on the peel give it a shake to ensure it is not adhering to the peel, then as you dress the skin give it another occasional shake. Once you get the hang of it dressing the pizza skin will go pretty fast with that occasional shake and transfer will be a snap. Not bad for a first home made pizza.

Tom Lehmann/The Dough Doctor  
5296

### **Dough Clinic / Re: Pizza crust**

I can't tell much from the photo except that it is formed by hand with what appears to be a pinched edge. The party slice might suggest Illinois or Ohio as the basis. Does not look New York to me.

I'm guessing the dough was made with an absorption of about 55%, little or no sugar (0 to 1%), IDY at maybe 0.25%, at least 24-hours cold fermentation, salt at 2%, oil at 1%. Just an educated guess.

Tom Lehmann/The Dough Doctor  
5295

### **Pizza Toppings / Re: Clams?**

I use an Alfredo sauce for all of my seafood pizzas. I few years ago I did some experimenting with some fresh salmon that I had and I used a 50/50 blend of Alfredo and sour cream for the base and flavored it with dry dill weed.....really good!

Tom Lehmann/The Dough Doctor  
5294

### **New Forum Members / Re: Dough storage**

You could use par-baked crusts (no refrigeration required) or to store raw dough balls you could place the dough balls into individual plastic food bags (not Baggies) and then put them into a cooler/fridge overnight and then, when you are loading for the event, into a freezer for super cooling (might even freeze a little of the outer edge of the dough balls which is OK) then transfer to a suitably sized cooler

chest with some dry ice (on the top, be sure to separate from contact with the dough balls with a sheet of corrugated cardboard) to hold while at the event. To use the dough balls, transfer to a holding shelf (remember, they're in individual plastic bags so this should not pose a problem) to temper at ambient to 50F before opening into skins. The dough balls being held at ambient should keep for at least an hour or more once they reach 50F.

Tom Lehmann/The Dough Doctor  
5293

### **Other Types / Re: How to make stromboli/calzone?**

While I wouldn't recommend eating the raw dough, just in case. Keep in mind that you will need to reach an internal dough temperature of at least 160F to kill any potentially harmful bacteria BUT since the dough will not set until an internal temperature of at least 180F is reached, and a finished dough temperature close to 200F will be achieved in the normal baking of the pizza, the 160F minimum internal dough temperature will be easily reached and exceeded, rendering the finished pizza close to sterile for all practical purposes as it comes out of the oven. Be sure to wash your hands well after breaking the eggs to prevent the possibility of cross contamination. By the way, Danish pastry and sweet dough will typically contain 15 to 24% whole eggs when made the way they should be made. New formulas for these products are lucky to contain 10% due to the cost issue.

Tom Lehmann/The Dough Doctor  
5292

### **Stones/tiles/steel, Pans & Accessories / Re: Wooden peels commonly used for neapolitan pizza**

You bet!

Go to <[www.MrPeel.com](http://www.MrPeel.com)> or check out the Portion Peel at <[www.portionpeel.com](http://www.portionpeel.com)> or American Metalcraft at <[www.amnow.com](http://www.amnow.com)> I just got mine from Portion Peel and I really like it since it has laser etched circles on it for both 10 and 12-inch diameter pizzas. I believe it's also available in different sizes too.

Tom Lehmann/The Dough Doctor  
5291

### **Dough Clinic / Re: Whats the pizza's top and bottom when its a ball and is that a rule?**

When the entire dough ball is oiled, not just the top, or if the dough box is oiled there is much less of a difference between the top and bottom of the dough ball than if just the top is oiled. Some of the shops that I've been in practice this so they don't have to differentiate between the top and bottom of the dough ball. The practice of oiling the entire dough ball is also used much more frequently in those shops where a press is used for forming the skins than a sheeter or hand forming method. When a sheeter is used to form the skins it is all but imperative that the dough be oriented with the top of the dough ball facing down when the dough enters the sheeting rolls. Failure to do so generally results in the dough hanging up on the chute which guides the dough into the sheeting rolls, or the dough sticking to the sheeting rolls, either will result in a lost dough piece. With hand forming the dough is easier to open if placed on the bench with the top of the dough ball facing down (towards the bench top), this positioning of the dough ball allows the dough to stretch across the bench easier while providing better traction with the hands to allow for stretching the dough. From a finished product stand point, if the dough ball is not oiled, and a dry skin forms on it that skin is not soluble and will never be

softened, making it an excellent candidate to entrap leavening gas forming large bubbles in the process so for this reason a lot of operators automatically place the ball top side down when opening regardless if it has been oiled or not.

Tom Lehmann/The Dough Doctor  
5290

**[Dough Clinic / Re: Whats the pizza's top and bottom when its a ball and is that a rule?](#)**

Due to both the downward pressure of the dough weight and the entrapment of moisture under the dough ball those folds generally just flow out and form a cohesive bottom to the dough ball. This even happens with a dry dough such as one used for a thin crispy or thin cracker type crust but the dough flow is not as great due to the dry dough lacking the ability to flow out. With enough time though even the driest dough will flow out to form a cohesive bottom. You can see this in a lot of the photos posted here showing the dough as it comes out of a container with essentially no signs of the dough being folded during forming of the ball. We see a similar thing happen with the forming of Kaiser rolls (the rolls with the swirl on top). The swirl is stamped/pressed into the dough, but even with a dough at roughly 55% absorption sometimes the swirl pattern still flows out and loses definition in the baked roll.

Tom Lehmann/The Dough Doctor  
5289

**[Sauce Ingredients / Re: Full Red Pizza Sauce](#)**

Full Red is a product manufactured by Stanislaus, one of the premier tomato processors in the U.S. Which Full Red product do you have?

Full Red Fully Prepared Pizza Sauce  
Full Red Tomato Puree

There is also a Full Red Marinara Sauce as well as a Full Red Cacciatore Sauce

The Full Red Prepared Pizza Sauce and the Full Red Tomato Puree are specific to pizza.

Tom Lehmann/The Dough Doctor  
5288

**[Sauce Ingredients / Re: Canned tomato common manufacturing?](#)**

Walmart is notorious for having products private labeled for them, not just in food but in just about everything else too so if you know what you are looking at you can usually identify a name brand product under a Walmart label, the same is true for just about any other retailer with a house brand.

One thing to keep in mind about Walmart though is that their suppliers seem to change faster than some people change their underwear, so if things suddenly take a change, don't be surprised. My rule for Walmart is if you like it, buy it, buy a lot of it, because it may not be there tomorrow or it may be made by a different supplier. As you know, Walmart is all about \$\$\$\$\$\$.

Tom Lehmann/The Dough Doctor  
5287

**[Neapolitan Style / Re: Caputo gluten content](#)**

Can you share with us how you are measuring your ingredients and making the dough? How are you managing the dough from the mixer to the bench for use in making skins?

5286

## [\*\*Dough Clinic / Re: Fed starter but no dough rise?\*\*](#)

How are you feeding it and how often?  
Tom Lehmann/The Dough Doctor  
5285

## [\*\*Prep Equipment / Re: Best Stand Mixer Under \\$1K \(Whole Wheat Dough\)\*\*](#)

Also, keep in mind that when made properly, whole wheat doughs are no more difficult on the mixer than your regular doughs made with white flour. I've made a number of posts on how to determine the absorption of any one particular whole wheat flour but is short you need to use a soaker. This is done by blending all of the whole wheat flour with 75% (actual dough absorption for your flour may be different) absorption/water based on the weight of the whole wheat flour. Allow this soaker to hydrate for one hour at room temperature (this is best done right in the mixing bowl). When making the soaker it is only necessary to mix the dough just enough to wet the flour). After the soaker has hydrated add the remainder of your ingredients and mix just until the dough comes together and forms a smooth, cohesive dough ball, it should be slightly tacky after mixing. Take the dough directly to the bench for scaling and balling, place into lightly oiled individual containers for cold fermentation. I like to oil the entire dough ball and place each ball into a plastic bag, twist the open end to form a pony tail and tuck it under the dough ball as you place it in the fridge. The dough will be ready to use in 18 to 24-hours.

Tom Lehmann/The Dough Doctor  
5284

## [\*\*Sauce Ingredients / Re: Sauce\*\*](#)

You might try just hand crushing the plum tomatoes after thoroughly draining them, the pieces will be larger than what you might be accustomed to but they should hold their water much better without exhibiting the syneresis that you're presently getting, as an added bonus you will also get a more pronounced flavor from the sauce as the larger tomato pieces provide a burst of flavor and texture to the pizza.

Tom Lehmann/The Dough Doctor  
5283

## [\*\*Dough Clinic / Re: Best type of flour for NY style Pizzas?\*\*](#)

All Trumps is somewhat the "go to" flour in New York, but any of those mentioned by Craig would work equally as well and might be easier for you to find locally. As for myself, I use General Mills Full Strength at a little over 12.5% protein content as compared to 14% for All Trumps.

Tom Lehmann/The Dough Doctor  
5282

## [\*\*Shop Talk / Re: Where to buy conveyor pizza oven in China?\*\*](#)

On an outside chance, you might contact Jerry Henke, Director International Applications Support, Middleby-Marshall/CTX Oven Company. You can contact him at [jhenke@middleby.com](mailto:jhenke@middleby.com)>

Tom Lehmann/The Dough Doctor  
5281

## [\*\*Pizza News / Re: Pizza Hut removes additives BHA and BHT\*\*](#)

BHA and BHT are used as anti-oxidants to fend off oxidative rancidity. While the

article doesn't specifically say, the "natural" replacement is tocopherols AKA vitamin E so it's probably easy for them to get away from the BHA (Butylated Hydroxy Anisole) and BHT (Butylated Hydroxytoluene), consumers don't like scary sounding names in their food anymore. Anybody wanna take a guess as to why these additives are used in making rubber? I just love it when ingredients and additives are supposed to be ultra bad for you just because they're used in some other commercial application, just think, yeast is commercially used to produce "alcohol" which we all know is a deadly poison and it produces alcohol in our dough and finished crust so by association it must be bad for us, how about salt? Also deadly, even water has its issues, the list just keeps going on and on. I'm not against making our foods safer and with cleaner labels, I'm just against all the scare hype that we read about in the media.

I now relinquish my soap box.

Tom Lehmann/The Dough Doctor

5280

### **Dough Ingredients / Re: General Mills Gold Medal Flour Recall**

Like I've always said, people would be scared to use flour if they knew more about it. The ones that are especially troublesome to me are the people who buy wheat as is and grind their own flour. What is surprising to me though is that G.M. didn't pick the problem up on their micro analysis since e-coli is one of the things they test for and report on their COAs.

Tom Lehmann/The Dough Doctor

5279

### **Pizza News / Re: Pizza Hut removes additives BHA and BHT**

Craig;

You bet!!!

Hundreds if not thousands of people die from that stuff every year. Excessive consumption or inhalation can both be deadly.

For anyone wondering, Craig is alluding to H<sub>2</sub>O (water). It's all in the name.

Tom Lehmann/The Dough Doctor

5278

### **Dough Ingredients / Re: General Mills Gold Medal Flour Recall**

If you'll remember, I think it was Ben & Jerry's ice cream that had a recall on their "Cookie Dough" ice cream, yep, you guessed it, raw cookie dough was the culprit. I remember as a kid I used to love it when we made a cake as I normally got to lick the bowl, it's a wonder that I made it through my childhood.

Tom Lehmann/The Dough Doctor

5277

### **Dough Clinic / Re: Ice vs. no ice experience**

I'm guessing that the dough made with ice was colder than the one made without ice. This would make the dough without ice ferment at a slower rate so it would be firmer, less relaxed and extensible than the warmer dough made without ice.

Tom Lehmann/The Dough Doctor

5276

### **Dough Clinic / Re: Ice vs. no ice experience**

That is correct so it would feel softer, while the dough made with ice would feel firmer possibly being interpreted as more hydrated, meaning that the water had better absorbed into the dough. If on the other hand we are saying that the dough

made with the ice was softer and more extensible than the dough made without ice there is a possibility that the dough made without ice was sufficiently warm to allow for over fermentation of the dough which would result in a tighter, more "bucky" dough that lacked in extensibility. This characteristic would be exasperated by the dough management procedure used, for example, if the dough was placed into containers and sealed closed when placed into the fridge, this would result in the heat being trapped in the dough ball resulting in faster fermentation of the dough. This is why it is important to measure the dough temperature immediately after mixing. The finished dough temperature sets the stage for everything that happens after mixing.

Tom Lehmann/The Dough Doctor  
5275

### **Shop Talk / Re: Serving Peel to Table**

The PortionPadL is made of a composite material like that which I mentioned above and it would have the best chance of working for this application. They are quite moisture resistant as far as pizza peels go, and the hard surface should make them easy to clean and sanitize too. Maybe look into getting some without the cutting (portion) lines to make it even easier to clean. With all of that said, before ordering a case of the peels I would still run the concept across my food safety/health department inspector to get their blessings. Be sure to have one of the peels that you are proposing to use on hand so the inspector can see exactly what you are proposing to use.

Good luck, let us know what happens if you decide to proceed.

Tom Lehmann/The Dough Doctor  
5274

### **Off-Topic Foods / Re: The Perfect Garlic Butter recipe**

I hate to sound like I'm beating a dead horse here, but be sure to go back a few weeks and check out the posts on the potential food safety issues associated with home made garlic oil, the same warning applies to garlic butter as both create an anaerobic environment conducive to the potential growth of clostridium.

Tom Lehmann/The Dough Doctor  
5273

### **Dough Clinic / Re: Ice vs. no ice experience**

My normal recommendation is to give it the additional needed mixing time, then measure the temperature again most of the time the temperature gain will only be 1 or 2F, in that case I just give the dough an additional 15-minutes of cross-stack time or uncovered time in the fridge and then make a note to use 5F colder water the next time. Remember that for me, I find that a targeted finished dough temperature of 75 to 80F works best for me at home so the above only holds true if the dough temperature rises above 80F, if it still falls within the 75 to 80F temperature range with the additional mixing no changes should be necessary. This is true when I'm working in a pizzeria too, but in that case I normally target a finished dough temperature of 80 to 85F unless circumstances dictate otherwise.

Tom Lehmann/The Dough Doctor  
5272

### **Dough Ingredients / Re: General Mills Gold Medal Flour Recall**

John;

What you are experiencing now is why we so often recommend to pizzeria operators that they at least identify alternate flour sources (different brand usually

from a different supplier) and keep the information tucked away in the "just in case" book. While we haven't heard of any recently, it is entirely possible to have a flour mill explode creating a regional spot shortage of some flour types, or as we witnessed a few years ago a crop failure which resulted in at the very best rationing of flour, or sometimes flour of a specific type wasn't even available and if it was there were a lot of complaints regarding its quality, granted a crop failure will reach across all of the different milling companies but as we have seen in the past, some were able to manage better than others and some suppliers had a better inventory on hand than others so you could normally eek out some flour to get by on.

The practice of having alternate suppliers for all of their ingredients is a very common, if not universal practice among the larger producers as well as chain store commissaries.

An anecdotal story: When the last crop failure made its presence known I had a client who immediately rushed out and went to his alternate suppliers and bought up all of the flour he could get his hands on (he ended up renting a reefer to store it in.) and he never had a flour problem during the full year that it took to get into a new wheat crop. I might also add that while the crop issues were horrid here in the U.S., Canada had also experienced some crop issues but not as severe as those here, so why didn't we just buy wheat from Canada???????????? Well, it seems that OUR GOVERNMENT had restrictions on the amount of wheat that we could bring in from Canada, and by the time they got their heads pulled out of where they normally keep them almost 9-months had transpired and by that time a bag of anything even resembling flour was worth 3X its normal value.

Remember this story as much of our wheat comes from Texas, Oklahoma, Colorado, Kansas, Nebraska, North and South Dakota, and Montana. Some of these states have been devastated with flooding potentially reducing the overall wheat crop harvest which potentially could impact flour prices this summer. Like the wheat farmers say "It ain't wheat until it's in the bin"

Tom Lehmann/The Dough Doctor  
5271

### **Shop Talk / Re: Serving Peel to Table**

That being the case, he might want to get some pictures of a composite peel (like those shown in the post) and see if he can get them made locally, When I was there a few years ago we needed some bagel boards so we down loaded some pictures of bagel boards from the internet and by the end of the day we had a stack of locally made bagel boards to work with.

Just a thought.

Tom Lehmann/The Dough Doctor  
5270

### **Dough Clinic / Re: Less salt for cold fermentation**

And also, salt has a regulating effect upon the fermentation rate. Higher salt levels slow the rate of fermentation and lower salt levels allow for a faster rate of fermentation. Years ago when I was looking into the history of pizza with Evelyn Slomon I observed that the older methods of making almost always used a higher salt level than more modern methods. I attributed this mostly to the lack of refrigeration available at the time and the fact that bulk fermentation was the order of the day as opposed to subdividing the dough into individual smaller pieces which are far easier to manage with regard to fermentation. Add to that the fact that salt strengthens the dough, the higher salt levels fit into the pizza dough equation quite well. It really wasn't until we began to see the use of refrigeration in

making pizza dough that we saw salt levels coming down to where we typically see them at today (1.75 to 2.25%). With refrigeration to participate in controlling the rate of fermentation the higher salt levels were not needed and in all probability at one time or another resulted in the dough moving too slowly after the refrigerated storage (cold ferment) period.

Tom Lehmann/The Dough Doctor  
5269

### [\*\*Dough Clinic / Re: Mobile operators storing dough\*\*](#)

Tia;

Most small mobile operators don't have the luxury of electric or propane refrigeration so they use large ice chests. They scale and ball the dough, oil the dough balls with salad oil, place into individual plastic "food" bags, twist the open end into a pony tail and tuck under the dough ball as you place it in the cooler to cold ferment 18 to 24-hours (could be more if you want), after the cold ferment period place the dough balls into a freezer for about an hour to super cool them, then place a layer on the bottom of an ice chest, place a sheet of cardboard over the layer of dough balls, add another layer of dough balls, another sheet of cardboard and a few ounces of dry ice on the cardboard, some insulation over the dry ice and build up two more layers with more dry ice on the very top, close the chest and you're good to go. At the event, transfer bagged dough balls to a plastic dough box to warm up to 50F, then begin opening into skins as you need them. The dough balls in the dough box will be good to use for 2 to 3-hours once they reach 50F. To use the bagged dough just invert the dough ball while stripping the bag over the dough ball (bag will normally invert as the dough ball drops out). Let the dough ball drop into a bowl of flour and begin opening by your preferred method.

Tom Lehmann/The Dough Doctor  
5268

### [\*\*Dough Clinic / Re: How to get the perfect hydration level?\*\*](#)

Absolutely! Dough that is too warm will ferment at a faster rate so within any given period of time the warmer dough will receive more fermentation. Depending upon the actual dough temperature and the fermentation time the faster fermentation rate can break down more of the gluten making the dough softer and more extensible. Adding more water to the dough will also make the dough softer and more extensible. Keep in mind that this is only one aspect of a warmer or over fermented dough as there are many other things that come with the greater fermentation.

Tom Lehmann/The Dough Doctor  
5267

### [\*\*Off-Topic Foods / Re: The Perfect Garlic Butter recipe\*\*](#)

Clostridium Botulinum results in Botulism poisoning resulting from the aflatoxin which is produced but not destroyed by the normal heat produced when baking or heating most foods. It is the most dangerous pathogen we are faced with in the food industry as it is fatal more often than not. As its an anaerobic spore forming bacteria we have normally encountered it in improperly canned foods and infused oils but more recently we are seeing it in vacuum packaged pita, tortillas and pizza crust as well as some breads. When I was working at the AIB we saw it in canned bread as far back as the 1960's. Nothing wrong with making your own infused oil/butter, just be sure to play it safe and discard it at the end of the day.

Tom Lehmann/The Dough Doctor  
5266

## [\*\*New York Style / Re: Hobart VCM FINALLY put to good use...\*\*](#)

How is he presently managing the frozen dough that he uses?

Tom Lehmann/The Dough Doctor

5265

## [\*\*New York Style / Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe\*\*](#)

Back in "the good old days" the typical ash content for most bread flours milled here in the U.S. was in the range of .45 to .48%. This was done to help produce bread with a brighter, whiter crumb color, then came the bread called "Grandma's Bread" made with an unbleached flour so now the finished crumb color was more yellow (actually creamy in color) and all was good as people liked it, so the flour millers decided to "up" the ash content to 0.5% to 0.52% as this allowed them to mill the wheat to a higher extraction rate (more pounds of finished flour from a given weight of wheat) and all remained good by consumer and baker standards as a white crumb structure was no longer the gold standard for bread, in fact the saying "the whiter the bread the sooner you're dead" came to be, and ever since then the ash content has been gradually creeping up primarily as a way for the flour miller to hold the line on cost. Now with some of the hard white wheat varieties we are seeing ash content approaching 0.6%. Ash content used to be used as a quasi measure of protein quality/quantity, this is because as the ash content increases the bran content of the flour also increases slightly, the bran has a small amount of protein attached to it that is mostly non gluten forming, this protein is measured as protein with no distinction between gluten forming and non gluten forming, so we end up with a higher protein content in the flour but all of that protein is not of the gluten forming kind so it was said that while the protein of a long extraction flour was higher it was not necessarily a higher quality protein in terms of gluten strength. You see this all the time when you look at a whole wheat flour containing all of the bran, here we typically see an increase in protein content of about 1% over the same wheat milled as a patent or straight grade flour. Soft wheat flours are still milled to a very low extraction rate to retain the whiter appearance of the flour necessary for many pastry applications, however, with that said, for a good number of years now, some pastry flours have been successfully made from hard wheat varieties, but still with low extraction rates.

In some countries (Mexico for example) it is common to mill the flour to only one extraction rate then use the standard milled flour as a bread flour and then proceed to mill the flour to a finer/smaller particle size for use as a pastry flour.

Tom Lehmann/The Dough Doctor

5264

## [\*\*Neapolitan Style / Re: Dough maturation depending on temperature.\*\*](#)

The increase in dough volume can be significantly impacted by the dough absorption so it is not always a good indicator and the conversion of starch to sugar by the amylase enzymes and mellowing of the proteins by proteolytic activity are difficult to measure or ascertain. The most effective and commonly used measurement for dough fermentation is referred to as the first full rise. By this method the dough is allowed to ferment/rise undisturbed in a suitably sized container until it rises and begins to collapse and fall back on itself. This is the first full rise and it typically represents 2/3 of the full fermentation that is correct for the dough at hand. So, if the first full rise is reached in 4-hours, the full fermentation for that particular dough will be reached in a total of 6-hours under the conditions in which the dough was fermented. Now, if you want to use the

dough at full fermentation or not is a totally different story. Some like the strength of dough made with less than full fermentation (tossing the dough comes to mind) while others like the extensibility and flavor characteristics achieved through over fermentation of the dough. This is why I almost never concern myself with determining the full fermentation of a dough unless I'm working with an unknown flour that I want to quickly learn how it responds to fermentation, instead, I like to recommend with controlling the factors (time, time temperature and weight of ingredients) as consistently as possible and then finding the total fermentation time that provides the characteristics that I'm looking for in both the dough and finished crust, once you have identified that time, if you control the factors you can use the final time to determine when your dough is properly fermented for your specific use/application.

Tom Lehmann/The Dough Doctor  
5263

### **New York Style / Re: Hobart VCM FINALLY put to good use...**

Just to confirm:

He receives the frozen dough ball, places them in the walk in freezer for a couple of days holding, then slacks out/thaws, removes from the bags, forms into skins using a dough sheeter, dresses and bakes?

Or, does he receive the frozen dough balls, take to the walk-in cooler to slack out for a couple of days, remove from the bag, open using a dough sheeter, dress and bake. It sounds like the second method is the one he is using. That being the case, you might want to target for a finished dough temperature in the 70 to 75F range, cross-stack for 3-hours before down-stacking, then deliver to him after 18 to 24-hours in your cooler. That should come pretty close to giving him something close to what he is presently using. If he complains that your dough exhibits too much memory or is too strong get some PZ-44 and add about 1% (you will need to experiment) to the dough. Remember that the PZ-44 will reduce the mixing time so just be aware of that.

Tom Lehmann/The Dough Doctor  
5262

### **Neapolitan Style / Re: Using Bread Flour**

I've found that if you're baking your pizzas at anything under at least 700F the bread flour will generally perform better. A lot will depend upon your dough formulation though, but for a formula without added sugar or diastatic malt the above holds true.

Tom Lehmann/The Dough Doctor  
5261

### **New York Style / Re: Hobart VCM FINALLY put to good use...**

Chayo;

Could you give me a call at 785-537-1037? I'd like to discuss this with you. I'm located in Manhattan, Kansas just a couple hours south west of Omaha. I'll be away from my desk all of this afternoon but I plan to be back around 5:00 p.m.

Just e-mail me with the time that you want to call me and I'll be sure to be at my desk to receive your call.

Tom Lehmann/The Dough Doctor  
5260

### **Dough Clinic / Re: What is full fermentation?**

My response to "full fermentation" pertains to any kind of yeast fermented dough. I think where there might be some confusion is in the question itself where "full" fermentation was referenced. Full fermentation pertains to the maximum amount of fermentation that a dough, made under specific conditions by a specific formulation can be fermented without imparting weakness to the dough. I think what you are referring to is "optimum" fermentation which is an entirely different thing. Optimum fermentation is the amount of fermentation a dough receives to make any desired product, be it bread, rolls, or pizza. Because in pizza production we are typically more concerned over the flavor imparted by fermentation, as long as the dough exhibits performance characteristics acceptable for the way we are making the pizza we can use just about any fermentation time we need to use. While extended fermentation periods will substantially weaken the dough structure, unless we are planning to win a contest for the largest hand tossed pizza skin, it really doesn't make that much difference if it's weak or not. Some weakness is desirable as it allows for easier opening of the skin and reduces or eliminates shrinkage/snap back while too much can result in a dough that tears too easily or is sticky to work with. In short, optimum fermentation for a dough is the amount of fermentation that the dough is subjected to which allows it to produce the desired end product. Because of the number of variables driving dough fermentation it is all but impossible to speculate, outside of broad generalities, what the optimum fermentation for a dough might be. This is where the fun part of making pizza begins, experimenting with your dough to identify the optimum processing/dough management parameters.

I'm sorry for any confusion.

Tom Lehmann/The Dough Doctor  
5259

### **Dough Clinic / Re: Sliding Pizza**

I've never heard of a pizza moving enough in the oven to partially fall off of the baking stone. How does the diameter of the pizza before baking compare to the diameter after baking? Most commercial deck ovens operate at 525F and I've never experienced anything like that there either.

Depending upon the dough formulation and management, if the skin is of such a size that it exactly fits the size of the stone the dough might be expanding laterally enough for it to expand over the edge of the stone, but not by any significant amount. Can you post a picture of what you are seeing? This might help in identifying the causative factor.

Tom Lehmann/The Dough Doctor  
5258

### **Dough Ingredients / Re: Sugar Reduction**

While I can't be too specific, the chains are just about all in the 2 to 4% added sugar range while many if not most of the independents are at 2% or less. If one was planning to make a reduction in sugar intake pizza crust would not be the most productive place to start, instead think of hamburger buns and hot dog buns at 10 to 13%, white bread at 6 to 8%, whole-wheat and multi-grain breads at 8 to 10%, sweet dough (cinnamon rolls for example) at 12 to 16% for wholesale and 18 to 22% for retail, Danish at 15 to 20% but could go as high as 25%, and then there are the cakes at 115 to 140%. The real winner if you want to reduce your sugar intake and still enjoy yourself is puff pastry (elephant ears and turnovers w/o a sugar topping) which comes in at only 2% dextrose (corn sugar). Even pretzels and bagels come in at 1 to 2% sugar. Check the ingredient legend on your favorite breakfast cereal too, mine shows sugar in the second most predominant

position.....I'm not so sure I'd be overly concerned about sugar in pizza crusts, there is a lot more low hanging fruit to pick. Why not just limit sugary soft drinks to not more than 16-ounces, that way we can refill our cups as many times as we want, or just buy two. I think it's good to show ingredient content on labels, but if we underscore sugar, what about salt? What about total fat content? Natural v/s artificial colors and flavors? Where does it end???

The only real solution as my aging eyes see it is in EDUCATION, gee do they even offer nutrition education as part of the "health" curriculum in primary and secondary education any more? A lot of schools don't even offer P.E. and as parents we have to get off of our butts and go outside and play with our kids (I play tennis with the grand children) and then we need to teach our kids that there is something else in life aside from the television, Game Boy, X-Box, and computer. Huhhh! I can't imagine why obesity is such a problem today when it wasn't when I was a kid. I guess it's just easier to mandate nutrition than it is to teach it.

Tom Lehmann/The Dough Doctor  
5257

#### **Prep Equipment / Re: Problem with my Hobart A-200**

I've got an exploded diagram of the A-200 mixer along with a parts identification listing for the diagram.

If you will send me your hard mailing address I'll be glad to send you a copy. If you can get back to me tonight yet at <thedoughdoctor@hotmail.com> I can have it in the mail tomorrow morning otherwise it will have to wait until next week as I'll be away from the office for a few days.

Tom Lehmann/The Dough Doctor  
5256

#### **Dough Clinic / Re: Help with my dough**

What was the finished dough temperature (temperature of the dough immediately after mixing).

Tom Lehmann/The Dough Doctor  
5255

#### **General Pizza Making / Re: How to make this pizza? | What kind of pizza?**

Manuel;  
Can you also provide a picture of the bottom of the pizza so we can see how it was baked?

Tom Lehmann/The Dough Doctor  
5254

#### **Dough Clinic / Re: Help with my dough**

For most pizza doughs made at home 70 to 75F is a good target finished dough temperaqture.

Tom Lehmann/The Dough Doctor  
5253

#### **Dough Clinic / Re: Dough too moist (Lehmann)**

I might suggest two things to help you.

- 1) Use a lower height container, one about 5" high should work well.
- 2) Allow the container to remain uncovered for about 2-hours after you put it into the fridge and then apply the lid to the container, actually, just a piece of foil lightly crimped over the top of the container works as well as or better than a snap-on lid. Another option is to oil the dough ball and place it into a "food bag" or bread bag,

twist the open end to form a pony tail and tuck it under the dough ball as you place it in the fridge, then kiss it good night and come back to it on the following day. I normally remove the dough from the fridge and allow it to warm at room temperature until it reaches 50F, then turn the dough ball out of the bag onto some dusting flour on the counter top, open into a pizza skin, dress and bake, but you can use other management procedures if you like.

Tom Lehmann/The Dough Doctor  
5252

**[General Pizza Making / Re: How to make this pizza? | What kind of pizza?](#)**

The pizza looks as if it has been baked in a cutter pan, probably without any oil in the pan.

Tom Lehmann/The Dough Doctor  
5251

**[General Pizza Making / Re: How to make this pizza? | What kind of pizza?](#)**

I forgot to add that from the cell structure it appears that the pizza skin was formed using a dough sheeter, fitted to the pan, crimp cut using a rolling pin over the top of the pan (cutter pan) and allowed to proof, my guess is about 30-minutes before dressing and baking. As for a dough formula you might try this one:

Flour: (bread type flour) 100%

Salt: 1.75%

Sugar: 2%

Oil: 2%

IDY: 0.4%

Water: (65F) 58%

Procedure:

Put water in bowl, add salt and sugar. Place the IDY in a small container of water at 95F and stir to suspend, allow to hydrate for 10-minutes, pour into the water in the bowl, add the flour and mix using a wooden spoon until the dough looks like wet oatmeal, add the oil and knead on the bench top just enough to work the oil in (about 2-minutes) then form dough into ball, oil the dough ball and place into a plastic bread bag, twist the open end into a pony tail and tuck under the dough ball as you place it into the fridge. On the following day turn the dough out of the bag onto a floured counter top, flour the dough ball and open into a pizza skin by your preferred method, dress and bake. NOTE: To use the dough on the same say it was made, after oiling the dough ball place it back into the mixing bowl, cover with a piece of plastic (a Walmart bag cut along the side and bottom works very well) no need to seal it tight, just drape it over the bowl. Allow the dough to ferment in the bowl for a minimum of 4-hours, then remove from the bowl and knead the dough for a couple minutes, form the dough into a ball, oil the bowl and place the dough ball back into the bowl to ferment another 4 to 6-hours (can be longer if necessary). Turn the dough out of the bowl onto a floured counter top, flour the dough ball and open into a pizza skin.

If you don't have access to a cutter pan just use any flat pizza pan (well seasoned), using your fingers crimp a raised edge around the skin (don't make it more than 1/4-inch wide/high, then set the formed dough aside to proof/rise for about 20-minutes (maybe a little less depending upon the room temperature), then dress the skin and bake.

You might want to lightly wipe your pan with oil just to make sure the finished pizza doesn't stick.

Tom Lehmann/The Dough Doctor  
5250

## [\*\*Dough Clinic / Re: Help with my dough\*\*](#)

Maintaining a consistent finished dough temperature is important only if one desires to replicate the dough/pizza again. For example, if you are managing the dough in a specific manner as most do, and one time the finished dough temperature is 90F you will get one result but if it is 70F another time you will get a different result. The actual dough finished dough temperature being targeted will vary with many factors but the factor having the greatest influence will be the way you are managing the dough, so it isn't so much the temperature itself, but rather the ability to consistently achieve it from one dough to the next. A good example of how important this is would be if one were to bulk ferment the dough for say, 12-hours prior to going into a cold ferment process. A finished dough temperature of 90F would most likely result in a grossly over fermented dough unless the yeast level was adjusted to a very low level to account for the high temperature. The next time the dough was made the finished dough temperature would be 70F with no other formula changes the dough would be fermented to a significantly lesser amount at the end of the bulk fermentation period. This is one of the reasons why we often hear that "I didn't do anything differently from what I've always done but my dough came out very different" This is why you will often see me ask what the finished dough temperature was, and more often than not the answer is either "I don't know, or what should it be?" both answers indicate that maybe temperature is wholly or partially to fault. One other reason for targeting a finished dough temperature below 90F is that when we get into the 90F range we open the door for some potentially unwanted bacterial growth in the dough prior to our yeast becoming the dominant micro-flora, the result can be the unexplained development of off or strange flavors.

Tom Lehmann/The Dough Doctor  
5249

## [\*\*Dough Clinic / Re: PZ-44\*\*](#)

As a reducing agent the sole function of PZ-44 is to mellow/soften the gluten for a finished dough that is easier to stretch and with reduced or no memory/shrinkage. The amount of PZ-44 needed to accomplish this will depend upon a number of factors such as dough temperature, dough management, dough absorption and flour protein content/gluten quality. Because of this it is impossible to give a hard and fast recommendation on how much PZ-44 should be used. My own recommendation is to begin low and work up until you see the effect that you are looking for. It sure beats using too much and ending up with a dough that can't be used. This is why I always say to begin at 1% and work up gradually in 0.25 or 0.5% increments until you see the desired effect. Keep in mind that the effect can be rather dramatic with dough that is bulk fermented for long periods of time. The main application of PZ-44 in pizza dough as I see it is to reduce/eliminate dough memory/snap back especially with dough that will be formed into skins using a dough press. It also works well to make the dough easier to open if the existing dough is too strong/stiff to open easily (normally, I'd rather address problems like that through dough management). Occasionally dough that is opened into skins by use of a dough sheeter exhibits undesirable memory characteristics and PZ-44 works well in this application to relax the dough after sheeting. Be careful about using the PZ-44 dosage for acrobatic dough in a regular pizza dough as acrobatic dough is made with a fairly low absorption, no yeast and a very strong flour so in this unique application the PZ-44 provides the extensibility needed while retaining as much dough strength as possible so the dough doesn't over stretch or tear during use. We used to make the dough for the PMQ Show competitions using

PZ-44. One last thing, it works great in making an emergency dough too.

I hope this provides a little insight into PZ-44.

Tom Lehmann/The Dough Doctor

5248

### **Dough Clinic / Re: PZ-44**

You begin to see it at around 90-parts per million (ppm) of L-cysteine, for the work that I did with PZ-44 back in the 70's we estimated that 2% PZ-44 contributed about 40 to 45-ppm L-cysteine so I would think that something close to 4% would do the trick.

Be aware though that at that level mixing time will be VERY SHORT, the dough will be sticky and keep getting stickier as time progresses. Mix, target finished dough temperature (70 to 75F), scale, ball, oil the ENTIRE dough ball, set aside to rest until the dough ball is soft and pliable (you won't need to wait very long), form onto a solid baking platform (like a coupe pan), give 5-minutes to rest and par-bake.

Dress par-baked crust as desired and finish baking at 450F. A toaster oven is what we used at the time to finish baking.

Tom Lehmann/The Dough Doctor

5247

### **General Pizza Making / Re: How to make this pizza? | What kind of pizza?**

From the looks of it I would call it a "Domino's" style. The crumb structure is too tight for any of the styles you mentioned.

Tom Lehmann/The Dough Doctor

5246

### **Hearth Ovens / Re: Type 1 hood?**

A good person to post this question to is George Mills at the PMQ Think Tank.

<[www.pmq.com](http://www.pmq.com)>

Tom Lehmann/The Dough Doctor

Keep in mind though, if your city code requires a hood, a hood you shall have.

5245

### **Pizza Toppings / Re: Unchopped basil**

I add mine after the pie is baked but I then put the pizza back into the oven just long enough to wilt the basil leaves and release its wonderful aroma.

I use only full basil leaves as I want to have my pizzas with a layered flavor, this means that each bite will be a little different from the last bite. My own personal take is that there is nothing more boring than a pizza where every bite tastes just like the last one.....if that's what I'm looking for I can always go to P.H, Dom's., L.C., P.J's, just to name a few.

Tom Lehmann/The Dough Doctor

5244

### **Chitchat / Re: Garden 2016.**

We have gone through all of our scallions and we're now turning to the leeks which are ready for picking, but we just planted our second crop of onions so we don't run out during the summer. We have been picking peppers for a couple of weeks now, radishes are gone as is the spinach (made a few great spinach pizzas with it) we were able to harvest it three times this year. Now we're turning to the beet greens and I'm getting ready to make a pizza with beet greens to replace the spinach...that'll be a first for me. Snow peas are doing great and we have been

using them in salads along with the black seed Simpson lettuce. As black seemed to be the "in" color this year we planted several black cherry tomato plants as well as two black bell pepper plants. Let's see, we have black, red, yellow and green, I think we have all of the colors for sweet bell peppers covered this year. Vine plants, cucumbers, butternut squash, acorn squash, and watermelon are all doing extremely well this year. First potatoes (Yukon Gold) will be ready for harvest in about two weeks. We planted some heritage variety tomatoes, vines are taller than me and they're setting fruit like crazy. Also a variety of other large tomato varieties which are doing well too. This has been one of the best springs for our garden in a number of years...it started out wet and cool and before the fungus could set in it dried up and went to dry and warm but not hot, now we're in the dry and hot period which the garden plants just love. You sure get spoiled in a hurry having a fresh produce center in your back yard.

By the way Norma, the basil is going absolutely crazy! We have been harvesting leaves and turning it into basil pesto for the freezer just to keep up with it.  
Tom Lehmann/The Dough Doctor  
5243

### **New Forum Members / Re: Greetings from Venezuela**

Welcome to the site!

Peter mentioned using a good bread type flour which I believe you have available to you in Venezuela, or at least you used to have it readily available. I was a consultant to David Epplebaum and developed all of the dough formulas for his pizzeria chain "Pizza King" which was copied after Pizza Hut, in fact, many of his managers were pirated from Pizza Hut stores in the Miami, FL region.

Please tell us something about how you are presently making your pizzas, we're all here to help, compare notes and learn from one another.

Tom Lehmann/The Dough Doctor  
5242

### **Dough Clinic / Re: Instructions for making dough using formulations**

Formulas for different type of pizzas will typically employ different methods of dough management.

If you would like to have a very basic home made pizza dough formula/recipe and procedure I've got one posted in the PMQ Recipe Bank at <[www.pmq.com](http://www.pmq.com)> just go into the Recipe Bank and use "home made pizza" for your search. I just finished making two pizzas tonight using that same recipe and procedure. Because I made the pizzas in a thin crust format I baked the pizzas on a pizza stone (preheated for 1-hour) at 550F.

Both pizzas were absolutely great!

Tom Lehmann/The Dough Doctor  
5241

### **Dough Ingredients / Re: Stupid flour question**

The amount of protein indicated is for the portion size indicated. All you need to do is to divide the grams of protein indicated for the portion size by the indicated portion size and multiply by 100, this will give you the percent protein content for that particular flour. Example: serving/potion size:30-grams, grams protein: 4-grams. Divide 4 by 30 and multiply by 100.  $4 \div 30 = 0.13333333 \times 100 = 13.3\%$  protein content. If this is different from the format of your label let us know and include a photograph of the nutrition label.

Tom Lehmann/The Dough Doctor  
5240

## [\*\*Pizza News / Re: First they came for the...\*\*](#)

Actually, to an extent wood and coal fired ovens are banned in New York City. They have grandfathered in the existing ovens but will not permit new ovens to be installed. The state of Colorado requires the use of catalytic converters on wood burning fireplaces and furnaces. I can't speak to the other states but those are two that I'm aware of.

Tom Lehmann/The Dough Doctor

5239

## [\*\*Pizza Ovens / Re: Indoor wood fired oven\*\*](#)

Norm;

Also be sure to check to see how, if at all, the oven might affect your home insurance rates. We have a wood burning furnace for back up heating and it impacts our insurance rate, there are also some states where the insurance is much more strict when it comes to anything burning wood or coal. A number of years ago I worked with a pizzeria in Iowa, I believe, and we were planning to install a wood fired oven (Woodstone) but quickly found out that since the building was a wood frame structure the cost of insurance was going to be prohibitive. The solution for us at the time was to place the oven outside of the building in its own protective metal (non-combustible) shed, tear out a portion of the wall and replace it with a brick wall with a large opening allowing access to the oven. It actually worked out pretty well, the wall looked like the oven was built into it and it freed up a huge amount of space for us. This was in a commercial application so I don't have any idea of what the impact might have been if it were in a residential application.

You just don't want any after the fact surprises.

Tom Lehmann/The Dough Doctor

5238

## [\*\*General Pizza Making / Re: \\$5 for a dough ball at a local pizza shop?\*\*](#)

I totally agree with Craig, he is "spot-on".

Tom Lehmann/The Dough Doctor

5237

## [\*\*Dough Clinic / Re: Bagging dough balls\*\*](#)

As you will be using a home "fridge" you will need to make a small but important change. You want to have a targeted finished dough temperature in the 70 to 75F range. Even if it ends up in the high 60's that won't be a problem. IMMEDIATELY after mixing scale and ball the dough, oil the dough balls and drop into individual food bags, be sure to twist the open end into a pony tail and tuck it under the dough ball as you place it in the fridge. Leave the dough balls in the fridge until you're ready to transport them. Once you're at the event remove the number of dough balls that you will need to use during the first hour, allow them to temper until they reach 50F, they are then ready to use. Keep pulling dough balls from the cooler about every 30-minutes so you will have a steady supply of dough balls ready to be opened into skins. The dough will increase in volume by about 50 to 75% during the initial chilling phase.

Oh yes, one more thing to keep in mind, since you're using a home fridge the length of time needed for the dough balls to reach 50F at the event may only be an hour or less.

No need to be overly gentle with the bagged dough balls as they will hold their shape just fine. To remove the dough ball from the bag just invert the bag over a

bowl or tray of flour allowing the dough ball to fall into the flour then proceed to open into a pizza skin.

Tom Lehmann/The Dough Doctor  
5236

**Dough Clinic / Re: Soap in my starter!!!**

Totti;

How much are we talking about? 10-ml into 250-ml. is one thing while 10-ml. into 1-L. is a totally different situation. In any case unless the amount that got contaminated is very small it is entirely possible that you might be able to culture and purify the Ischia to get it back to where it was. Check around to see if you can find a whisk with a solid handle like is required for restaurant use. If you have access to a restaurant supply store check them out, or you might be able to get one off of the internet.

Tom Lehmann/The Dough Doctor  
5235

**Newbie Topics / Re: Wood issues.**

Possibly the birch that you're burning is not burning hot enough, hence the carbon/soot accumulation. Maybe try some oak, which burns very hot, to see how it performs.

Tom Lehmann/The Dough Doctor  
5234

**Dough Clinic / Re: knead dough and stand mixer problem please help**

The dough is much too small for the bowl capacity. With a small size dough it is not uncommon to use a higher speed for mixing the dough.

Tom Lehmann/The Dough Doctor  
5233

**New York Style / Re: Tossing dough and hydration levles**

Here is a good dough formulation that tosses well. How well you ask??? Many years ago Tony G. hung on of the skins made from this dough up in our pizza lab rafters (20-feet high) during our AIB pizza seminar.

Flour: 100% (strong bread type flour/12.2 to 12.8% protein content)

Salt: 1.75%

Sugar: 2%

Oil: 2%

IDY: 0.375%

Water: 58% (65F)

Water is added to the bowl first, then the salt and sugar followed by the flour and IDY.

Mix dough for about 2-minutes until you don't see any dry flour in the bowl then add the oil and mix 1-minute in low speed.

Change to medium speed and mix for 10-minutes.

Target finished dough temperature is 80 to 85F.

Immediately scale and ball.

Place in dough boxes and wipe the top of the dough balls with oil.

Immediately take to the cooler and cross-stack for 3-hours.

Down-stack and allow to cold ferment for a minimum of 24-hours before using.

If you want to do it more like PJ's cold ferment for 3-days.

To use the dough, remove from the cooler and allow to warm to 50F and begin

opening the dough balls into skins.

You can also see this dough in use by going to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and viewing their pizza videos.

This should help in getting you started, once you have mastered the technique you can begin making changes to the dough formulation and/or dough management procedure to make different types/styles of pizza.

Tom Lehmann/The Dough Doctor

5232

### **Dough Clinic / Re: ADY instead of IDY for Lehmann NY Style Pizza?**

No, when used at the correct substitution levels any of the common yeast types (ADY, IDY or CY) can be used interchangeably with no changes to how the dough is handled or managed.

Some things to remember about yeast:

In addition to the above, when the dough is MACHINE MIXED IDY and CY are best added to the dry flour.

ADY must always be hydrated in a SMALL portion of warm (100F) water for about 10-minutes just prior to use whether hand or machine mixed.

When the dough will be mixed/kneaded by HAND both ADY and IDY must be suspended in 100F water for 10-minutes before addition to the dough.

CY must be suspended in the dough water in the mixing bowl (it does not need to be warm water) The rest of the ingredients can be added right away and mixing started as soon as the CY is suspended (no need to wait as for IDY or ADY).

Tom Lehmann/The Dough Doctor

5231

### **Dough Ingredients / Re: Getting aways from Frozen Dough balls and gonna make it fresh?**

A very good "go to" flour is Pillsbury's Bread Flour which is available at most supermarkets. This flour was put up for consumer use in bread machines. If I remember correctly it has a protein content of 12% or a little more. If you're working in bakers percent here is a little trick:

1) Find the sum of all of the ingredient percentages.

2) Divide this number by 100.

3) Take the amount of dough that you want to make (express the amount in ounces) and divide it by the number you got in #2 above, this will give you the amount of flour (in ounces) needed to make your desired dough weight.

Pretty nifty!

Tom Lehmann/The Dough Doctor

5230

### **Chitchat / Re: Food Quotes**

"I've never had a pizza I couldn't learn to like"

Tom Lehmann/The Dough Doctor

"The only difference between a really, really really really good cookie and a really, really, really, really bad cookie is that it takes just a little bit longer to eat all of the really, really, really, really bad cookies"

Tom Lehmann/The Dough Doctor

5229

## [\*\*Dough Clinic / Re: Dough ball storage in pizzeria\*\*](#)

Store them refrigerated until about 2-hours prior to use, then pull and allow to warm to 50F before opening into pizza skins. Once you begin opening the dough balls that have reached 50F they can be left out at room temperature (70 to 75F) for 2.5 to 3-hours. Dough that has not been removed can be stored for up to 3 or possibly 4-days with effective dough management procedures in place.

Tom Lehmann/The Dough Doctor  
5228

## [\*\*Dough Clinic / Re: Dough ball storage in pizzeria\*\*](#)

The act of "opening" a dough ball into a pizza skin is taking the dough ball and forming it (by any of a number of different ways) into a flat dough piece which will be "dressed" (toppings added) and baked to become the crust portion of the pizza. I can't imagine anyone leaving dough balls out at room temperature all day in a pizzeria. Due to the continuing fermentation of the dough there would be a significant change/variation in pizzas made during the course of the day, not exactly the thing that instills consumer confidence in your pizzas.

Tom Lehmann/The Dough Doctor  
5227

## [\*\*Dough Clinic / Re: Soap in my starter!!!\*\*](#)

From what it sounds like, I'd say that it should be just fine after a few feedings. If you have not already done so you might want to give a lot of thought to keeping two starters, ideally in different locations (like backing up data on the Cloud), or if you can't do that you should have two separate containers in the fridge (you can rotate using one, then the other) so if you should lose one you will still have the other one to use as an inoculant to start a new one.

Tom Lehmann/The Dough Doctor  
5226

## [\*\*Dough Ingredients / Re: Getting aways from Frozen Dough balls and gonna make it fresh?\*\*](#)

If you do your part the dough most definitely will get better with a longer period of cold fermentation. My doughs are always in their "sweet spot" on day 3 after mixing.

Tom Lehmann/The Dough Doctor  
5225

## [\*\*Dough Clinic / Re: Bagging dough balls\*\*](#)

Using a Hobart bench top mixer like an A-120 or larger all the way up to an 80-quart (M-800/M-802) use 60F water to achieve a finished dough temperature in the 70 to 75F range assuming you will be mixing the dough at medium speed for 8 to 10-minutes after the oil addition. Do you have a freezer? If so, place your first batch in the freezer, when the second batch is bagged, take the dough balls from the freezer and place them in the fridge and put the new dough balls in the freezer. This is what I refer to as "super cooling" the dough balls. It works very well considering the inefficiency of a home fridge. If you do this you can stack them in the fridge just about any way you want. If you do not have a freezer I don't recommend stacking more than two high.

Tom Lehmann/The Dough Doctor  
5224

## [\*\*Dough Clinic / Re: Dough ball storage in pizzeria\*\*](#)

The length of time that the dough balls can be left out between reaching 50F and using them to make your skins will vary with the temperature of your kitchen. Even in China, India, Korea, and Turkey where the kitchen wasn't air conditioned we were able to successfully leave them out for up to two hours. Any dough balls that cannot be held any longer should be opened into skins, placed on wire pizza screens and placed in a wire tree rack in the cooler. This will allow the dough to chill quickly thus allowing you to hold them through the entire day. To use these pre-opened skins, just remove them from the cooler and allow to temper at room temperature for about 20-minutes, then remove from the screen and use the same as any just opened skin.

The key element in tempering the dough balls after removing them from the cooler is allowing them to reach a temperature of 50F/10C. If this is done at room temperature or in a non-heated cabinet really doesn't have much impact upon the dough, however putting the dough balls into any heated cabinet to reduce the time needed for the dough balls to reach 50F/10C should not be encouraged as the dough balls do not warm up uniformly, the outer portion of the ball will be warmer than the core which will result in the balls having a very short time in which they can be used. If you ever find yourself in a position where you have run out of dough for whatever reason, you can safely remove a single box of dough balls, then using your hands flatten each dough ball in the box so it looks something like a hockey puck, be sure the box is covered and the dough pucks are lightly oiled to prevent drying and place the box of flattened dough balls on top of your oven where they will warm rather quickly and be ready for use inside of 30-minutes, just be sure the top of the oven is not so hot so as to damage the dough box. Keep in mind though that this is ONLY an emergency action and those rapidly warmed dough balls will need to be used in one way or another soon after you begin opening them into skins.

Tom Lehmann/The Dough Doctor  
5223

### **Dough Clinic / Re: Bagging dough balls**

Since you will be transporting the bulk dough back home from 30-miles away you might want to use water at 50F to achieve a finished dough temperature closer to the 60 to 65F range. You certainly don't need the dough to begin fermenting at an accelerated rate during the drive home.

The difference isn't so much in how the dough handles at between 50F and 70F but in how much time you then have to get the rest of the dough balls opened into skins, dressed and into the oven. At 50F the fermentation rate is still a bit sluggish so the window of opportunity to use the dough is greater, like I've been saying, typically in the 2 to 3-hour range but if you don't begin to open the dough until it's 70F the rate of fermentation is much faster thus greatly diminishing that window of opportunity to use the dough balls without getting changes to the finished crust due to the more greatly fermented dough balls. While this is not an issue for home pizza making or even pizza making on a very limited basis such as in making "bar pizzas" where only a couple of pizzas are made at any one time, it gets to be a huge problem in a pizzeria where we have upwards of 30 to 100 dough balls sitting out and not knowing how many we will use or how fast they will be needed/used so we need the greatest time period in which to use the dough without imparting inconsistencies in the finished crust. On a small scale those inconsistencies may be overlooked, but in a pizzeria those inconsistencies can influence customers and their perception of the pizza which can adversely impact the pizzeria and all who work there. In the pizzerias that I work with we find a crust with the characteristics that the customer wants and then we do everything in our power to

maintain those characteristics. I have been called in to assist stores when they change from one type of flour to another or from one manufacturer to another just in case something gets lost in the translation I'm there to get them back on track as quickly as possible. No pressure on me at all.

Tom Lehmann/The Dough Doctor  
5222

### **Dough Clinic / Re: Dough ball storage in pizzeria**

Lupin;

A thermometer is used to measure the temperature of the dough/dough ball. Since thermometers are available in different temperature ranges it is best to use a thermometer where the temperature you will be looking for is about in the middle of the temperature range. In any case a good thermometer will typically have a high end of something between 125 and 250F/52 to 121C. Electronic thermometers are the exception to this rule, if an electronic thermometer is used it will almost always be sufficiently accurate over its entire temperature range for our use.

PETER: I don't have any file photographs of a wire tree rack, or a reach-in and walk-in cooler, can you please help?

Tom Lehmann/The Dough Doctor  
5221

### **Shop Talk / Re: New Opening - Location question**

What is the breakout of dine in and delivery, carry out? This can have an impact upon the location. Have both sites been approved by the franchising company? Are both sites equally accommodating to the wood fired oven?

Traffic flow: Easy in easy out?

Proximity to potential customers: local shopping, business centers, factory, school, etc.

Hundreds of questions to be asked, these are but a few.

You might also want to consider making a post in the PMQ Think Tank <[www.pmq.com](http://www.pmq.com)> as the Think Tank is visited mostly by pizzeria operators.

Tom Lehmann/The Dough Doctor  
5220

### **Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

Carl;

The dough really looked quite good. The only change I might suggest is to pour a very small amount of oil down the inside of the bowl about 10 or 15-seconds before stopping the mixer. This will make the dough easier to remove from the mixing bowl and it won't hurt the way the dough balls up. It looks like you have enough dough there to make possibly three pizzas? If this is the case you should pull one dough ball after 24-hours (approx.) and then again at 48 and 72-hours to see which cold fermentation time works best for you. For me and the way that I handle/manage the dough I find that the "sweet spot" is at 48-hours. It performs OK at 24-hours but still shows some signs of being under fermented (other love it at 24-hours, to each his own). I like your mixer by the way. :)

Tom Lehmann/The Dough Doctor  
5219

### **Dough Ingredients / Re: Low protein levels a concern for Kansas wheat crop**

Peter;

Most, if not all of the major pizza chains use flour in the 12% protein range

(typically 12.2 to about 12.8%) so the low average protein of the KS wheat crop this year will not impact anyone directly, but it will impact them indirectly by creating a greater market for HRS wheat (hard red spring) as the demand for HRS will increase due to its need as a blending wheat (high protein wheat is commonly blended with a low/lower protein wheat to improve the quality of the flour milled from the lower protein wheat or to achieve specific flour performance characteristics) this will most likely impact the cost of those using flour in the 12% protein range which is typically made from HRS. It will not impact any of the major chains as they purchase so far ahead but it will most likely have an impact upon the price that the smaller regional chains and pizzeria operators pay for their flour. This is especially true for the immediate time as we are working from last years HRS wheat harvest and the new HRS harvest will not come in until late August or September, if the HRS harvest is good prices will probably remain stable or even come down a bit BUT if it does not meet expectations (based on domestic and export needs) we can probably look for higher flour prices come this fall which will remain with us until this time next year. I might be wrong on this but I think the reason for the low protein content here in KS is due to the very mild and somewhat wet winter that we experienced. Typically, when the protein content of the wheat goes down the yield increases, I don't know if that was the case this year or not as I am no longer doing any crop surveys.

Tom Lehmann/The Dough Doctor  
5218

#### **Shop Talk / Re: New Opening - Location question**

Like I said, hundreds of more questions. You will probably get a better answer as indicated at the PMQ Think Tank as there are mostly operators who have gone through this anything from once to multiple times, and depending upon the type of pizzeria that one is planning to open (dine-in, carry-out, delivery, or DELCO) there are people there most qualified to provide direction in selecting a site for the specific type of pizzeria in question. If anyone is not familiar with the PMQ (Pizza Marketing Quarterly) web site at <[www.pmq.com](http://www.pmq.com)> and need help in the pizzeria or commissary arena I would highly encourage you to visit the Think Tank. Like here at Pizza Making it is a friendly site, free of charge, and there is always someone willing to help.

Tom Lehmann/The Dough Doctor  
5217

#### **Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

Thanks Carl, I look forward to reading/seeing your results.  
Tom Lehmann/The Dough Doctor  
5216

#### **Dough Ingredients / Re: Low protein levels a concern for Kansas wheat crop**

Peter;

Hard red winter wheat (HRW) typically has a lower protein content and produces a lower protein content flour than hard red spring wheat (HRS) and most commercially made pizzas are made from the stronger flours primarily of HRS origin, this is why I don't see the HRW issue here in KS impacting the pizza flours in a significant way at this time. Additionally, we have to consider the HRW crop quality coming in from the other HRW states like Texas, Oklahoma, Colorado, and Nebraska. If they are all or mostly in line with typical HRW protein expectations the KS crop will be blended with HRW from other states (cheaper than using HRS)

to bring the quality up (protein content as well as baking performance). The high protein content specification demanded by many of the chains is due to their desire to have a consistent quality/performing dough from day 1 through day 7 when properly managed by tight company standards.

Tom Lehmann/The Dough Doctor  
5215

### **Dough Clinic / Re: Dough ball storage in pizzeria**

The common practice is to place the opened skin on a screen and slide it into the wire tree rack and then cover the entire rack with a large plastic bag. No need to worry about closing the bottom of the bag unless you experience problems with the skins developing a crust on them, in that case you will need to fold the open end of the bag under the rack to hold it closed.

You can normally store skins made with up to 65% absorption on screens but since all doughs are different you will need to experiment with a few to see if it works for you without the dough flowing into the screen openings. If you find that the dough flows into the screen openings place a piece of lightly oiled parchment paper on the screen prior to placement of the skin. You can use sheet pans instead of pizza screens, it is not as efficient but it does work. Here is the procedure for using sheet pans:

- 1) Store the sheet pans in the cooler so they are cold.
- 2) Place the skins on the sheet pan with each skin on its own individual piece of parchment paper, this will allow you to remove the skins one at a time for ease of handling.
- 3) Place each sheet pan into individual plastic bags and close by folding the open end of the bag and tucking it under the sheet pan to hold it closed.

An alternative to using individual plastic bags is to place the sheet pans into a rack or cabinet made for holding the sheet pans then close the door on the cabinet or cover the rack with a large plastic bag or specially made rack cover.

Tom Lehmann/The Dough Doctor  
5214

### **Pizza News / Re: Bloomberg Video: Pizza Making Robots Are Coming for Domino's**

Peter;

An now we also have 3-D printers for making pizzas too! Any guesses of what a pizzeria might look like in 25-years? From what I've heard the things that are pushing the "mechanization" of not just pizzerias but all box type fast food chains is (1) Increasing operating costs, (assuming this might have something to do with the new minimum wage and health care regs.) (2) Availability of the technology (it's there, and the price is right, why not use it?) (3) The novelty factor (4) Expansion of marketing horizons (The target appears to be non-manned "food kiosks" where the customer selects from a menu, pays, and automatically gets food prepared by the machine) We already have a pizza machine that does this so the "ice has been broken" for more things to come.

Good, bad or indifferent, I think this is the new future for fast food.

Tom Lehmann/The Dough Doctor  
5213

### **Neapolitan Style / Re: Anyone tried deep frying a neo?**

Anything like the Celeste brand/Pillsbury frozen pizza? They were made using a fried crust. Also, a few years back there was a flurry of interest in making pizzas using fried Indian bread (common to S.W. USA) as a base.

Tom Lehmann/The Dough Doctor  
5212

**Dough Clinic / Re: Why am I burning my pizza bottom?**

It would help to know what your dough formulation/recipe is but for starters, make sure the dough doesn't contain and sugar, milk or eggs. Your stone might also be too close to the heat source (needs to be raised up higher). Why are you putting corn meal on the baking stone? No reason to do so.

Tom Lehmann/The Dough Doctor  
5211

**Newbie Topics / Re: Can someone help me please?**

Can you share your dough formula/recipe and dough making procedure?

Tom Lehmann/The Dough Doctor  
5210

**Newbie Topics / Re: Can someone help me please?**

It could also be that the amount of yeast was mis-scaled. A good trick to test the dough for yeast is to tear off a small portion, form it into a small ball (about the size of a large marble) and drop it into warm water. If it floats or floats in ten minutes yeast is present, if it doesn't float...Oops!

Tom Lehmann/The Dough Doctor  
5209

**Chitchat / Re: Garden 2016.**

We just harvested the first of our container grown potatoes with a yield of nearly a full 5-gallon bucket from the single container that we harvested. Also got the second harvest of basil which gave us another full quart of pesto (we call it pesto but it really isn't, instead it's only basil and olive oil pureed, we found that when we made real pesto the pine nuts or walnuts or pecans would turn rancid in the freezer before we could use it all during the winter, this stuff has kept well in the freezer for up to two years (we found a lost container of it that was two years old and it was still fresh). Best part of growing basil is harvesting it, oh the aroma!!! The tomato plants are giving up the early tomatoes but it will still be about two weeks before the BIG tomato harvest. Pepper plants are loving our hot and dry weather here in Kansas and are rewarding us with a continual supply of peppers. Having fresh produce is one of our great joys of summer, and nothing beats harvesting your own pizza toppings which will be on the dinner table in less than an hour.

Tom Lehmann/The Dough Doctor  
5208

**Pizza News / Re: Bloomberg Video: Pizza Making Robots Are Coming for Domino's**

I think if you go to <[www.quantumtechnicalservices.com](http://www.quantumtechnicalservices.com)> you'll be able to see the same type of equipment as seen in the video. There is nothing new about automated equipment to open a dough ball into a pizza skin one at a time (Rheon has a pretty slick one) and sauce applicators are a dime a dozen (do you want a waterfall or target sauce applicator?), loading a pizza into an oven....ya gotta be kidding! Where are the "robotics" here? Automated yes, but robotic? We use robotics in the baking industry to place product in the cases, close and seal the case, place the cases on pallets then send them on their way to a stretch wrapper. In the pizza industry robotics are used to place the dough balls into the plastic

dough boxes/trays just prior to going into the cooler...what a sight it is too!  
Tom Lehmann/The Dough Doctor  
5207

**New York Style / Re: Heikjo's first attempt at NY style Lehmann (12" on stone)**

I agree that the pizza crust shown in the pictures appears to be under baked and not very well browned. In addition to loss of crust crispiness and rigidity the lack of crust color development also results in a loss of flavor in the finished crust. Are you sure you are leaving the stone in the oven long enough to thoroughly heat up before putting the dressed skin onto it? I typically allow one hour to heat the stone. Move the stone closer to the heat source if you can as this will provide greater bottom heat (pizzas are baked from the bottom up). Try to not open the oven door for at least 5-minutes after you place the dressed skin on the stone. When I make pizza my wife is in charge of the oven door, she opens it, I peel the dressed skin onto the stone and as soon as possible she is closing the oven door. The reason for us doing it this way is that we feel it helps to minimize heat loss from the oven through the open door. Much of those first few minutes after the door is closed the oven chamber is coming back up to temperature, this is why we don't open the door for at least 5-minutes, and then we just crack the door open for a peek.

Tom Lehmann/The Dough Doctor  
5206

**Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

Carl;  
Thank you for sharing the photographs. The pizza looked great! The next time you make it you might try leaving one dough ball cold ferment for 72-hours (3-days) before using. This will help you to know the limits for cold fermentation of your dough and it should provide some additional flavor to the finished crust. I've taken the dough out to 96-hours (4-days) and still got reasonably good results from it. It will definitely go longer than that but I think I begin to lose consistency, one time It will go for 5-days without a problem but the next time the dough is sticky and difficult to handle, it still makes a good pizza but you know the dough isn't handling as well as it should.

Tom Lehmann/The Dough Doctor  
5205

**Chitchat / Re: Electric deck oven temperatures**

What kind of deck does the oven have?  
Tom Lehmann/The Dough Doctor  
5204

**New York Style / Re: Heikjo's first attempt at NY style Lehmann (12" on stone)**

Placing the pizza higher up in the oven will get you more top heat to the pizza but won't help the bottom bake.

Tom Lehmann/The Dough Doctor  
5203

**Chitchat / Re: Electric deck oven temperatures**

And what does your dough formula look like? How are you planning to manage the dough? What kind of mixer do you have? Assuming you're planning to bake directly on the oven deck?

Tom Lehmann/The Dough Doctor  
5202

### **Chitchat / Re: Electric deck oven temperatures**

Here goes:

Put (65F) water in mixing bowl, add salt and sugar, add flour and IDY then mix at low speed until the flour is hydrated (about 2-minutes) add the oil mix one more minute at low speed then mix 10-minutes at medium speed or until the dough has a smooth, satiny appearance. You are looking for a finished dough temperature in the 80 to 85F range. Immediately take the dough to the bench, scale (400-g. for a 12-inch pizza), ball, place in dough boxes, wipe the top of each dough ball with oil, cross-stack in the cooler for 2.5-hours, down-stack and allow to cold ferment for 24-hours. To use the dough balls: Remove from the cooler keeping them covered. Allow to warm to 50F then begin opening the balls into skins by your preferred method. Dough balls will remain good to use for about 3-hours after they reach 50F. Any remaining dough balls in the cooler will keep for up to 72-hours.

Bake at 525F/274C for about 7-minutes. This should get you started.

Tom Lehmann/The Dough Doctor  
5201

### **Dough Ingredients / Re: Whole grain flour adjustments**

Pretty easy if you're going to make 100% whole grain pizza crusts.

You will need a scale and a small bowl.

Weigh out any amount of flour into the bowl (I like to use 100-grams).

Add water to the flour and stir to incorporate. The flour should look something like breakfast oatmeal.

Set everything aside and allow the flour to hydrate for about an hour (not less than 30-minutes).

The flour will look dry and lumpy, add more water and stir in until it looks like oatmeal again.

Allow the flour to hydrate again.

Keep doing this until the flour-water mixture retains the oatmeal appearance after an hour of hydration time.

Weigh the flour-water mixture and subtract the tare weight of the bowl.

Now subtract the weight of flour that you started with. This will tell you how much water you had to add.

Divide the weight of the water by the weight of the flour and multiply by 100. This will give you the total absorption percent of the flour, now subtract 5% from that number and that is the absorption you will need to use when making your dough. Failure to follow this procedure in determining generally results in a finished crust more like cardboard than a pizza crust.

NOTE: The finished (mixed) dough will be slightly tacky, don't worry as this is normal for a whole grain dough (if it isn't tacky your absorption is too low). The dough will continue to hydrate during the cold fermentation period and the dough balls will feel pretty normal after the cold ferment period. Whole grain doughs don't hold up very well due to the cutting action of the bran flakes on the gluten film so it's best to limit the cold fermentation to not more than 24-hours.

I've covered this procedure in one of my articles (In Lehmann's Terms) in PMQ Magazine at <[www.pmq.com](http://www.pmq.com)>

Tom Lehmann/The Dough Doctor  
5200

### **Stones/tiles/steel, Pans & Accessories / Re: Anodized aluminum pans**

You can get just about any size, shape, weight/thickness, perforated or non-perforated, dimension, black anodized or bright anodized pan from American Metalcraft, Inc. at <[www.amnow.com](http://www.amnow.com)>. They also carry a lot of other nifty things for pizza production too.

Tom Lehmann/The Dough Doctor  
5199

### **[Newbie Topics / Re: Beginner recipe for hand kneaded, home oven pizza?](#)**

You might also want to have an electronic digital scale for weighing the ingredients too. You should be able to find one through the Internet at a reasonable price. Here in the U.S. we can get them for around \$30.00 U.S. A 500-gram capacity scale will work but a 1-kg./1,000-gram capacity would be better. Also, the larger the dough size the easier it is to get decent scaling accuracy. Remember, you will most likely be using a cold fermentation dough management procedure so you will be able to have dough in the fridge ready for use over a several day period of time, but if you get tired of eating pizza (I can't believe that would ever happen) you can always open one of the dough balls very thin, brush it with melted butter, sprinkle with a cinnamon-sugar mixture and bake until golden brown, enjoy as is or make a powdered sugar-water icing (cup of powdered sugar, add hot water (a few drops at a time) and stir to make a thick, honey like consistency then drizzle over the skin after it has cooled for 2 or 3-minutes. You can also add pieces of fresh fruit and nuts to "up" the ante.

Tom Lehmann/The Dough Doctor  
5198

### **[New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)**

Heikjo;

I got to thinking about what you said about using the fan for convection baking. That might be part of the problem too. With the fan running the heat will not be impinging directly upon your stone to give you a stronger bottom bake. You might want to try baking your pizzas without turning the fan on to see if it helps.

Tom Lehmann/The Dough Doctor  
5197

### **[Off-Topic Foods / Re: Freshly Picked Apricots](#)**

I'm envious! Our apricot crop as well as all of the peach, and pear crop got zapped by a late frost this spring :( we will be getting a few apples but not by the bushel as we normally get.

We turn most of our apricots into freezer preserves, fast and easy to do.  
Tom Lehmann/The Dough Doctor  
5196

### **[New Forum Members / Re: Sick of the Chains](#)**

Oh, so YOU'RE the Guinea Pig.....Let's see if Dad can make us a good pizza!  
We'll try to help you develop a new reputation as a great pizza maker with your family, and I'm sure you'll have fun doing it too.

Welcome to the site! :)  
A few things to keep in mind, there is no such thing as providing TMI on what you are doing or trying to accomplish. Formulas and procedures are an important part of getting the best help from everyone here, and where appropriate pictures, like they say, "are worth a thousand words".  
Tom Lehmann/The Dough Doctor

5195

**[Prep Equipment / Re: Just purchased a sheeter](#)**

Norma;

Now you're ready to begin making cracker type crusts.

Tom Lehmann/The Dough Doctor

5194

**[Prep Equipment / Re: Just purchased a sheeter](#)**

While they can be the same or similar more typically the dough that is to be formed into skins by one of the pressing methods (hot or cold) will contain some reducing agent to both improve the pressing properties of the dough as well as to address any memory/snap-back issues common to pressed dough. The dough sheeter on the other hand really doesn't handle soft and extensible doughs very well as they are difficult to handle and don't always pull through the sheeting rolls all that well resulting in oblong shaped dough coming from the sheeter after the second pass. When it comes to forming a thin dough skin the sheeter does a much better job of making a very thin dough skin than a hot or cold press.

The finished dough temperature is for controlling your dough management procedure so it is a moot issue, BUT if we are talking about commercial (wholesale) production of pressed and sheeted dough then there is a significant difference in dough temperature. Commercially sheeted doughs are in the 60 to 75F temperature range while hot pressed doughs are in the 80 to 90F range and cold pressed doughs normally run in the 90 to 100F range, of course none of these doughs receive any appreciable fermentation prior to forming so these temperatures have a significant impact upon the way the dough performs during the forming operation. Mind you, when I say "commercial" I'm referring to dough production rates of 4 to 7-thousand pounds of dough per hour.

Tom Lehmann/The Dough Doctor

5193

**[Chitchat / Re: Leoparding, acrylamide, cancer](#)**

And don't forget the air we breathe! Just think of all the pollutants in it, live in a big city/major metropolitan area? Now please explain to me why I should be overly concerned about acrylamide? It's been around ever since the first troglodyte found a crispy critter after a fire and decided that it tasted better than raw meat. But what about the acrylamide? My guess is that even in modern times the parasites and bacteria found in raw meat would kill us MUCH faster than the cancer caused by the acrylamide. I'll take my chances with the acrylamide and continue to stay away from the front bumper of moving cars, trucks and buses as part of my plan to live a long, productive and healthy life. For those who might be wondering, so far my plan has been working quite well for me. You'll have to excuse me now as my wife just made some fried turkey strips (from my successful turkey hunt this past spring) for lunch and I don't want it to get cold. :)

Tom Lehmann/The Dough Doctor

5192

**[General Pizza Making / Re: Firewood Jackpot](#)**

You got a great deal!

Where I deer hunt in Arkansas there is a lumber mill just across the valley from me where they process nothing but hardwood. Local residents go to the mill regularly to buy the trim scraps (devoid of bark) generated when they trim the boards to length. A pickup load (1-rick, more or less) costs almost nothing. Take a look

around you, if there is a lumber mill close by you might want to talk to them...just a thought.

We also have a transfer station here in Manhattan, KS where trash is taken. As part of this they have an area where local residents and contractors can bring trees that they have cut down as well as storm damaged branches/limbs. Since we have a wood burning furnace I make regular trips to the transfer station to sort through their assortment of trees and limbs, with my chain saw in hand I can harvest my winter supply of oak (about 1.5 cords) over the summer for nothing but my time and the cost of gas for the saw.

Tom Lehmann/The Dough Doctor  
5191

### **Dough Clinic / Re: Room temp vs dough temp**

Aric;

Without question, the actual finished dough temperature has greater influence on the dough than the ambient temperature. Since dough is porous it's an excellent insulator so it takes quite some time for the outside/ambient air temperature to warm or cool the dough. This is why I always say that you cannot have effective dough management without effective finished dough temperature control.

Tom Lehmann/The Dough Doctor  
5190

### **Focaccia Style / Re: SF Liguria Bakery - Focaccia at 800 degrees?**

HBOLTE;

Non-seasoned pans (not bright and shiny) are commonly used to make focaccia since the brighter colored pans reflect heat away from the dough allowing for a longer bake without excessive color development. The pans are also responsible to a great extent for the soft bottom texture. I've always allowed the dough to proof in the pan for a short time (about 20-minutes) and then brush the top with olive oil and finger dock. My favorite presentation is black olives, rosemary, sea salt and a light application of shredded Parmesan cheese. We typically baked our focaccia at 550F. If you go to the Rheon web site <[www.rheonusa.com](http://www.rheonusa.com)> you might be able to see a video of the Rheon automated focaccia equipment/line which produces a continuous ribbon of focaccia which is then sliced and guillotined to size for retail sale.

Tom Lehmann/The Dough Doctor  
5189

### **Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans**

What a buy!!!!

Tom Lehmann/The Dough Doctor  
5188

### **Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans**

Norma;

The logo on the pan looks like it might be American Metalcraft, a magnet will quickly tell you if they are steel or aluminum. The seasoning looks to be a standard oil seasoning.

You should have bought more then you could be the internet purveyor of pizza pans for Pizza Making.Com. :)

Tom Lehmann/The Dough Doctor  
5187

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)

Norma;

No, no, no, they will not bake OK! They will bake GREAT! I can't tell very well from the photographs but they appear to be thicker than your standard pans, probably a L.C. specification with their order. The only thing I would do is to clean them up, remember not to soak them, just scrub out with a soft bristle pot brush, sanitize, wipe dry and run through the oven immediately to force dry them. Once dry I would season them and call them good and ready to go.

Tom Lehmann/The Dough Doctor

5186

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)

Norma;

I like to use peanut oil in the pans since it has a very high smoke point (about 450F) also, many of the large chains used to use peanut oil almost exclusively so that might be the oil originally used in your pans.

Tom Lehmann/The Dough Doctor

5185

## [New York Style / Re: Thoughts on Recent Pie?](#)

It might be just a little thin for the raised edge dimension and it might take a little more bake but otherwise it looks like a great pizza with good crust porosity.

Tom Lehmann/The Dough Doctor

5184

## [Dough Clinic / Re: garlic bread doug formula](#)

Most operators use their regular pizza dough for making their bread sticks, in fact it is a good way to use dough that might otherwise be discarded. The way the bread sticks are commonly produced is to open a dough ball into a rectangle (using a rolling pin works well) to about 1/2-inch in thickness by about 6-inches in width and whatever length your dough weight allows for. Then use a pizza cutting wheel to cut into strips about 6-inches long by 3/4 to 1-inch in width. Dampen your hands with a little water and roll each piece into a hot dog shape. Set each rolled piece aside on a sheet pan with a little fine corn meal to prevent sticking and allow to proof/rise for about an hour, make a few diagonal cuts across the top of each piece, and transfer to a screen for baking. Brush with a commercial garlic butter/oil and bake right along with your pizzas. Watch the baking time as it may be shorter than what is required for your pizzas. As soon as the bread sticks come out of the oven brush again with the garlic butter/oil and they're good to go. If you par-bake them (baked just enough to set the structure and get just a little crust color) you can prepare as many as you want. After cooling store in a covered dough box for use over the next three days. These should be stored at room temperature and the second application of the garlic butter/oil should not be applied, instead it is applied after you have finished baking the bread sticks to fill an order. Another popular presentation is to dust them with grated Parmesan cheese after the second bake. Or my favorite, give the bread sticks a light spritzing with water and sprinkle on some shredded Parmesan cheese before baking and then give a light brushing with the garlic butter/oil immediately after baking.

Tom Lehmann/The Dough Doctor

5183

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)

Norma;

I wouldn't try to clean them anymore than you already have. The inside of the pans look to be fine, the outside is just coated with caked on/baked on oil that shouldn't pose a problem. If you get too carried away with your cleaning you might end up needing to completely strip all of the pans and start all over again with the seasoning process. What you are looking at on the outside of your pans is normal for well used pans and what you are doing is akin to washing Grandma's cast iron frying pan. :)

Tom Lehmann/The Dough Doctor  
5182

**[Pizza Ovens / Re: Deck oven teamperature](#)**

Lupin;  
Are you making a Detroit style pizza?  
If so, what color is your pan?  
Tom Lehmann/The Dough Doctor  
5181

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)**

Norma;  
I'm guessing that the "stink" that you were smelling was rancidity which is very common with seasoned pans that are stored for any significant period of time. If you can, set your oven about 50F hotter than you normally bake your pizzas and then put one of the pans into the oven to see if the oil will burn off. This should resolve the smoking issue as well as the stickiness issue too. If that does the trick load the oven up with as many pans as it will hold and do the rest of your pans. The process usually takes around 30-minutes. But if you see smoke at first and then the smoke stops the process is completed.

If you should decide that you want to really clean the outside only of the pans see if you have someone in your area that can sand blast them for you, BESURE to instruct them to invert the pans so only the outside is cleaned, and be sure to tell them that the pans are made from aluminum as that will influence the type of abrasive they use in blasting the pans.

Tom Lehmann/The Dough Doctor  
5180

**[Pizza Ovens / Re: Deck oven teamperature](#)**

300C/572F is higher than I'm used to baking Detroit style pizzas at (assuming you have a black anodized or well seasoned pan). I typically bake Detroit style pizzas at 500 to 525F/260 to 274C. When you allow your oven to preheat to any specific temperature the entire oven should be at that temperature unless you have an oven damper open that would be used to regulate top heat. If you have both top and bottom heat adjust the bottom heat to 274C and then if the top of the pizza needs more heat add heat to the top of the oven. I don't know how your oven is set-up or how it operates so I can't be more specific. In many cases when baking Detroit style pizzas in a deck oven with a solid deck surface we get too much bottom heat which results in the bottom of the pizza either getting too dark or actually burning before the pizza is fully baked, if this is a problem you are experiencing you will need to place a pizza screen under the pan to create a thermal break (air gap) between the bottom of the pan and the oven deck.

Tom Lehmann/The Dough Doctor  
5179

**[Dough Clinic / Re: Should I adjust yeast content?](#)**

Stueg;

I'm in agreement with Steve, the yeast level is too high for a 24-hour cold ferment dough. What can you tell us about your flour? Also, on a large scale a 24-hour cold ferment will require a finished dough temperature of around 60 to not more than 65F. You would be much better served by dividing the dough into individual dough balls and then placing them into the cooler for the 24-hour cold fermentation period.

The problem with what you are attempting to do is that with a small dough you can reasonably well control the temperature of the dough in the cooler, but with a large size dough (about 22-pounds in this case) the dough becomes such an excellent insulator due to its increasingly porous crumb structure and the fact that the dough actually continues to gain temperature due to heat of metabolism generated by the yeast as it feeds and ferments so what you ultimately end up with is a dough in the cooler that is warm in the center and cooler on the outside with the warm inner portion continuing to ferment while continuing to gain temperature which further speeds up the rate of fermentation. By subdividing the dough into smaller pieces (200 to 600-grams) the dough can be much more effectively cooled to control the rate and amount of fermentation.

As for the humidity in the air impacting the dough absorption, the humidity has essentially no impact upon the dough absorption. What you might have been experiencing is the break down of the dough due to excessive fermentation, and by reducing the dough absorption you have addressed the symptoms but not the problem itself (over fermentation) resulting in a tight, difficult to handle dough. I think once you get the yeast level down to around 0.5% or a little less and develop an effective dough management procedure things will fall into place.

If you would like to get a copy of my Dough Management Procedure just e-mail me at <thedoughdoctor@hotmail.com> requesting a copy on my Dough Management Procedure and I will gladly send you a copy.

Tom Lehmann/The Dough Doctor  
5178

#### **Off-Topic Foods / Re: The Perfect Garlic Butter recipe**

I don't want to hazard a guess as the ramifications are just too great so I am suggesting that you contact a local university and ask to speak with someone in their microbiology department. If I was to take a guess I would say "YES" since it can survive the canning process quite well, and it can also survive the internal temperature reached when baking bread (190 to 205F).

Tom Lehmann/The Dough Doctor  
5177

#### **Dough Clinic / Re: Should I adjust yeast content?**

Steug;

Remember that the dough management procedure that I provided to you under separate cover will more effectively control the amount of fermentation that your dough is receiving so it should be much better suited to what you wish to accomplish than what you have been doing. In view of the potential weakness of your flour (thanks Peter) I would suggest changing the target finished dough temperature to 70 to 75F/21 to 24C. This is accomplished by adjusting the temperature of the water that you add to the dough. I would suggest using water at 65F/18C.

Please keep us posted on your results and progress.

Tom Lehmann/The Dough Doctor  
5176

## [\*\*Off-Topic Foods / Re: The Perfect Garlic Butter recipe\*\*](#)

Since you were able to ask the question, the answer is a resounding yes.

I look at it like Russian Roulette, there are winners who will dispute the fact that it is a dangerous game, and then there are losers, but you never hear from them.

Tom Lehmann/The Dough Doctor

5175

## [\*\*Off-Topic Foods / Re: The Perfect Garlic Butter recipe\*\*](#)

I should have added in my last post that the probability isn't as great with basil as it is with garlic but the vacuum packaging adds a whole different dimension.

Tom Lehmann/The Dough Doctor

5174

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

We had both steel and aluminum pans at AIB that we used in our pizza class, the aluminum pans were dark anodized and the steel pans were well seasoned. We found that both types baked reasonably similar in both deck and air impingement ovens. The biggest issue was the potential for rust with the steel pans.

Tom Lehmann/The Dough Doctor

5173

## [\*\*Newbie Topics / Re: Tips for preventing the pizza to become too sour\*\*](#)

Andre;

You are correct in that the yeast, through fermentation is responsible for the tartness you have observed in the finished crust.

As the yeast ferments it produces carbon dioxide, alcohol and acids as by-products so the more a dough is fermented the more of these by-products are produced.

There are several things that can cause this;

- 1) Finished dough temperature is too high (above 85F/29C).
- 2) The yeast level is too high. (Typical yeast level is 1% compressed yeast, 0.5% active dry yeast or 0.375% instant dry yeast)
- 3) Cooler temperature is too high. (Ideal temperature range is 36 to 40F/2 to 4C)
- 4) The dough is not being cooled efficiently due to poor dough management practices. (Failure to cross stack, not cross stacked long enough, dough pieces too large to be cooled efficiently (200 to about 600-grams is normal for most dough balls)
- 5) Failure to take the dough directly from the mixer to the bench for scaling and balling.

Mixing/kneading has no effect upon the "sourness" of the dough.

If you would share your dough formula and dough management procedure with us we can probably be more specific as to what is causing your problem. Every little bit of information helps.

Tom Lehmann/The Dough Doctor

5172

## [\*\*Dough Clinic / Re: Marino's pizza\*\*](#)

In St. Louis the cheese of the day is called Provel, a blend of Provolone and Velveeta a very rich and creamy cheese but with this blend you can see some yellow due to the Velveeta. It would be my guess that they are making a blend of either Provolone or Mozzarella and white cheddar which exhibits an oiling out property but does not provide a yellow/orange color as Velveeta or yellow cheddar

does. If they are buying the cheese in blocks, shredding and blending in-house it would be my guess that it is a blend containing yellow cheddar which is available in blocks as is the Mozzarella and Provolone.

This is all made assuming the orange color isn't due to the oiling out of the pepperoni.

Tom Lehmann/The Dough Doctor  
5171

### **Off-Topic Foods / Re: The Perfect Garlic Butter recipe**

Clostridium is an anaerobe so it does not grow in the presence of oxygen. pH is also another way to control it. A number of years ago a young housewife poisoned her entire family (I believe it was in Indiana) when she canned low acid tomatoes using her mother's recipe for canning regular tomatoes, ends up there was not enough acidity to prevent clostridium growth and when she made pasta sauce using those canned tomatoes the results were fatal.

Tom Lehmann/The Dough Doctor  
5170

### **Pizza Ovens / Re: Deck oven teamperature**

If the pizzas came out of the oven with the crust characteristics that you are looking for the bottom heat is good, in many cases you don't even need to use the top heat when baking pizzas. Most of the time the top element is there only to allow for the baking of other food products aside from pizza. There shouldn't be any need to pre-cook any of the vegetable toppings unless you want the toppings to be soft and limp. Try making a pizza with the vegetable toppings applied just before you bake the pizza. While not always necessary, I like to always use pre-cooked meat toppings from a food safety standpoint. My only deviation from this is when making a Chicago style deep dish pizza where raw sausage is placed on the bottom of the pizza BUT this pizza is also baked for roughly 45-minutes so the sausage ends up getting properly cooked along with the rest of the pizza.

Tom Lehmann/The Dough Doctor  
5169

### **Dough Clinic / Re: reducing carbs**

Really easy to reduce both carbs and calorie count of your pizza by 75%. How you ask? Just eat one slice rather than all four, I know it's hard to do but one slice is better than no pizza at all. :)

Tom Lehmann/The Dough Doctor  
5168

### **Chitchat / Re: The art of pizzadough**

I remember that movie! It was Steve McQueen's first movie if I remember correctly. The Blob.

Oops! is all that you can say.

It's all part of the learning process.

Tom Lehmann/The Dough Doctor  
5167

### **Dough Clinic / Re: Dough not coming out smooth after kneading**

Chris;

From what you have described I'd say that you need to mix the dough longer. The lumpiness and tearing of the dough are signs of insufficient gluten development. However, you can also turn to biochemical gluten development to do the work for

you. To do this just oil a bowl of appropriate size, oil your hands and form the dough into something that resembles a dough ball, drop it into the oiled bowl, drape a piece of foil or plastic over the bowl (do not tightly lid) and allow the dough to ferment at room temperature for about 4-hours, turn out onto floured surface and knead. Then scale into desired weight pieces and manage the dough by your preferred manner.

Tom Lehmann/The Dough Doctor  
5166

### **Newbie Topics / Re: Tips for preventing the pizza to become too sour**

By cross-stacking I mean to place uncovered boxes of dough in the cooler with each box perpendicular to the box above and below it. This type of stacking allows for air circulation around the dough balls while they are in the the cooler. This is important as it allows the dough balls to cool at a consistent rate and it allows the dough to cool sufficiently to control fermentation.

The yeast percentage/amount is based on the total flour weight as are all of the other ingredients, this is referred to as "bakers percent" To find the bakers percent for any ingredient just divide the ingredient weight by the flour weight (both must be in the same weight units, grams, kilograms, etc.)and multiply by 100.

To find the weight of any ingredient expressed in bakers percent using your calculator, show the weight of the flour in whatever weight units that you want the ingredient weights to be shown in. Then enter the flour weight you wish to use.

Press "X" then enter the ingredient percent that you want the weight for and press the "%" key. The ingredient weight will be shown in the display window. By this method of expressing a formula the flour weight will always equal 100%.

For me, I would use less yeast and allow the dough to ferment longer for better flavor development, BUT without knowing your dough formula or at least the amounts used I cannot say if this will work for you or not. You cannot just reduce the yeast level to control fermentation if you are not managing the dough properly to begin with. For example, if your dough temperature is too hot and you do not cross stack the dough boxes or do something else to cool the dough balls rapidly and at a consistent rate, you can end up reducing the yeast level to such a low level as to not provide sufficient leavening for the dough once it goes into the oven which will usually result in a flat, tough, chewy, soft crust. If you would like to receive a copy of my Dough Management Procedure just e-mail me at <thedoughdoctor@hotmail.com> and request a copy of the Dough Management Procedure.

Tom Lehmann/The Dough Doctor  
5165

### **Dough Clinic / Re: Dough not coming out smooth after kneading**

Chris;

That's really not very much fermentation at all, and the elasticity with resulting difficulty in opening the dough ball into a pizza skin all indicate a most probable lack of fermentation.

Just to keep things simple, try placing the dough into the fridge to ferment overnight after the bulk fermentation period, then remove the dough after 18 to 24-hours, allow it to temper AT room temperature for about 2-hours or until the dough reaches 50F then begin opening the dough into skins. You should find the dough much more extensible and it should exhibit better oven spring too resulting in better thickness as well as a more thorough bake resulting in a crispier finished crust.

To ferment the dough balls in the fridge the easiest way is to oil the dough ball(s)

and place into individual plastic food bags, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it into the fridge to ferment. To remove the dough ball from the bag just invert the bag over a floured surface allowing the dough ball to drop out, then proceed to open into a skin.  
Tom Lehmann/The Dough Doctor  
5164

**[Dough Clinic / Re: reducing carbs](#)**

DCC;

You might look into incorporating different types of fiber materials into the dough formulation. Some of those that have been successfully used include oat fiber, pea fiber, micro-crystalline alpha cellulose, and even wheat fiber aka wheat bran. With a little luck you can incorporate these at levels to replace up to 25% of the flour weight, maybe even a bit more. Remember that all of these will have a rather high, delayed absorption so you will want to follow the rules for finding the absorption for multi-grain doughs. While many of the fiber materials were only available at one time in trailer load quantities I think you will find them more available now that the low carb craze has passed.

Tom Lehmann/The Dough Doctor  
5163

**[Dough Clinic / Re: Dough not coming out smooth after kneading](#)**

Chris;

For a "same day" dough I would not change the yeast level but rather increase the temperature of the dough. In this case I would suggest targeting a finished dough temperature of 90F. Then bag and refrigerate the dough balls until about an hour before you want to open the balls into skins, allow the dough balls to warm to 50F and begin opening the dough into skins for your pizzas. As I don't know what your finished dough or water temperature is I cannot give recommendation as to what water temperature might be required to achieve the 90F target. That's fully half of the fun of learning to make pizza, experimenting with your dough and dough management procedure, the other half is eating the pizza or enjoying it with friends. You will notice that many of the regulars here mention making pizzas for both friends and family, once the word gets out about your pizza making skills your list of friends start getting longer....can't imaging why? :)

Tom Lehmann/The Dough Doctor  
5162

**[Dough Clinic / Re: My dough mixing process](#)**

Your mixing time is way to short for what you are trying to make. The dough should be mixed just until it develops a smooth surface and has a satiny appearance to it. The problem is that you are using a flat beater for mixing your dough which is designed and intended for mixing batters, like cake batter and icings. As the dough develops gluten it will just cling to the agitator without getting any further development. To correct the situation you need to make a larger dough size so you can use a dough arm to develop the dough. Your mixer appears to be a Hobart A-200 so the minimum dough size should be based on 2000-grams of flour, with this you can safely mix the dough at #2-speed to achieve the level of gluten development needed. I would also suggest adding 2% oil to the formula using the delayed oil addition method for adding the oil. With this mixing method there is no need for further mixing, just take the dough directly from the mixer to the bench for scaling (I cannot comment on your present scaling weight as I don't know what pan size you are using) and balling, oil each dough ball and place into individual

food bags (NOT ZIPPER TYPE BAGS), twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge, allow to cold ferment for 24 to 48-hours, remove the dough from the fridge and invert the bag allowing the dough to drop out onto a floured surface, then using a rolling pin or pie pin, roll the dough out to a size slightly larger than your pan, place the dough piece into your oiled pan (dark colored pan), cover to prevent drying and allow to rest for 45 to 60-minutes at room temperature, then using your fingers (oil your fingers to prevent the dough from sticking to them) push the dough out so it completely fits the pan, cover again and allow to proof/rise for 45 to 60-minutes and you're ready to dress the dough and bake the pizza. Note: You may need to experiment a little with the exact rest period before fitting the dough to the pan as well as the proofing/rising time needed prior to dressing the dough and baking the pizza.

You may need to experiment with the dough absorption too as 75% is on the high side, 70% is more typical. Be sure to adjust the water temperature to 70F to give you a finished dough temperature of 80 to 85F. The yeast level does not need to be adjusted seasonably if you monitor and maintain a consistent finished dough temperature in the range suggested.

Tom Lehmann/The Dough Doctor  
5161

### [\*\*Newbie Topics / Re: A few newbie questions \(crust problems + taste\)\*\*](#)

If the pan shown in the picture is the pan you're baking in....bad news. The bright pans simply reflect too much heat away from the pizza to be effective especially in a home oven. I also highly recommend the use of a good pizza stone for baking but if you must use a pan it should be well seasoned before using it. To season a pan wipe it down, inside and out with salad oil then place it in the oven at not more than 425F for about 30-minutes, remove from the oven and repeat. Do this two or three times or until you see an amber color beginning to develop. This color will darken with use which is desirable. NO NOT SOAK A SEASONED PAN TO WASH IT, instead, just wipe it down and place it in the oven to force dry it for a few minutes. Failure to do so may result in the seasoning peeling off like a bad sunburn and you will need to strip the pan of all seasoning and start all over again :(

Tom Lehmann/The Dough Doctor  
5160

### [\*\*Newbie Topics / Re: Tips for preventing the pizza to become too sour\*\*](#)

Andre;  
Management of the dough is everything that you do with the dough from the time it is mixed until you open it into a pizza skin.

Cross -stacking is a term used for retail pizzeria operators, if you are only making a few dough balls instead of cross-stacking you have two options: 1) place the dough ball into a suitable sized container, leave it open when you place it in the fridge and allow it to remain uncovered for about 3-hours (be consistent with the time). 2) Oil each dough ball and place then into individual bags (like food bags or bread bags), twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the fridge.

Scaling the dough is the act of weighing the dough into individual pieces (1-piece = enough dough for one pizza crust).

Balling the dough is the act of forming each scaled dough piece into a round ball. Scaling and balling are important steps as they allow for more consistent dough performance when forming the dough into a pizza skin.

The correct amount of yeast to use is dependent upon a number of factors: Type of pizza being made, dough management parameters, and type of yeast being used

are the main factors. With regard to the type of yeast used here are the basic yeast levels for the different types of yeast: compressed yeast: 1%; active dry yeast: 0.5%; instant dry yeast 0.375% (all percentages are in bakers percent based on the total weight of flour used in the dough).

Tom Lehmann/The Dough Doctor  
5159

### [\*\*Shop Talk / Re: Electric Pizza Ovens?\*\*](#)

What kind of pizzas are you planning to make and what kind of production capacity are you looking at?

Tom Lehmann/The Dough Doctor  
5158

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

Norma;

Those pizzas look ABSOLUTELY GREAT!

It does indeed sound like the pans might need a little more seasoning. I'd suggest using corn oil as it seasons pans very well (good for seasoning pans but bad for a pan oil as it will continue to polymerize and eventually the inside of the pan will look a lot like the outside).

Tom Lehmann/The Dough Doctor  
5157

### [\*\*Newbie Topics / Re: Tips for preventing the pizza to become too sour\*\*](#)

Andre;

Oops! I forgot to say that after you leave the dough uncovered in a bowl in the fridge for about 3-hours to cover it to prevent drying.

Both methods described work well, one method requires that you keep track of time so you can come back to it after 3-hours to lid the container thus preventing the dough from drying out. The other method where you place the dough into a plastic bag once the dough is placed in the fridge it requires no further attention until you're ready to begin making pizzas.

The yeast amounts shown are typical yeast levels for the three common types of yeast used to make pizza. All of the yeast levels shown produce similar/equivalent fermentation.

The amount of yeast used typically does not change if you want to keep the dough in the fridge for a longer period of time. That's why you put the dough into the fridge, to suppress fermentation.

If you are making a sourdough, yeast is not added. If yeast is added you will not achieve the desired tartness in the crust. In a biga I usually put about 25% of the yeast amount into the biga and then add the rest back when I make the dough.

You are correct in your assumption but wrong in your math. Compressed yeast: 1%; ADY 0.5%; IDY 0.375% as you can see ADY is used at 50% of the compressed yeast level and IDY is used at about 38% of the compressed yeast level.

You make mention of a 3-hour fermentation time, do you really only want to ferment the dough for just 3-hours? That's more like an emergency dough which is a totally different type of dough producing a finished crust without the flavor level of a cold fermented dough that has been fermented in the cooler for at least 18 to 24-hours.

Tom Lehmann/The Dough Doctor  
5156

### [\*\*Neapolitan Style / Re: Dough timing commercial enviroment\*\*](#)

If you will e-mail me at <thedoughdoctor@hotmail.com> and request a copy of my Dough Management Procedure I will gladly send you a copy. This is a procedure that is followed by many retail pizzerias and with just a little modification, most of the big box pizza chains too.

Tom Lehmann/The Dough Doctor  
5155

**Dough Clinic / Re: Dough not coming out smooth after kneading**

I think most will agree that the dough is much easier to stretch out into a skin if it is allowed to temper AT room temperature for a period of time (I normally recommend 2-hours or until the center of the dough balls reach 50F). I see that you are using "00" flour. This flour is not malted so you do not have much sugar available to support fermentation (2 to 3-hours at most), and since your dough formula doesn't contain any sugar I'm betting that the yeast is running out of nutrient to support good yeast activity aka fermentation. Unless you have an oven that will reach 700 to 800F or more you probably don't want to be using "00" flour, instead try using a malted bread type flour or to use your existing flour add 2% sugar to the dough formula.

Tom Lehmann/The Dough Doctor  
5154

**Dough Clinic / Re: Marino's pizza**

Ryan;  
Velveeta is a processed cheese, some will go so far as to say that it is "fake" cheese. Different sources will give different ingredients (whatever the case, I'm sure Kraft Foods isn't going to be publishing the exact formula anytime soon). In my "neck of the woods" Velveeta cheese got its reputation from being the cheese half of macaroni and cheese and possibly a pasty/gummy cheese sandwich once in a while. Hey! We were kids and didn't know any better.

Tom Lehmann/The Dough Doctor  
5153

**Neapolitan Style / Re: Dough timing commercial enviroment**

Peter;  
That's the one.  
Your help is appreciated.  
Tom Lehmann/The Dough Doctor  
5152

**Dough Clinic / Re: reducing carbs**

G.R.;  
Reminds me of the time I opened a pizzeria in Tuscon, AZ. One of the pizzas that we offered was simply called an "Old World Traditional Pizza" It was offered in a 12-inch format at first but later expanded to include a 14-inch buy popular demand. We used the standard dough ball for the crust, added a few cloves of sliced garlic, Stanislaus 74/40 Tomato Filets for the sauce, 4-ounces of Grande brine pack fresh Mozzarells cheese (used one 4-ounce ball peeled like an orange) and topped it with a few fresh basil leaves at the very end. It looked GREAT! It sold at a \$2.00 premium but was actually the cheapest (cost wise) pizza they made and it became a best seller. Ain't consumer perception wonderful? :)

Tom Lehmann/The Dough Doctor  
5151

## [\*\*Shop Talk / Re: Electric Pizza Ovens?\*\*](#)

How many pizzas per day do you anticipate making?

How many pizzas do you anticipate making during your busier periods, like from 5 to 9:00 p.m. on a Friday or Saturday? Or whatever your busiest day/time will be. I'm a little concerned over your selection as it might be to slow for "pizzeria" use if you are going to be doing any kind of volume.

Tom Lehmann/The Dough Doctor  
5150

## [\*\*Newbie Topics / Re: Tips for preventing the pizza to become too sour\*\*](#)

Andre;

The reason for leaving the container uncovered for the 3-hour period is to allow for more efficient cooling of the dough and to prevent excessive moisture from forming in the container due to condensation.

You can add some yeast to a sourdough but it does influence the flavor and you do not get a true sourdough flavor.

The amount of yeast can remain constant IF you manage your dough properly and effectively, if you do not manage the dough well you will get significant variation from dough to dough regardless of the yeast level. We use the same yeast level if we are cold fermenting the dough for 18-hours or 5-days (120-hours). The only difference is if we are targeting for 120-hours we reduce the targeted finished dough temperature to 70 to 75F/21 to 24C.

Tom Lehmann/The Dough Doctor  
5149

## [\*\*Dough Clinic / Re: reducing carbs\*\*](#)

Peter;

I had a marketing friend who used to say that the name was everything, just like you said. He explained that you can have dead chicken baked with cheese sauce or you can have chicken cordon-bleu, both are one and the same, one sells well while the other one not so well, and if the perception meets the customer's expectation to the name or description they will generally respond in a predictable manner, he would go on to say that "window dressing" was effective at selling a product the first time but repeat sales were dependent upon the product meeting those expectations in a positive light in the eyes of the consumer. I've always remembered this and that is why I referred to the pizza in my story as an "Old World Pizza" as opposed to a more specific name like New York, New Haven, etc. which might trigger a response like "This is not a New York pizza!" We were banking on the old world connotation to leave their expectations open ended so they wouldn't be judgmental but instead decide for themselves if they liked the pizza or not. They liked it and as they say, "The rest is history". One more and I'll shut up. I'm in London, I place my breakfast order which is fried eggs, fried potatoes (everything has to be fried)and black pudding. The waitress asks "Do you know what black pudding is sir?" I respond "Yes, it's fried (has to be fried) blood sausage made with blood and oatmeal", don't ask what else is in it. I got my breakfast order as I requested. Do you get the impression that black pudding is just a gussied up name that possibly didn't meet with everyone's expectations, especially those of Americans?

And I might add that the breakfast was very good. One more, how about Kopi Luwak coffee? Sounds pretty good right?? The other name for it is cat poop coffee, hummmmm which sounds more appetizing? Which name sells more coffee? :) Ya just gotta love marketing! You can gift wrap dogie dodo and sell it once but you can make coffee out of cat poop and with the right name make a fortune.

Tom Lehmann/The Dough Doctor  
5148

**[Pizza Ovens / Re: Il Fornino Ovens](#)**

The thermostat was one of the start up problems I experienced too.  
They were very prompt at getting us a replacement after we called them about it.  
Tom Lehmann/The Dough Doctor  
5147

**[Newbie Topics / Re: Tips for preventing the pizza to become too sour](#)**

Andre;  
You are correct on all of your points.

The purpose of the oil on the dough ball is to help prevent it from sticking to the bag.

If you are looking for 120-hours refrigerated dough life you should reduce the finished/mixed dough temperature to 70 to 75F/26 to 29C, you are correct.

The normal targeted finished dough temperature for up to 3-days refrigerated storage is indeed recommended at 80 to 85F/ 26 to 29C.

Yes, you determine the temperature of the dough by sticking a thermometer in it.

If you are mixing your dough by hand/manually the same rules still apply but don't expect to get as consistent results due to the great variation that you will experience in mixing/dough development. Mixing the dough by hand is fine for making pizzas at home where inconsistencies provide a level of interest in the pizzas but if you want to make a consistent product the use of a dough mixer will provide greater overall consistency. When mixing the dough by hand there is very little heat generated due to the mixing process for this reason I usually recommend using water temperature at or slightly below the desired dough temperature.

Tom Lehmann/The Dough Doctor  
5146

**[Dough Clinic / Re: Arabic/Lebanese bread as base for pizza?](#)**

John;  
Pizza is one of what we call ancient breads just like bagels, pretzels, French breads and flat breads. All of these breads have one thing in common, they are all made from essentially the same dough formula, in fact, you can make all of these bread types from the same dough formula (flour:100%; salt: 1%; compressed yeast: 1%; water 50%) There are a few differences in the way the dough is manipulated to make some of the different products, for example the dough is first boiled and then baked to make bagels, or it receives an alkali wash just prior to baking to make a pretzel, the other products are all just formed into a thin skin and baked at a higher or lower temperature to produce the different types of breads. In short, if you were to take a flat bread dough and form it into a thin sheet (skin) dress and bake it you would be making a fairly typical thin crust pizza. Yes, it can be easily baked in an air impingement oven but to get the best results the pizza should be baked on one of the Hearth Bake Disks from Lloyd Pans <[www.lloydpan.com](http://www.lloydpan.com)> with the temperature set at 500F and a baking time of around 4-minutes. A number of years ago Pizza Hut offered a pizza made on a wheat flour tortilla crust. In this case the tortilla was already made, it was just dressed and baked. More recently we have seen some interest in using Greek pitas (non-pocket) for the pizza base.

These are fairly successful BUT what you end up with at the end of the day is nothing more than a pizza made on a par-baked crust, just like the pizzas you buy from the frozen food case at your local supermarket.

I hope this answers your question.  
Tom Lehmann/The Dough Doctor  
5145

### **Newbie Topics / Re: Source for cutter pan**

American Metal Craft <[www.amnow.com](http://www.amnow.com)> also carries them along with a vast selection of other types of pizza pans, disks, screens, etc.  
Tom Lehmann/The Dough Doctor  
5144

### **Off-Topic Foods / Re: Off topic equipment question**

Something to keep in mind when thinking about adding steam to an oven that was not specifically designed for steam injection. When steam is injected into the oven it combines with the acids being volatilized by the oven heat (acids: acetic, lactic and propionic) are produced through yeast fermentation and are volatilized during baking. These acids are VERY corrosive and in time (not necessarily a long time) will corrode the entire inside of the oven as well as any flue pipe/stacks. Ovens that are designed for steam are specially constructed to take this into account as are the flue pipe/stacks. You are much better off in this case by just spraying the dough with water before placing it in the oven or placing a sheet pan with water in it to help humidify the oven during baking.

Case in point: A number of years ago I was called out to a large commercial bakery producing a product which required steam in the oven during baking to prevent the product from bursting during baking. Their oven was not designed for steam injection but they did it anyways. Two months later the line was shut down by the USDA inspector due to rust on the product (coming from the oven). Not to worry though, they lined the entire inside of the oven with stainless steel panels, problem solved! Well.....not exactly. On my next visit to the plant about a year after my initial visit I was asked to look at their oven to see if I could determine why they could not maintain tension on the oven belt/conveyor. I told them that we would need to look at the oven after it was shut down and cooled to determine what the problem might be. We never made it to that point. A couple hours later the bakery floor shook and the oven was flopping around like a beached fish. The frame in the oven had rusted through causing the oven to collapse in the middle (the weakest point). What a sight to see, a 200-foot long oven squirming around on the floor, at that point the new oven at \$500,000.00 which they opted not to buy (opted instead to add steam to their existing oven) was beginning to look like a pretty good deal.

Tom Lehmann/The Dough Doctor  
5143

### **Dough Clinic / Re: My dough mixing process**

Wow!!! Your videos are great! I would like to offer a couple of suggestions based on what I'm seeing.

- 1) I don't think you need to allow for a hydration time since the flour will hydrate just fine with the type of mixing action that you're getting.
- 2) Adjust the total mixing time in second speed to a total of 8-minutes.
- 3) With the mixing bowl empty and installed on the mixer, raise the bowl to its highest position (as if you were going to mix a dough), then check the clearance between the mixing arm and the bottom of the mixing bowl. It should be about 2.5 mm/1/8-inch. It looks like yours might be greater than this. I'd suggest checking it

just to be sure as it does affect the way the dough mixes. If it does require adjustment, there is an adjustment nut on the crane assembly that lifts the bowl into position. Be careful when making any adjustments as you don't want the mixing arm to be contacting the bowl, you can always tell when this happens as you will hear a "ping" each time the agitator contacts the bowl.

Other than that the amount of dough in the bowl looks good for the minimum and the dough is looking pretty good too.

Tom Lehmann/The Dough Doctor  
5142

### **Shop Talk / Re: Electric Pizza Ovens?**

For your application I would recommend a deck oven from one of the major manufacturers like the Bakers Pride Model EP-1-8-3836 <[www.bakerspride.com](http://www.bakerspride.com)>. We had one of these ovens when I was at the AIB and it served us well for making pizza for over 20-years. You can anticipate a baking time of around 8-minutes at 500F with an electric oven of this type. The top heating elements are not generally used when making pizza unless there are a lot of toppings on the pizza, in that situation the top heat helps to control moisture on the top of the pizza.

Tom Lehmann/The Dough Doctor  
5141

### **Dough Clinic / Re: My dough mixing process**

DB;  
I am proposing that the rest period is not necessary in this case, so just add 6-minutes in second speed to the 2-minutes that you are already mixing in second speed and you should be good.

Your bagging of the dough is just about right, the only change that I suggest is to try to pull the bag down closer to the dough ball so you don't leave those empty spaces in the bag sticking out as shown in the photographs. Be sure to twist the open end of the bag at least several times before tucking it under the bag as you place it in the cooler/fridge. Otherwise it looks good.

Tom Lehmann/The Dough Doctor  
5140

### **Newbie Topics / Re: Multiple pies - keep warm?**

Ditto.  
Tom Lehmann/The Dough Doctor  
5139

### **Shop Talk / Re: Electric Pizza Ovens?**

You bet!!!  
Tom Lehmann/The Dough Doctor  
5138

### **Resources / Re: NY Water**

If you still need more convincing, I wrote an article on this exact topic in PMQ Magazine (In Lehmann's Terms) a short time back. You should be able to access the archives at <[www.pmq.com](http://www.pmq.com)> to read the article. By the way, the best New York pizza I've ever had outside of NYC (agreed, I've had some bad ones there too) was on the island of St.Thomas, Pizza Amore, located in the mall across from the post office. Where did they get their water from? From the tap of course, and since St.Thomas doesn't have any fresh water their entire potable water supply comes

from collected rain water that is processed into potable water. About the closest to New York that water has ever been is in the fact that you can say that it might have, at one time, fallen in NYC, can't prove it though.

The worst water that you can use is distilled/de-ionized water. Regular well water, as long as it doesn't contain sulfur, is just fine. If your water is heavily treated you might want to possibly consider looking at one of the spring waters that still has a full compliment of minerals.

Tom Lehmann/The Dough Doctor  
5137

### [\*\*Resources / Re: NY Water\*\*](#)

Peter;  
How are you able to dig that stuff out so easily??? You're the man!  
Thanks,  
Tom Lehmann/The Dough Doctor  
5136

### [\*\*Dough Clinic / Re: Humidity in wine cooler used for dough...?\*\*](#)

If the containers are tightly sealed....not the best condition for long term storage of the dough, but that's a whole different story, to be specific to your question, no (we're talking about an air tight, water/moisture proof container, so the outside relative humidity will not impact the dough in the container. The temperature will, but not the humidity.

Tom Lehmann/The Dough Doctor  
5135

### [\*\*New York Style / Re: Grimaldi's Clone Recipe - Can We Figure It Out?\*\*](#)

James;  
I can't speak to the Grimaldi's near to you as I have only been to one of the original "Patsy's" at the base of the Brooklyn Bridge, it is indeed a great pizza though a little on the tough/chewy side. I would think that any good New York pizza dough and sauce formula found here should at least get you pointed in the right direction and give you something to work on. Remember, unless you have an oven that is capable of reaching at least 700F it might take some "doing" on your part, but in any case you should be enjoying some great pizzas along the way.

Tom Lehmann/The Dough Doctor  
5134

### [\*\*Newbie Topics / Re: Tips for preventing the pizza to become too sour\*\*](#)

Andre;  
There are three things that drive/control yeast fermentation, these are TIME, TEMPERATURE and pH/acidity. The temperature of the dough after mixing is so important because the higher the temperature the faster the rate of fermentation progresses and the lower the temperature is slower it progresses, when we place the dough into the fridge/cold room it DOES NOT chill down to a lower temperature right away, the dough itself is an excellent insulator so it retains the heat (temperature of the dough after mixing) for a significant length of time after placing the dough in the fridge allowing it to continue to ferment at a rate dependent upon the temperature of the dough. As a secondary effect when the dough temperature is too warm and too much fermentation occurs after the dough is placed in the fridge the density of the dough changes (becomes less) and it becomes an even better insulator so now the dough becomes even more difficult to cool down to a point (40F/4 to 5C) where the fermentation rate is controlled. You

can see this for yourself by making a dough, measuring the temperature immediately after mixing, then placing it in the fridge and measuring the temperature of the dough every hour there after to see how long it will take for the dough to reach 40F/4 to 5C, which is the temperature that the dough needs to reach to become stable enough for long term refrigerated storage.

Tom Lehmann/The Dough Doctor  
5133

**[Dough Clinic / Re: Humidity in wine cooler used for dough...?](#)**

A little carbon dioxide in the container to blanket the dough is a good thing but having the container so tightly sealed that it allows the container to build up pressure is not especially good for fermentation, a better approach might be to drill a small hole in the lid to act as a pressure release. Even doing this the humidity in the cooler will not impact the dough, now take the lid off, and we have a whole different story.

Tom Lehmann/The Dough Doctor  
5132

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)**

Do you have a restaurant supply store near you?

Tom Lehmann/The Dough Doctor  
5131

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)**

Oops, just realized your location. To answer my own question, probably not. So, what to do? The internet is a good source for just about anything you might need, and if things are really difficult to come by think "cake pans" Cake pans can work well as a pizza pan. You might need to season them to give them the desired dark color and even if the pan is deeper than what you need, you can still make a decent thin crust pizza in a deep side cake pan, plus on the bright side you can use the same pan to make deep-dish pizzas too. Some will even use a frying pan to make their pizzas in, just make sure the handle doesn't go into melt down when you place it in the oven, then too you if thin crust pizza is on the menu you don't even need a pan, just find yourself a piece of steel or aluminum about 7mm or thicker that will fit into your oven, make the pizza on a wood peel with a little peel dust (corn meal, semolina flour, rice flour or bread flour, or any combination of these) under the dough to help it slide from the peel onto the hot baking surface.

Tom Lehmann/The Dough Doctor  
5130

**[Dough Clinic / Re: My dough mixing process](#)**

That pizza looks awfully good to me!!! :)

Tom Lehmann/The Dough Doctor  
5129

**[Newbie Topics / Re: Tips for preventing the pizza to become too sour](#)**

Andre;

Yeast, like all micro-organisms, establishes an environment favorable for its own growth. Since yeast is an acid loving organism (it performs better in an acidic environment) it produces acids as a by product (those are the same acids that ultimately end up giving the finished crust a sour or acidic flavor). In cases where we need to have fermentation proceed as rapidly as possible we will acidify the dough by adding a little dilute acetic acid (vinegar) to slightly acidify the dough.

You should also be aware that due to the production of a different balance of acids produced during fermentation there is a difference in finished crust flavor between dough that is fermented at warmer temperatures v/s colder temperatures (cold room). Everybody has a preference in crust flavor and this is why some like to ferment their dough at room temperature while others like to ferment their dough under refrigerated conditions. My own personal preference is the flavor achieved through fermentation at refrigerated temperature.

Tom Lehmann/The Dough Doctor

5128

### **Chitchat / Re: How Pizza Works**

When most of the major pizza chains were started, late 50's to early 60's, pizza was not as mainstream as it is today and to a great extent it was a carry-out food (actually considered to be a snack back in those days) so for the most part people didn't have a good grasp on what a good or bad pizza really was, it it was pizza, it was good! That 's a good thing because it indoctrinated generations into the love of pizza which has brought us to where we are with pizza today, and with more pizza opportunities/presentations we all tried those new/different pizzas and eventually developed more specific tastes for certain types and kinds of pizza. It's this diversity in pizza that has been responsible for its long lived popularity as America's favorite food.

Tom Lehmann/The Dough Doctor

5127

### **Dough Clinic / Re: Arabic/Lebanese bread as base for pizza?**

John;

Not a problem. Feel free to give me a call at 785-537-1037. Just drop me an e-mail first to let me know about when you plan to call so I can be at my desk to receive your call preventing us from having to play phone tag.

Tom Lehmann/The Dough Doctor

<thedoughdoctor@hotmail.com>

5126

### **Newbie Topics / Re: Tips for preventing the pizza to become too sour**

Andre;

It's not so much the difference in amount of acid produced (that's controlled through the amount of fermentation) but instead the type of acids produced. You can get excessive acidity with either room temperature fermentation or cold fermentation, it'll just take longer for the cold fermented dough to develop the acidity and additionally, there will be a perceived change in flavor (good or bad depending upon your flavor preference) between the two different fermented doughs.

Yeast loves an acid environment. It will do quite well all the way down to about 4.2pH. If you want to see how pH impacts yeast fermentation make two identical doughs, into one dough put about 20-grams of baking SODA into the water for each 500-grams of flour weight. Then add the same amount of cream of tar-tar to the water in the other dough. The dough with the cream of tar-tar will ferment faster due to the acidity (lower pH) of the dough while the other one will exhibit slower fermentation due to the higher pH of the dough.

If you wish to read more about this get a copy of Baking Science and Technology, by E.J. Pyler (author), your local library may have it or you can order it from Amazon. This is an excellent book on all things pertaining to baking.

Tom Lehmann/The Dough Doctor

5125

**Newbie Topics / Re: Help figuring out if I undermixed my dough**

For a same day pizza dough as you are making you are going to need to have more mechanical mixing than you are presently giving the dough.

I suggest the following:

- 1) Adjust the water temperature to 70F.
- 2) Put water in the mixing bowl first followed by the flour, salt, sugar and IDY.
- 3) Mix the dough at low speed for 3-minutes then add the oil.
- 4) Mix one more minute at low speed.
- 5) Mix the dough at medium speed for 8 to 10-minutes.
- 6) Put mixer in low speed and pour a very small amount of oil down the inside of the bowl, stop mixing after 15-seconds or so.
- 7) Take the dough straight to the counter top for scaling and balling and manage the dough by your normal manner.

I think you will find this dough easier to handle and open into a skin.

Let us know how it works for you.

Tom Lehmann/The Dough Doctor

5124

**Neapolitan Style / Re: Dough timing commercial enviroment**

Are you vending from a pizza cart, truck or trailer? Do you have anything to keep the dough cold? How are you opening the balls into skins? How are you baking the pizzas? Where do you make your dough? Do you have access to refrigeration or any kind of a freezer? Answers to these questions may help in finding a dough management procedure that will work better for you.

Tom Lehmann/The Dough Doctor

5123

**New York Style / Re: help please**

P505;

I'd like to suggest a change in the way you are mixing your dough.

Put the measured cold water in the mixing bowl first.

Add flour, salt, sugar, and yeast.

Mix for 2-minutes at low speed.

Add the oil.

Mix 1-minute at low speed.

Then mix for 8-minutes at medium (2nd.) speed.

I advise taking the dough directly to the bench for scaling into desired weight pieces, forming each piece into a ball, oil each dough ball, place into individual plastic bags, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the cooler. The dough will be ready to use after 18-hours but can be held in the cooler for 48-hours or more.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor

5122

**New York Style / Re: help please**

P505;

You should be making a "fixed" diameter/size pizza so if you want to have a thicker finished crust just increase the dough scaling weight for that particular size pizza. If you can provide me with the diameter of the pizza you're making I can suggest a new scaling weight for a thicker finished crust.

Tom Lehmann/The Dough Doctor  
5121

[\*\*New York Style / Re: help please\*\*](#)

P505;

If your dough is fermenting too fast, especially on the first day this is a good indication that your dough might be too warm. To correct this try using colder water, I know that your tap water isn't very cold so I'd suggest storing the water that you will use for the dough in the fridge at least overnight and then using that as your only source of water in the dough, this should effectively lower the dough temperature to allow for better control of the rate of fermentation, of course you can also float a few ice cubes in the water too to get your cold water for the dough. Don't worry about the humidity it isn't going to have any impact upon the dough at this point.

Tom Lehmann/The Dough Doctor  
5120

[\*\*New York Style / Re: help please\*\*](#)

P505;

What is your oven temperature? That crust looks awfully light in color. Be sure to follow Peter's suggestion to add about 3% sugar to your dough formula. Also, is that the screen you're baking the pizza on that I see sticking out from under the pan? If it is, it doesn't appear to have been seasoned. You should season any baking pans or screens unless they already have a dark colored finish. To season the the pan/screen wipe it down both inside and out with corn oil then place it into a 425F oven for 20 to 30-minutes, remove from the oven and allow to cool and repeat the process. You will see an amber color beginning to develop, this is the seasoning, it will continue to darken with use (that's what you are looking for). Remember to NEVER soak any seasoned pan in water, instead just wipe it down and place into the oven to force dry for a few minutes before putting away for the next use.

Tom Lehmann/The Dough Doctor  
5119

[\*\*Newbie Topics / Re: Beginner recipe for hand kneaded, home oven pizza?\*\*](#)

Did you oil the dough balls? This is a good way to prevent that annoying dry crusty skin from forming on top of the dough balls, if after oiling the dough balls you still experience the formation of a crust on the dough balls try placing a sheet of plastic over the oiled dough balls, that usually does the trick.

Tom Lehmann/The Dough Doctor  
5118

[\*\*New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)\*\*](#)

A couple of things that I'd like to weigh in on, the mixing agitator that you are using is actually designed for mixing rich (high fat and high sugar) pastry dough, it is not well suited for mixing bread or pizza dough. The reason for this is because the dough gets all wrapped up in the agitator and doesn't receive very efficient mixing action or gluten development. I can see the indications of this in the photographs of the dough where it doesn't appear to be smooth, but instead, it has a rough appearance to it due to the under mixing. What you need to use is a "dough hook" aka dough arm designed specifically for mixing bread and pizza dough. With the correct mixing attachment the mixing time will probably be about 8 to 10-minutes (use a clock to time how long the dough is being mixed, also if at

all possible mix the dough at a higher speed. If you are presently mixing at 1st. speed go to 2nd. speed with the dough hook. The way the dough is interacting with the existing agitator I doubt that increasing the mixing speed would help any. I also notice that the crumb structure is really quite dense, more like some breads than pizza crust. To address this I would suggest increasing the dough absorption by at least 3%, possibly 5%. When combined with the improved mixing action afforded by a dough hook the dough should handle fine and you will see improved oven spring which will result in greater crumb porosity which in turn will reward you with both improved crust color as well as a improvement in crispiness.

Tom Lehmann/The Dough Doctor  
5117

### **Dough Clinic / Re: Neapolitan Dough with oil and some sugar**

The function of the added sugar is to provide nutrient for the yeast to feed upon and to provide residual sugar to help with crust color development which is especially important when using an un-malted flour and baking in a home oven or other oven that cannot bake at a temperature of 700F or more to develop crust color. Some flours have malted barley flour added to them as a source of diastatic (enzyme active) malt which creates sugar through the enzymatic conversion of damaged starch in the flour by enzymes present in malt. The malt can be added by the flour mill as "malted flour" or it can be added independently by the baker. In either case the sugars created by the malt play an important role in dough performance since it provides the necessary nutrient for the yeast to feed upon as well as providing sugar to aid in crust color development during baking.

Oil, depending upon the type of oil used can contribute flavor (olive oil, canola oil, sesame oil are but a few examples). Oil also entraps flavors/aromas which are generated during the baking process and in that manner oil adds to the flavor of the finished pizza. Oil in the dough helps to create a water/moisture barrier to prevent migration of moisture from the top of the pizza into the dough/crust which can ultimately lead to a wet, limp crust or at least lack of crispiness. Oil also acts to seal the cells in the dough so they are better able to retain gas, air pressure and moisture expansion resulting in a more open, porous crumb structure which greatly impacts crust eating properties, bake out, and crispiness. Along these same lines the oil lubricates the dough structure which further enhances the ability of the dough to expand during the critical oven spring stage of baking. And lastly, oil contributes to both the tenderness of the finished crust as well as overall eating/mastication properties of the crust. At higher levels (above 3%) it may also contribute to the crust color characteristics by providing a more vibrant (as opposed to dead/chalky) crust color. This is due to the oil on the surface reflecting light better than a dough made without the addition of oil.

Tom Lehmann/The Dough Doctor  
5116

### **New York Style / Re: Heikjo's first attempt at NY style Lehmann (12" on stone)**

I stand corrected, you are using a dough hook, it sure doesn't look like a dough hook in the photo though. However, it appears that you are using what is referred to as a "J" hook, an old design that has been replaced some time ago (actually back in the 70's) with the reverse spiral dough hook which is commonly referred to as a "dough mixing arm" to differentiate it from the "J" hook. The problem with the "J" hook as you are well aware is the problem of the dough climbing up on the hook and getting a free ride with little or no mixing action. The problem is worse with strong/stiff doughs like some pizza doughs are so the addition of some additional

water to the dough may help things a bit as will mixing the dough in a higher speed as the increased centrifugal force generated at the hook by the higher speed tends to throw the dough off of the hook better for improved mixing action. You might want to look into the availability of a reverse spiral mixing attachment for your mixer, when using one of these the dough cannot climb up on the attachment so it's constantly being worked for improved gluten development, and the best part of all.....you don't need to stop the mixer periodically to pull the dough down off of the hook.

One other thing, by putting the water into the mixing bowl first, then the flour with the salt, sugar and IDY (your level is a bit high) and mixing for about 2-minutes at low speed, then adding the oil and mixing for another minutes at low speed followed by 8 to 10-minutes at medium speed will result in improved mixing action regardless of the agitator design.

Tom Lehmann/The Dough Doctor  
5115

### [\*\*New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)\*\*](#)

Yep, that's the one we're looking for.

Tom Lehmann/The Dough Doctor  
5114

### [\*\*New York Style / Re: help please\*\*](#)

If you can get a malted flour try to get one with a protein content in the 12 to 14% range, personally, my favorite is in the 12.2 to 12.8% protein content range.

If you can find malt locally look for a diastatic activity of about 20-litner. if it is in powder form the use level will be about 0.5% of the total flour weight. If it is in a liquid/syrup form the use level will be about 2% of the total flour weight.

Since you are still having a problem with top crust color (even with 3% added sugar) I'm guessing that the issue is with the oven, either not hot enough or the pizza is being baked at a position too low in the oven (raise the pizza to a higher position in the oven for baking).

Tom Lehmann/The Dough Doctor  
5113

### [\*\*Dough Clinic / Re: Dough stretches too much \(can't pick it up\)\*\*](#)

Tijolo;

And don't forget to pick up a thermometer too while you're at it. You will want to record the temperature of the tap water that you are using as well as the temperature of the dough after you are through mixing/kneading it. Does your flour bag provide any nutritional information on the flour? If it does there should be something about the amount of protein provided per serving, this would be useful information for us too. After the cold fermentation period remove the dough from the fridge and allow it to warm AT room temperature until the internal dough temperature reaches 50F/10C before you begin opening the dough ball into a pizza skin.

Tom Lehmann/The Dough Doctor  
5112

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Wooden peels commonly used for neapolitan pizza\*\*](#)

Enchant;

It's actually pretty easy to cut a taper on a piece of wood, stand each board on edge

and use a tapered cutting jig on your table saw. Rather than going into the details of how to make one here, just Google: Cutting tapers using a jig on a table saw.  
Tom Lehmann/The Dough Doctor  
5111

**Dough Clinic / Re: Dough stretches too much (can't pick it up)**

Tijolo;

According to that information your flour has a protein content of only 10% which is very low for making a pizza dough which will receive more than an overnight cold fermentation period. See if you can find a flour with six (6) grams or more of protein for a 50-gram portion. This will give you a flour with 12% or moire protein content. If you can't find a flour wit more protein see if you can find some vital wheat gluten aka (glutina de trigo en polvo). With the dry gluten you should add 3-grams per 100-grams of your present flour, this will give you an equivalent protein level of 13% which should work fine for you.

Tom Lehmann/The Dough Doctor  
5110

**New Forum Members / Re: New Member wants to fix chewy dough**

Are you trying to make a pizza using a par-baked crust?

Tom Lehmann/The Dough Doctor  
5109

**Dough Clinic / Re: Hard to close dough ball after bulk CF?**

Clarkth;

That picture is showing me a very over fermented dough, so much so that it is bucky and very elastic resisting opening into a skin.

Try this for dough that you can use all week long:

After mixing the dough divide into desired weight pieces, form into balls, oil each dough ball, place into individual plastic food bags (NOT ZIP-LOCK) twist the open end to form a pony tail and tuck it under the dough ball as you place it into the fridge, leave the dough balls in the fridge in this manner overnight then leaving the dough balls in their bags place into your existing plastic containers but DO NOT tightly lid, you can now stack them so they don't take up so much space. Managed in this fashion you should be able to make pizzas (at least better than you are right now) all week long.

To make a pizza just remove a container and allow it to rest on the counter top for 1-hour then turn the dough ball out of the bag by inverting the bag (the dough will strip the bag inside out as it falls from the bag), let the dough fall onto a floured surface and begin opening the dough into a skin. Let me know how this works for you.

Tom Lehmann/The Dough Doctor  
5108

**Stones/tiles/steel, Pans & Accessories / Re: Making a Bigger Pizza**

How about an 18" stone for your oven?

5107

**Dough Clinic / Re: Hard to close dough ball after bulk CF?**

If it was very easy to open and very slack I would still say that it was over fermented but not yet to the stage where the dough becomes "bucky" extremely elastic and difficult to open.

Tom Lehmann/The Dough Doctor

5106

**Stones/tiles/steel, Pans & Accessories / Re: Making a Bigger Pizza**

Do you clean your pizza stone?

Tom Lehmann/The Dough Doctor

5105

**Stones/tiles/steel, Pans & Accessories / Re: Making a Bigger Pizza**

Out of curiosity I did a quick Google search (flat cast iron disks) and found a 17-inch disk. It has handles which could easily be ground off as well as provisions for legs which could be ground off too and you would have one that is 17-inches in diameter. That was just one item I found there, you might take a look to see if there is something there that might work for you.

Tom Lehmann/The Dough Doctor

5104

**Resources / Re: GFS Store vs Restaurant Depot vs Clubs vs Sysco/US Foods**

You might also want to post your question on the Think Tank at the PMQ (Pizza Marketing Quarterly) web site <[www.pmq.com](http://www.pmq.com)> which is visited mostly by pizzeria operators.

Tom Lehmann/The Dough Doctor

5103

**Prep Equipment / Re: Mixer for Neo-Neapolitan?**

A 60-quart Hobart or a spiral mixer should work well. You will only be making about 50# of dough a day to start so your dough size will be based on about 30-pounds of flour. A 50-pound (flour basis) spiral or a 60-quart planetary mixer will handle up to 50-pounds of flour so either mixer will be big enough to provide you with enough dough capacity for future growth. The mixing of the dough is not the critical part, it's all in how you manage the dough, without effective dough management you cannot have a consistently performing dough or a consistent quality finished crust.

Tom Lehmann/The Dough Doctor

5102

**Chitchat / Re: Catch a contractor**

We have had two major additions added onto our home in addition to decks located at the front and rear of the house. We required that all work be done only by licensed contractors from the immediate area. In all cases we had a contract developed in which it was stated that all construction shall be in full compliance with all city (Manhattan, KS) and county (Riley) building codes even though we live outside of the city. The payment money was held and payable through a local escrow company with agreement that 25% of the total charges would be held until the work was inspected and passed by a city/county inspector (we had to pay a small fee for the inspection). This keeps everything above board between me and the contractor, and I have piece of mind that the work is being done as right as possible, it also ensures that there will be no post construction surprises in the form of mechanic liens due to unpaid materials that were delivered to the work site.

What happens when you don't require this?

These are all things that are close to me and I can point them out.

1) Home was built within the roadway easement. Problem: If the county decides to run underground utilities or widen the highway the house will need to be moved

(not likely as it's a berm home). Their title carries this stipulation so the owners have been unable to sell the home...can't imagine why??

2) Garage was built right over the underground utilities contained within the roadway easement....you guessed it, when those utilities need to be replaced there will be a problem. Oops!

3) Another home, essentially right across the street from #2 above, same thing. Our county code stipulates minimum set-back from all easements, it pays to know where they are and what the required minimum set back is before breaking ground.

Tom Lehmann/The Dough Doctor  
5101

### **New York Style / Re: help please**

P505;

The pizza looks pretty good but still has a light crust color. What does the bottom of the pizza look like? I'm really beginning to think that you might have an oven issue which is responsible for the lack of crust color development.

Tom Lehmann/The Dough Doctor  
5100

### **New York Style / Re: help please**

P505;

If you are baking the pizza just on a screen that might be the problem right there. Home ovens have two main problems when it comes to baking pizza, 1) They don't really have any bottom heat so vertical positioning of the pizza in the oven rack is critical. 2) Heat recovery is poor, to say the least. If you bake your pizzas on a pizza stone the stone holds latent heat which is released into the bottom of the pizza when you place the pizza on it and the mass of the stone (latent heat) helps to overcome the heat loss when you open the oven door. Baking your pizza directly on the stone should give a significant improvement in crust color development,

Tom Lehmann/The Dough Doctor  
5099

### **New Forum Members / Re: hi, I am a mother of a 9 year old.**

Three tools that you will find coming in handy are a low cost thermometer for measuring water and dough temperature (automotive stores carry good dial type thermometers used for measuring the air conditioning temperature for about \$7.00, Walmart carries them once in a while too) An electronic scale for measuring ingredient and dough weights is invaluable (cost about \$35.00 off of the internet) and a pizza stone sized to fit into your oven along with a pizza peel (I've found both recently at our local Ace Hardware store).

Tom Lehmann/The Dough Doctor  
5098

### **Dough Clinic / Re: Bread sticks**

Most operators just make their breadsticks using their regular pizza dough. It's a good way to use any left over pizza dough. You can par-bake the bread sticks and store them in a plastic bag or dough box at room temperature, then to fill an order just give a quick pass through the oven to thoroughly reheat, brush with a little garlic flavored butter oil and serve. If you want to make a dough just for your breadsticks again use your regular pizza dough formula and just increase the fat (oil or shortening) level to 5% and that'll make a softer breadstick.

Tom Lehmann/The Dough Doctor

5097

[\*\*New York Style / Re: help please\*\*](#)

P505;

Allll Right!! Now you're getting some bottom crust color. The crumb porosity looks good too. Your next series of experiments should center around using a pizza stone. Due to the more efficient heat transfer when baking directly on the stone the crumb porosity might also improve by getting a larger cell structure due to the improved oven spring when baking on a stone, you might even find another pizza that you like as much as the one you are making right now.

I'm glad to hear that you really like the pizza you're making now, we're all here to help.

Tom Lehmann/The Dough Doctor

5096

[\*\*Newbie Topics / Re: crust rising too much in the oven problems\*\*](#)

I agree with Nick 57, if you feel that you must par-bake the crusts a much preferred method is to sauce the dough skin prior to par-baking, then remove from the oven as soon as the dough structure is fully set and the edges are starting to turn brown, dress as desired and return to the oven to complete baking. This is not as good as baking the pizza in the normal manner on a raw dough skin but it is pretty good if you thin slice the vegetable toppings and don't get too carried away with the amount that you use, also be sure to use only fully cooked meat toppings too. This is necessary due to the reduced time that the fully dressed pizza will be in the oven. One other thing, research that we conducted a number of years ago at the American Institute of Baking showed that dough which had less than 2.5-hours of total fermentation time prior to baking exhibited a pronounced tendency to blister and bubble during the baking process.

Hang in there, we'll have you making better pizzas in short order. :)

Tom Lehmann/The Dough Doctor

5095

[\*\*Neapolitan Style / Re: Mozzarella browning in WFO\*\*](#)

Kolo 101;

I don't know if they market in the U.K. or not but Galaxy Nutritional Foods is a good source for vegan and vegetable based cheese products. Just Google (Galaxy Nutritional Foods) to see their offerings which includes a vegetable based Mozzarella type product.

Tom Lehmann/The Dough Doctor

5094

[\*\*New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)\*\*](#)

No question about it, the new spiral agitator is giving you much better dough development. I might suggest that you add the water to the bowl first (before adding any other ingredients) as this will result in much more thorough and consistent flour hydration (your comments about using both agitators confirms this). Also, the videos of the new agitator mixing the dough shows that your dough size is too small for the bowl capacity. You will note when watching this video that the dough makes little contact with the sides of the bowl, only the bottom so mixing action still isn't what it should be. To address this I would make two more doughs, one with 50% more flour and one with 100% more flour to see how the dough interacts with the side of the bowl. You should be able to see the dough pulling off

of the bottom of the bowl by the time the dough is fully mixed. Once the dough is pulling off of the bottom of the bowl you can pour just a small amount of oil down the inside of the bowl and mix for 10 to 15-seconds, the dough should just about pop out of the mixer by itself. You had also asked about the water temperature, 30C/86F, is too warm for the water temperature when a mechanical mixer is used. Instead, the water temperature (before placing it in the mixing bowl) should be about 21C/70F which should give you a finished (mixed) dough temperature between 80 to 85F / 26 to 29C.

The finished pizza is really looking quite good with a pretty decent open, porous crumb structure. If you want to achieve an even more open crumb structure begin experimenting with increased dough absorption. Begin increasing the dough absorption in 2% increments until the dough becomes too soft to handle, then back down by 2 or 3% and that'll be the maximum absorption your dough will carry for your method of dough management.

With improved mixing action with the larger dough size and the lower finished dough temperature you should be able to get away with an additional 5% in dough absorption before handling becomes an issue for you.

Keep us posted, and keep those great videos coming!!! :)

Tom Lehmann/The Dough Doctor  
5093

### [\*\*New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)\*\*](#)

Heikjo:

Save yourself the extra step of blending together the flour, salt, IDY, and sugar in a separate bowl, instead just add all of the flour right on top of the water in the bowl, then add the salt, sugar and IDY right on top of the flour (no need to blend in.....trust me), as you start the mixer the agitator will do all of the blending that's needed. Keep in mind also that as you increase the dough absorption you will need to mix the dough a little longer to reach the development point where the dough pulls off of the bottom of the mixing bowl by itself.

I'm looking forward to seeing your next videos with higher dough absorption.

Tom Lehmann/The Dough Doctor  
5092

### [\*\*General Pizza Making / Re: Detroit Style in Wood Fired Oven\*\*](#)

You will probably need to drop the temperature down to 500 to 550F and put a screen under the pan to control the development of bottom crust color.

Tom Lehmann/The Dough Doctor  
5091

### [\*\*Sauce Ingredients / Re: Why not cook sauce? Isn't it already cooked before being canned?\*\*](#)

Actually, the best tomato products are made by what is called a "cold pack" process where the sauce is not cooked in the traditional method. The canned product is heated as a sterilizing step but that's all the heat they get. The biggest reason for not cooking the sauce is flavor. You know how great the sauce smells while it's being cooked? Too bad you're the only one who will experience those wonderful aromas, those aromas are volatile (that's why you were able to enjoy them) and they can never be enjoyed as part of the experience of eating the pizza. When we use a "cold" uncooked sauce those wonderful aromas are released during baking so many of those aromas can be enjoyed by those eating the pizza. From a pizzeria standpoint, once you cook the sauce you must cook it to at least 165F/73.8C and

then hold it at 140F/60C for use (which further deteriorated the flavor of the sauce) so we cool it down for storage (food safety regs stipulate that you must cool it down to 40F/4.4C or less but here's the sticker, it's called the 4-hour rule which states that the food can remain at a temperature which can support microbial growth (140F/60C to 40F/4.4C) for an accumulated time of not more than 4-hours. Add in the time it takes to get the sauce temperature up to 165F/73.8C and then back down to 40F/4.4C and you don't have much, if any time remaining on the clock, much less use it on the prep table.

If you want to experience a wonderful "sauce" just take a fully ripe tomato and slice it 3/16th. inch (about 4mm) thick, drain on an absorbent towel and use the slices just as they are to replace your regular sauce. I like to add sliced fresh garlic and torn fresh basil leaves under the tomato slices, then dress the pizza with cheese and desired toppings and bake as usual.

Tom Lehmann/The Dough Doctor  
5090

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

Norma;

Are you putting oil in the pans when you bake the pizzas too?

Tom Lehmann/The Dough Doctor  
5089

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

Norma;

If you could provide a picture of the pan that would be great. I have a suspicion that the pan may not be sufficiently seasoned.

Tom Lehmann/The Dough Doctor  
5088

### [\*\*Sauce Ingredients / Re: Why not cook sauce? Isn't it already cooked before being canned?\*\*](#)

And as the tomato is cooked on the pizza it is also concentrated. They all end up being cooked in one way or another, most feel that you get a truer tomato flavor with minimal or at least a single cooking. Pasta sauce is a whole different story since the sauce doesn't really get cooked on the pasta, so slow simmering is the way to go for a pasta sauce. If you really want to see what too much heat on tomato sauce looks and tastes like just take a look at Hunt's tomato paste. The cooking has turned it to a Burgundy red and the taste, well you can decide that for yourself.

Tom Lehmann/The Dough Doctor  
5087

### [\*\*Sauce Ingredients / Re: Why not cook sauce? Isn't it already cooked before being canned?\*\*](#)

Not necessarily a "bad" result but a different result, if that result was good or bad you would have to decide based on your personal preferences and expectations. The one thing that I am sure could be predicted is that the fresh tomato flavor would be lost.

Tom Lehmann/The Dough Doctor  
5086

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

Norma;

What you probably read is that once the pans are properly seasoned the seasoning

process will continue as the pans are used, this is seen as a continued darkening of the seasoning until almost black in color.

Tom Lehmann/The Dough Doctor  
5085

**New York Style / Re: Heikjo's first attempt at NY style Lehmann (12" on stone)**

Heikjo;

If you keep making pizzas like that you're going to find out that you have a whole bunch of new friends. :)

I would continue to experiment with the convection fan on/off and with increased absorption with an increase in mixing time which will probably be necessary with the increased dough absorption. With the increase in dough size be sure to try using only the spiral mixing agitator for the entire mixing process, I'm just trying to make it easier for you to make your pizza dough.

Tom Lehmann/The Dough Doctor  
5084

**Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

Carl;

Next time try some Raw Sugar/Castor Sugar on top of the rolls before baking. I like to brush with melted butter and then sprinkle on the sugar just before going into the oven. Really Gooooood! :)

Or how about making a small amount of streussel topping and sprinkling on over the melted butter? Ditto as for above!

Tom Lehmann/The Dough Doctor  
5083

**Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

Jurjan;

Additionally it would be beneficial to know what the finished/mixed dough temperature is. Since temperature drives the rate of fermentation dough that is too warm will ferment faster than a cooler dough AND the cooler dough will cool down faster when you place it in the fridge for better fermentation control. For most pizza doughs that will be cold fermented for 24-hours a finished dough temperature of 75 to 80F is a good place to start.

BTW: Zip-Lock bags are not the best bag option for bagging your dough balls, instead, pick up a roll of food bags from your local supermarket, just a couple of dollars for a box of them, oil the dough ball, drop the dough ball into the bag, pull bag snug around the dough ball and twist the open end to close and tuck it under the dough ball as you place it in the fridge, this is important as it allows for some expansion of the dough ball without fear of the dough bursting the bag, and it also allows the bag to burp itself as carbon dioxide is formed in the bag. To remove the dough ball just invert the bag over a floured surface allowing the ball to strip the bag inside out as it falls from the bag. Place the used bags into a clean bag and store in the fridge until the next time you make dough, they can be reused many times over.

Tom Lehmann/The Dough Doctor  
5082

**Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

Jurjan;

I forgot to add that if you cannot find the food bags in your area, you might check with a local bakery to see if they use plastic bags for any of their items, then see if you can buy a few from them, buy reusing them (no need to wash between uses) twenty bags should last you a long time. Or, if your commercial bread is sold in plastic bags, put out the word to friends that you need some of those plastic bread bags, you do realize that you will probably need to thank them for saving those bags for you by inviting them to one of your pizza parties. :)

Tom Lehmann/The Dough Doctor  
5081

**Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

BJ;

No, I do not find that plastic bags work well for room temperature fermentation, in that case plastic containers will work better for you.

Tom Lehmann/The Dough Doctor  
5080

**Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

Jurjan;

I think the problem with your bags is that they are too big. Try a smaller size bag, that should work better. As for spacing them apart in the cooler the dough balls should not be tightly packed as they need room for airflow around them to achieve effective cooling of the dough ball. Even in the plastic dough boxes the dough balls have to be spaced about 2-inches/50mm apart for the same reason, plus the dough boxes also have to be cross-stacked for approximately 3-hours (depending upon the weight of the dough ball and efficiency/type of cooler you are using, after the cross-stack period the boxes are then down-stacked (a new stack is built taking the top box from the stack and placing it in the bottom position of the new stack, the boxes are covered at this time for the duration of the cold fermentation period.

Tom Lehmann/The Dough Doctor  
5079

**Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans**

Norma;

If I'm seeing it correctly (light isn't playing tricks with the photographs) it appears that the seasoning is pretty well worn through on the pan that you tested. The other two pans appear to be a better option. It is indeed worn seasoning you will need to continue seasoning the pan that was sticking until you see more color beginning to develop in the seasoning.

Tom Lehmann/The Dough Doctor  
5078

**New York Style / Re: Convection baking - good or bad?**

Pizzamaster;

In the oven industry a distinction is made between convection baking and air impingement baking to which you are referring. Convection baking utilizes air flow/movement throughout the oven while air impingement baking utilizes very high velocity airflow that is focused directly at the product being baked, part of the reason for doing this is to break through (sweep aside, There ovens were once referred to as "air sweep ovens") the cool area surrounding all products as they are

baked. This cool area is the result of steam being released from the product during baking and it greatly slows the rate of heat transfer to the product. By "impinging" the high velocity air onto the product the cooler "corona" is displaced, allowing for more efficient heat transfer to the product which translates to faster baking. You can see this by baking a pizza in a convection oven and then baking the same pizza in an air impingement oven at the same temperature. The air impingement oven will always give a stronger bake and higher internal temperature faster than other types of ovens. The one scenario where this is a moot issue is when baking a very thin crust pizza with a limited number/amount of toppings in a stone hearth oven at temperatures of 750F and more, in this case the air impingement oven is at a bit of a disadvantage as there is a limit to how fast you can bake using air impingement technology.

Since pizzas are correctly baked from the bottom up convection ovens do not generally do a very good job of baking pizzas but as has been mentioned by others if you add a pizza stone into the mix you have now created a platform for achieving bottom bake while the air movement does a pretty good job on the rest of the pizza, this is especially so if you have a lot of vegetable toppings on the pizza where in this case, the airflow, just like with an air impingement oven, does a respectable job of removing some of the moisture released from the vegetables resulting in a drier finished pizza.

Tom Lehmann/The Dough Doctor  
5077

### [\*\*Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball\*\*](#)

Jurjan;

I agree totally, we have all had to make some changes to our dough formulations or management procedures to accommodate what we have on hand to work with. If you don't already have one, see if you can find a good food type thermometer, they're rather inexpensive and the accuracy is close enough for our needs. Use the thermometer to measure the temperature in your home fridge as well as the finished dough temperature. Your home fridge should be operating at around 40F/4.4C. If the temperature of the fridge is much warmer you will need to reduce the finished dough temperature by a few degrees to prevent the dough from over fermenting. It also helps a lot to take the dough directly from the mixer to the counter top for scaling and balling without any pre-fermentation. Once the dough begins to ferment it becomes less dense making it even more difficult or sometimes even impossible to properly chill in a home fridge.

Tom Lehmann/The Dough Doctor  
5076

### [\*\*Neapolitan Style / Re: Adding basil before mozzarella\*\*](#)

Kolo;

This is just my humble opinion, but I think the only way to add basil to a pizza baked in a wood fired oven, especially a Margherita is to place the leaves on the top of the pizza after it has been completely baked (leaving the pizza on the peel while placing the leaves, then place the pizza back into the oven (still on the peel) and lift it into the dome of the oven to wilt the basil, remove immediately and let the latent heat in the pizza do the rest for you. I know of a lot of other operators who just add the leaves when they peel the pizza out of the oven letting the latent heat in the pizza wilt the leaves. Either way the presentation is great and the aroma released from the basil leaves is absolutely great.

When I'm making a regular type of pizza and just using fresh basil to replace that

"dried stuff" I like to roll a number of leaves and cut on the diagonal, then place the cut strips over the sauce before adding the cheese. This still allows the basil to wilt and release its aromatics and the cheese helps to trap those aromas in the pizza without any fear of scorching the delicate basil strips. The only problem here is that you cannot see the basil (what a shame) and the flavor is lost/intermingled with the other flavors of the pizza, but in any case it sure beats the flavor of dried basil, which is why we were adding it in this specific case anyhow.

I might add that my own personal preference is to add what I call an Italian Wedding Bouquet (that's the 4-leaf cluster at the top of each leaf stalk) to the very center of each pizza for great looks, aroma and taste.

Tom Lehmann/The Dough Doctor  
5075

**Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

In most doughs 1.75% salt is all that you really need unless you're addicted to salt, then the sky's the limit, but be aware that salt has a suppressing effect upon the yeast so it can slow down fermentation quite significantly when you start getting up at 3% and higher levels. In pizza production you really don't need more than 1.75% salt as this level provides all the advantages that the salt provides while not going overboard with the sodium level as there will be an additional salt/sodium contribution from the sauce and especially the cheese and any processed meat toppings. It's all in developing a balance.

Tom Lehmann/The Dough Doctor  
5074

**General Pizza Making / Re: Dough gets dry crusty layer on outside**

I either wipe all of my dough balls with a little oil or I use a plastic storage box about 6-inches deep that I bought at Walmart that I keep the dough balls in while they're awaiting their turn on the bench. If you're only looking to hold the dough balls for 15 to 20-minutes the oil works fine but if it will be longer than that you will need to cover them, doesn't need to be air tight, in fact you can put them into a roasting pan and drape with a damp towel too, works just fine.

Tom Lehmann/The Dough Doctor  
5073

**Dough Clinic / Re: 10 minute mix in a KA, dough ready for balling?**

Ryan;  
2 to 2.5% is what I would call typical, some may go as high as 3% but that's way beyond my own taste preferences.

Tom Lehmann/The Dough Doctor  
5072

**Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

Jurjan;  
I hope you're drinking stout and not beer from that fridge. Too warm for beer but just right for stout. Too warm for pizza dough too by the way.  
How long will it take you to get your dough balls into the commercial cooler? This is a very important thing to know in this case as it will help me to determine what you finished dough temperature should be.

Tom Lehmann/The Dough Doctor  
5071

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)

Norma;

As you continue to bake in a seasoned pan the seasoning slowly cures to a harder surface (pan seasoning is just like a varnish in that regard), as you continue to bake in a seasoned pan the oxidation process continues (heat accelerates oxidation) until the seasoning becomes hard (like cured varnish) and it continues to darken until nearly black in color. That's when you begin to see the improved release properties of a seasoned pan, also why grandma got so upset if anyone suggested cleaning that old black colored frying pan. It takes time to develop that desired patina and hard finish but it can be easily destroyed by improperly washing the pans.

Tom Lehmann/The Dough Doctor

5070

## [General Pizza Making / Re: Pre stretching pizza dough](#)

Greg;

How far in advance are we talking about pre-opening the skins? If the time will be fairly short, less than 30-minutes, you can probably get away with it but remember that the dough will be warm when you open it and it will also be actively fermenting so even the semolina flour will most likely be engulfed into the expanding dough potentially causing the waxed paper to stick to the dough. In this regard parchment paper might work better, and better yet would be to very lightly oil each skin to further ensure release from the separating papers. To protect the stack just lightly cover with a piece of cling wrap. I would not recommend trying to put the stack of pre-opened skins in the fridge as this will serve no useful purpose and may in fact, contribute to problems caused by condensation forming (warm dough cold environment) such as a sticky or tacky dough. I've also found it to be beneficial to minimize dough absorption as this will retain better handling properties of the pre-opened skins as you remove them from the stack.

Tom Lehmann/The Dough Doctor

5069

## [New York Style / Re: help please](#)

P505;

By doubling the dough size you will get a couple more degrees temperature gain due to the friction of the dough rubbing against the bowl but not enough to give you the result that you have observes, hence the only other reason why your dough has become noticeably warmer by just doubling the batch size is because the water temperature had to be significantly warmer. Remember, if you want to make great pizza, and if you want to do it consistently you've got to take the temperature of the water that you are putting into the mixing bowl (about 70F) and also the temperature of the dough at the end of the mixing period. You will most likely be served best with a finished dough temperature of around 75 to 80F but this might vary to some extent depending upon your exact dough management parameters. Remember that as the finished dough temperature gets into the 90F range the wheat proteins (gluten) begin to disassociate (come apart) resulting in a stringy, sticky dough that is all but impossible to work with.

Tom Lehmann/The Dough Doctor

5068

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans](#)

Norma;

Let's try one more thing, add more oil to the pan when you put the dough in. If I recall correctly, an old standard used to be 1-ounce of oil into a 12" diameter pan

(113-sq. in.). If that doesn't work my suggestion would be to completely strip all the finish off of the inside of a pan and begin the seasoning process over again on that pan. Since pan seasoning is a first cousin to varnish you can use any good paint stripper to remove the seasoning, if you need to scrape anything use a coarse steel wool, do not use sandpaper, sandpaper will scratch the pan while the steel wool will burnish it.

Tom Lehmann/The Dough Doctor  
5067

**[General Pizza Making / Re: Cricket Flour Dough for Pizza](#)**

Norma;

You should try some of your cricket flour dough in those problematic pans, I've heard that when you use cricket flour in dough for deep-dish pizza the finished pizza.....are you ready for this? Jumps right out of the pan! :) All kidding aside, those cricket flour pizzas actually look pretty good, something like a whole wheat pizza.

Tom Lehmann/The Dough Doctor  
5066

**[General Pizza Making / Re: Pre stretching pizza dough](#)**

Greg;

The parchment paper will provide insurance should the dough want to stick. Even if it sticks to the parchment paper you can still peel it off but if the skins stick to each other as, they might without parchment paper, you're not going to be able to separate them. Just a loose covering with Saran/stretch wrap will do, you don't want to trap any moisture in the stack, allowing it to ventilate is better than not.

Tom Lehmann/The Dough Doctor  
5065

**[Prep Equipment / Re: Need help choosing KA mixer...](#)**

The champ of all the 5-quart size Hobart mixers is the Hobart Model N-50. This is a real workhorse, 3-speeds, all metal gears, only complaint is that there isn't a spiral dough arm made for it. The mixer was originally designed for use in making small test batches of concrete and ultimately found its way into the food industry. As far as I know, all N-50s were painted only Hobart gray. Great mixer if you can find one, pretty scarce though. Another excellent option is to buy a used A-120/A-120-T (12-quart) or A, A/S, or AS-T-200 (20-quart capacity) Both operate on standard home voltage (110-V/15 AMP) both can be had with all the attachments including a reverse spiral dough arm. These mixers are actually pretty easy to come by as you will find them in most restaurants. The last restaurant sale that I was at had two A-120s that went for under \$1,000.00 each. Not a bad price when you consider that it will most likely be the only mixer you will ever need to buy for dough mixing and if you should ever decide to sell it you can always get your money back out of it. These mixers stand about 30" tall so they are hard to put on an average counter top but a friend of mine who has one has his mounted on a bench out in his garage. BTW: The "A" designation is the basic model, A/T has a timer integrated into the switch and the T/S has a timer in addition to a position on the switch which allows you to jog the agitator in a "stir" mode.

Tom Lehmann/The Dough Doctor  
5064

**[Dough Clinic / Re: Quick dough question from a complete newbie](#)**

Josh;

It is very common for a pizza dough to not contain any sugar. It all depends upon the type of pizza you are making.

Tom Lehmann/The Dough Doctor  
5063

### **[Shop Talk / Re: Tom Lehmann's Dough Management Procedure](#)**

The dough mixing can be done at either low or medium speed, Peter is correct in that it just depends upon how long you want to wait for the dough to be mixed. Typically we see mixing times of 18 to 20-minutes at low speed and 8 to 11-minutes at medium speed. I also recognize that for a number of reasons some mixers will not handle mixing some pizza doughs at anything but the lowest/slowest speed so that eliminates any options for mixing speed right off of the bat. The main thing about mixing almost all pizza doughs is that you don't want to mix to the point of developing a lot of gluten, mix the dough just to the point where the dough takes on a smooth, satiny appearance, biochemical gluten development will take care of the rest of the gluten development for you during the fermentation period. The one exception to this advice on gluten development is when we are making COMMERCIAL frozen pizza dough. In this case there will be essentially no fermentation so there will be no biochemical gluten development taking place, but we still need the gluten development to provide strength to the dough after slacking it out (thawing) so the only way to get the desired gluten development in this case is through mechanical gluten development. Since frozen dough is made cold (60 to 65F) the doughs are extremely tough, add to that the fact that the gluten is somewhat more difficult to develop at those lower temperatures it is common to include a reducing agent such as L-cysteine/PZ-44, glutathione, or deodorized vegetable powder to the dough to help develop the gluten and shorten/reduce the overall mixing time (hence their reference as a "reducing agent"). To achieve the needed gluten development these doughs must be mixed at high speed in mixers that are specially designed to withstand the mixing forces applied to the dough, they are also designed with direct expansion jacketed mixing bowls to help keep the dough cool during mixing allowing the targeted finished dough temperature (60 to 65F) to be CONSISTENTLY achieved.

This is probably more than what you wanted to know about dough mixing but I know that some of our posters either use or have used commercially prepared frozen dough from the supermarket or food distributor so I thought it might be good for them to have an understanding of how the commercial frozen dough is made.

Tom Lehmann/The Dough Doctor  
5062

### **[Commercial Ovens / Re: Pizza ovens](#)**

In my opinion you will be hard pressed to beat the Marsal deck ovens. Their newer brick lined decks are really great for N.Y. style pizzas. If you opt for Marsal just make sure to follow their installation advise and unless otherwise stated by Marsal, do not install an external gas pressure regulator, the Marsal ovens come with a regulator already installed in the oven, if you add a second one the oven will take forever and a day to come up to temperature and the baking times will be around 15-minutes. This is the single most common problem that I've encountered with the Marsal ovens, just read the directions and you will have a great oven from the get go.

Tom Lehmann/The Dough Doctor  
5061

## [\*\*Dough Clinic / Re: Quick dough question from a complete newbie\*\*](#)

Josh;

Believe it or not, there is a correct way to level a volumetrically portioned cup of flour. Pour, sift (the most accurate/repeatable) or scoop the flour into the cup, using a flat blade decorator's spatula held on edge, place the spatula across the center of the cup and move the spatula to the edge, repeat going in the other direction to level off the other side of the cup. Always begin in the center of the cup. This helps to promote the greatest repeatability.

Tom Lehmann/The Dough Doctor

5060

## [\*\*Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball\*\*](#)

Rick;

No, salt isn't evil, and when consumed in moderation it isn't bad for one's health either, with that said the salt needs to be balanced between the toppings and the crust for the best overall flavor in the finished pizza, types of pizza that will be made with a lot of toppings (toppings typically contain salt) will normally be best with a dough formulation with 1.5 to probably not more than 2% salt (I normally use 1.75% salt), while pizzas that are more sparsely topped typically do better with a dough formulation containing a higher salt level (2.5 to 3% salt is pretty common in this case). If you're just making pizzas and letting the amount of toppings fall where they may, 1.75% salt is a good level to work with. If you are trying to reduce sodium in your diet try Salt For Life with a 70% sodium reduction and no metallic taste like you got from the old Morton's Lite Salt. You can buy Salt for Life at Walmart.

Tom Lehmann/The Dough Doctor

5059

## [\*\*Shop Talk / Re: Tom Lehmann's Dough Management Procedure\*\*](#)

Peter;

For many years frozen dough manufacturers used nothing but either FRESH compressed yeast or cream yeast (liquid yeast/available only in truck load quantities). The compressed yeast was/is delivered to the bakery normally twice a week to ensure freshness. This compressed yeast is the same yeast that we can buy from a distributor but most likely a lot fresher. The frozen dough manufacturers go to great lengths to make sure the dough/yeast isn't activated prior to freezing. Once the yeast begins feeding/fermenting the individual cells plump up and are more easily and to a greater extent damaged in the freezing process. These steps are necessary to ensure satisfactory performance over the shelf life of the dough (18 to 22-weeks). When shelf life is not the prime concern and we can live with a predictable 15-day shelf life you can get away freezing a fermented dough in a non blast type freezer (blast freezer = -30 to -35F with 600 to 800 linear feet per minute airflow over the product) Static freezing, which is what many small operators do is defined as freezing at 0 to +10F with little or no airflow over the product. This type of freezing allows for the development of a very large and angular shaped ice crystal which is especially deleterious to the life of the yeast. The type of freezer that the dough is stored in can also have a dramatic impact upon the shelf life of the dough too. Residential freezers may defrost 12 to 24 times in a 24-hour period which results in moisture migration within the dough and continued development of those large ice crystals (this is why your ice cream looks grainy in your home freezer, just look at the top of the carton at all the

moisture/frost that collects there, that's all from the ice cream, the dough does the same thing, we have a name for it, "freezer burn". Commercial freezers don't have this problem by design, that's another way they get their long shelf life. Lately, there has been some development of freeze tolerant yeast but due to the higher cost not many commercial frozen dough manufacturers are using it. A number of years ago I did a quick calculation on the impact of yeast cost on the profit margins of a commercial dough manufacturer, a \$0.01 (1-cent) per pound cost difference in the yeast impacted profits by roughly \$91,000.00 a year assuming a production of 100,000-pounds of dough per day. That's why everyone isn't jumping on the freeze tolerant yeast band wagon, most dough manufacturers just don't see the R.O.I. There is one type of commercially frozen dough that is fermented prior to freezing, this is pre-proofed frozen dough, pre-proofed dough is frozen cryogenically at between -45 and -65F using liquid carbon dioxide or nitrogen which allows for the development of a very small ice crystal which does very little damage to the yeast so the product retains a reasonably long shelf life, you can see this type of dough in the Freshetta Pizza that is sold in the frozen food case at your local supermarket. If frozen dough has a common denominator it is temperature, everything revolves around temperature when making and storing frozen dough.

One last thing about commercial frozen dough formulations, many of them include some form of oxidation in the form of ADA (azodicarbonamide) or AA (ascorbic acid), these oxidants help to reverse the dough weakening effects of the glutathione which leaches out of the yeast cells damaged during freezing making for a stronger dough after it is slacked out/thawed.

I'm feeling like I'm back in teaching again! :)

Tom Lehmann/The Dough Doctor

5058

### **Pizza Cheese / Re: Anyone do a whole milk mozz/provolone blend?**

I'm with Essen1, Provolone will just increase the fat content of your cheese with essentially no impact upon the flavor, by definition Mozzarella cheese is bland in flavor, but with the addition of a small amount of Parmesan or Romano you can make the cheese flavor intensify and really "pop". Experiment with the addition of some other types of cheese to find what you really like, you won't be disappointed.

Tom Lehmann/The Dough Doctor

5057

### **Shop Talk / Re: Tom Lehmann's Dough Management Procedure**

Peter;

In a commercial operation CY is preferred over IDY only because of the cost factor with the one condition being that it must be available to the bakery fresh and at least twice a week. If either of these conditions cannot be met the cost of the yeast will become a secondary factor to the performance of the yeast, this is where IDY is looked at more favorably. Due to the difficulty of developing the gluten in such a cold dough it is customary to mix these doughs using what is referred to as the "delayed salt" mixing method. Since the sodium complexes with the wheat proteins/gluten mixing the dough without the salt allows for faster dough development (it shortens the total dough mixing time by about 2-minutes), the salt is then added at a point approximately 4-minutes prior to the end of the mixing time. In some of the smaller frozen dough operations where IDY is in use the most common method for adding the IDY is along with the salt, the additional 4-minutes of mixing after the addition of the IDY is sufficient to disperse the IDY and allow for complete hydration (it's one of the recommended ways to add IDY). As you have already discovered, yeast leavened dough is pretty tolerant to static freezing

conditions if you limit your expectations to not more than 15-days. I know people will argue with me saying that they have successfully frozen dough in their home freezer for much longer periods of time but two things are sure, one is that they cannot do it repeatably with consistent results, two I've yet to meet the person who would do it with as much as 22-weeks of production on the line (at anything from 50,000 to 100,000 thousand pounds of dough made on each of those days), the last thing you want to hear in a commercial frozen dough bakery is that the dough is failing...Ouch!

Tom Lehmann/The Dough Doctor  
5056

### **Dough Clinic / Re: Affordable Manual Dough Sheeter?**

A large, heavy duty rolling pin works well.

Tom Lehmann/The Dough Doctor  
5055

### **Shop Talk / Re: Tom Lehmann's Dough Management Procedure**

Peter;

No, salt isn't an antioxidant. Due of the complexing of the sodium with the wheat proteins the gluten is strengthened so when a dough is mixed without salt it will reach any specific level of gluten development faster, then when the salt is finally added the dough will tighten back up again. The idea is to mix the dough past peak development and then when the salt is added it brings the gluten back to whatever level of development you've developed the mixing time and salt addition to achieve. The beta carotenoids are what gives unbleached flour its yellow or creamy color and they can only be removed through oxidation. Back when we were using potassium bromate at 65-ppm and above all bread came out with a bright, white crumb color due to the oxidizing effect upon the beta carotenoids (of course everyone was looking for the brightest, whitest crumb color at the time so all was good). What makes the dough change in appearance (note I didn't say color) is the smoother skin that is being formed over the surface of the dough due to gluten development, this smooth skin reflects light better than the rough, porous surface texture of the undeveloped dough (light absorption into all of those crevices). As for flour strength in a frozen dough system you are correct in that the flour provides all of the strength needed, so why oxidation added to the frozen dough? The answer is because of the glutathione that is slowly released from the yeast during the long shelf life of the frozen dough, without the ascorbic acid, azodicarbonamide, or potassium bromate the glutathione would progressively weaken the dough to the point where it potentially could not be successfully used to make some yeast leavened items (pizza, in all probability would not be one of those items since we don't call for a lot of residual strength in the dough like we do when making bread where the structure is several inches high and is also subjected to mechanical shock from handling the pans of fully proofed dough. If the dough is intended just for pizza production you're right, no additional strengtheners in the form of oxidation would probably be needed, but as it is, the dough that is used to make pizza crust today might be used to make French bread, Vienna bread or rolls tomorrow. Add to that the fact that there is potentially so much dough in the pipe line and oxidation is something of a crutch, you will see oxidation continue to be used in frozen doughs if for no other reason than as an insurance policy to protect the dough performance just in case something goes wrong in storage or distribution.

Tom Lehmann/The Dough Doctor  
5054

## [\*\*Dough Clinic / Re: Surprise fail\*\*](#)

In your previous doughs did you use as much as 70% 00 type flour? Remember that 00 type flour is not malted so unless you are either adding a source of diastatic malt or sugar there is a good probability that the yeast ran out of nutrient and then began to cannibalize itself which results in a slack dough condition due to the release of glutathione from the dead yeast and little or no fermentation power in the dough.

Tom Lehmann/The Dough Doctor  
5053

## [\*\*New York Style / Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)\*\*](#)

When you say that you left them uncovered for 3-hours at first, was this in the fridge? Did you cover the dough balls afterward? Since the cold air in the fridge can't hold as much moisture as warm air outside of the fridge if the dough was at room temperature uncovered this would explain the dry crust on the dough ball. If you allow the dough to proof at room temperature it should always be covered in some manner to protect it from drying out. A very simple method of doing this is to place the dough balls on the counter top and then invert a bowl over each dough ball. To eliminate that stickiness you are finding immediately after the dough is fully mixed, put the mixer in low speed for 30-seconds and pour a small amount of oil down the inside of the bowl while continuing to mix at low speed for 10 to 15-seconds. The dough should come from the bowl much easier and without any perceived stickiness.

Your dough is beginning to look pretty good.  
Tom Lehmann/The Dough Doctor  
5052

## [\*\*Newbie Topics / Re: Meat or seafood toppings question\*\*](#)

While I'm a real seafood pizza lover I try to avoid shrimp on my pizzas because it's too easy to get them overcooked and it spoils the entire pizza. Instead I opt to use clams, crab meat, lobster and firm flesh fish. All of these can go on raw, just thin slice the fish and it'll be fine. I also like to use variations of a white sauce with my seafood pizzas as I think it complements the seafood better than a red sauce. A little while back there was some discussion with great ideas for seafood pizzas.

Tom Lehmann/The Dough Doctor  
5051

## [\*\*Shop Talk / Re: Tom Lehmann's Dough Management Procedure\*\*](#)

Peter;

Since the sodium complexes with the wheat proteins, thus strengthening them (omit the salt from a dough formula and you will see the effect of the salt) by adding the salt late in the mixing/dough development stage you allow for faster gluten development which allows the dough to be stretched faster over the roller bars/agitator bars of the horizontal bread mixers used in wholesale frozen dough production. It is this stretching (much like kneading but much more forceful) that exposes more of the dough to air within a given period of time which can oxidize the beta carotenoid pigments as well as strengthen the gluten structure in the exact same manner as the addition of a fast acting oxidant (ascorbic acid) would. This was actually commercialized by the old Continental Baking Company back in the 1970's in their fatigue dough method for making bread. By this procedure the dough was mixed using the delayed salt method but instead of adding the salt short

of full gluten development it was instead added somewhat after full gluten development. This was done as the proteins can carry more water if they are opened/uncoiled through over mixing (the same can be accomplished by using an autolyze but a wholesale production has neither the space, equipment or time to allow their doughs to set and hydrate for even a few minutes much less 30 to 60-minutes). In this regard the over mixing of the dough accomplishes the same thing but in a matter of just a few minutes, doesn't require any investment in equipment or space. They found that the doughs made in this manner were overly soft, extensible and sticky but they discovered if they opened the mixer bowl to allow air to enter and displace some of the carbon dioxide and tumbled (mixed at low speed) the dough for a couple of minutes before discharging it from the mixer it would tighten back up again due to the further oxidation of the proteins making up the gluten and all was good. They now had a dough with additional absorption (more than could otherwise be achieved) that also handled quite well through the make-up equipment (divider, rounder, sheeter and panner). Now, how does all of this relate to the article cited, I have a theory. The first thing to keep in mind is that both pan bread and commercial frozen pizza doughs are mixed to full gluten development while all pizza doughs are mixed to a point of development significantly short of full gluten development as this helps to promote the desired open, porous crumb structure characteristics, the same can be said for French bread doughs too. By putting the salt into the dough right up front the dough is much tighter and tends to get kneaded as the agitator drives through the dough but not stretched over the mixing arms or dough hook as the dough is too tight to do so, whatever the case may be, this results in less of the dough surface being exposed to air (oxygen) so there is less oxidation of the dough and a greater tendency to under mix the dough with regard to gluten development. That same "natural" oxidation condition created by mixing a soft dough would also tend to oxidize the beta carotenoid pigments from the flour (they use oxidation, bleaching as it is referred to as) to remove the beta carotenoid pigments at the flour mill so the end effect is similar.

Tom Lehmann/The Dough Doctor  
5050

### [\*\*Newbie Topics / Re: Meat or seafood toppings question\*\*](#)

You're right Craig, the times when I've had the best success with shrimp on a pizza has been when I've been using a wood fired oven and baking at high temps. When using a deck oven it's touchy, when using an air impingement oven less than desirable results are all too common so I don't even go there anymore.

Tom Lehmann/The Dough Doctor  
5049

### [\*\*Shop Talk / Re: Tom Lehmann's Dough Management Procedure\*\*](#)

Steve;

The addition of IDY to the dough rather than as a dough ingredient is the preferred method to add IDY but I don't recommend this manner for home bakers since you must use a mixer and that mixed must exhibit decent mixing action upon the dough (lately we've seen some cases where a very suitable mixer was used but the dough size was either too small for decent mixing action or the gap between the agitator was too great and mixing action suffered. For this reason I have always recommended for any home baking where a mixer will be used to add the IDY as an ingredient right on top of the flour and where the dough will be mixed by any method without a mixer it should be pre hydrated before addition to the dough water (once hydrated it can safely go into cold water without a problem). When the

IDY is added to the dough it should be added at or after the point where the flour has pretty well hydrated, in the case of a pizza dough this normally means about 2-minutes after the oil addition when using the delayed oil addition method of mixing. If the dough is being machine mixed by any other method you just want to be sure that the dough can mix for a minimum of 4-minutes after the IDY is sprinkled onto the dough surface.

In reading your report on the development of the frozen dough the only other thing that I can add is that it is well known that doughs with lower water activity Aw tend to exhibit better yeast survival than like doughs with a higher water activity Aw. In both bread and pizza formulations there are only two ingredients which can be added to reduce water activity in the dough, these are salt and sugar. You can't reduce the dough absorption sufficiently to impact the Aw in the finished crust. Based on this I would speculate that the addition of the honey that you added probably helped with the yeast survival to some extent, that's the good news, the bad news is that if you use either of these ingredients at levels sufficient to impact Aw the flavor of the finished crust will also be impacted. For this reason, whether it be in large scale or small scale freezing of dough I always take the stand that the salt and sugar levels should be maximized without adversely impacting the flavor of the finished crust. Several years before my retirement from AIB I noticed that crusts made from frozen dough that had been over fermented and re-rounded then allowed to rest again until the dough balls could be easily opened into skins always exhibited super flavor characteristics. This lead me to doing a little research for an alternative method for working with frozen dough when making pizza crusts. The method that I came up with (You've probably seen this before) is to fully slack out the dough in the cooler/fridge until the internal temperature of the dough balls is at the same temperature as the cooler, then remove the dough balls from the cooler and place at room temperature (70F ) for 1-hour, then place back into the cooler/fridge for a 24-hour cold fermentation period. What this accomplishes is to bring the dough balls to a constant temperature from which to bench mark the time from (the temperature of the cooler) the 1-hour at room temperature allows the dough to begin warming and the yeast to begin to activate a little, then the 24-hour cold fermentation period serves to develop the flavor and textural properties that we have come to expect in a pizza crust. Think about that for a minute, we just took a frozen dough ball and turned it into something that looks a lot like how we manage and cold fermented dough. Keep in mind that this was done using a commercial frozen dough ball, if you are using a commercial frozen dough puck (yep, they make them that way now) or if you're using your own home made frozen dough pucks you will need to work on the 1-hour out of the cooler aspect. This should be pretty easy to do as all you will need to do is to monitor the internal temperature of the dough puck and once it reaches something in the 60 to 75F range (you'll need to see what works best in your own fridge) put it back in the fridge for 24-hours. For a home made dough handled in this manner you MIGHT be able to hold the dough longer than 24-hours in the cooler (cold fermentation) but when using a commercially made frozen dough I've not had the best success holding it more than 24-hours as it tends to become overly soft, probably due to the use of L-cysteine or glutathione (dead yeast) in the formula to help with the long mixing times associated with frozen doughs.

I saw that you were having a problem getting the dough temperature low enough, that is not uncommon outside of a commercial bakery because they use horizontal mixers with 1,500 to nearly 2,000 pound dough capacity, as I said earlier, these mixers are specifically designed for mixing the super tough/stiff and cold frozen doughs. They have direct expansion jacketed mixing bowls which are used for cooling the dough, in fact if the mixer is stopped while the refrigerated jacket is

still turned on or if it is turned off within 2-minutes of stopping the mixer there is a good chance of freezing the dough to the inside of the mixing bowl. Here's a trick that a good friend of mine and I worked on some time ago, use dry ice to help keep the dough cool during mixing. VERY CAREFULLY (repeat that 100 times), USE FULL EYE AND SKIN PROTECTION (repeat that 200 times) place the piece of dry ice in a folded heavy weight towel and using a hammer break up into small granular pieces and begin adding it to the dough while it is still mixing (BE CAREFUL), you can get a rough idea of how much dry ice you have added by back weighing the original piece, once you know how much you needed to achieve the targeted finished dough temperature you can add that to your dough management procedure for frozen dough. We do this commercially but not with dry ice, we use compressed carbon dioxide, make a horn (like that used on a CO<sub>2</sub> fire extinguisher, to blow the CO<sub>2</sub> snow into the dough while its mixing. It is interesting to note that for whatever reason we were never able to reduce the dough temperature using CO<sub>2</sub> but we were able to very effectively maintain the dough at any cold temperature (within reason) we needed for making frozen dough. This method is in limited commercial use today to help control finished dough temperatures in very hot bakeries where chilled water and a refrigerated bowl are just not sufficient to achieve the targeted finished dough temperature during only very brief periods of time (CO<sub>2</sub> is expensive as a processing tool).

Tom Lehmann/The Dough Doctor  
5048

#### **Shop Talk / Re: Tom Lehmann's Dough Management Procedure**

Hey Peter; How do you like your new name "Steve"? Sorry about that, our air conditioning went out this afternoon, it's down to 90F as I write this at 10:44 p.m. I'm sweating, thinking about trying to sleep tonight and tomorrow it will be at the century mark with an abundance of humidity, oh, by the way, a new circuit board won't be available until Thursday or Friday!!!!

Tom Lehmann/The Dough Doctor  
5047

#### **Shop Talk / Re: Tom Lehmann's Dough Management Procedure**

Peter;

I'm here typing this in my 91F office, spent the night at a local motel and just stopped to check e-mail. For its impact upon Aw it doesn't matter if a granulated sugar or liquid sugar is used, in that respect they all perform equally, the only reason why the commercial manufacturers use HFCS is because of price and convenience (it's easier to convey and meter a liquid sugar than a granulated sugar).

You're right about the "dead yeast" since all yeast ends up being dead as a result of baking the dead yeast can be added to the dough and just lumped under "yeast" on the label. This helps them with the appearance of a cleaner label.....who wants to see something as chemical sounding as L-cysteine/L-cysteine hydrochloride?

As for adding IDY later in the dough mixing procedure for home bakers, it can be done only if they have a mechanical mixer and it is interacting with the dough in the correct manner (I have found that this is seldom the case with home bakers) because of this I have always recommended to home bakers/pizza makers/frozen dough makers, that the IDY be added right on top of the flour, it just circumvents so many of the variables that can exist with the home mixers. To put it another way, I've never seen a machine mixed dough fail because the yeast was added on top of

the flour, but I've seen any number of cases where the dough showed less than spectacular performance because the yeast was added late in the mixing stage, reasons being, it was added too late, it was not thoroughly incorporated into the dough due to poor mixing action, oops...forgot to add the yeast. I recently saw a case where the dough was mixed with a "J" hook and the IDY was added late in the mixing stage. The incorporation of the IDY was so poor that I think I could have picked out all of the particles of IDY from the dough if I had time to do so. So why not just add the yeast sooner? The truth of the matter is if the IDY was added any sooner it would be more convenient to just add it to the dry flour and we have found that when poor mixing action is the cause for poor yeast incorporation longer mixing times are not the answer.

As for ascorbic acid, there might be some benefit but the ROI wouldn't be worth it, not with a dough that will be used within 15-days of preparation. Some of our readers might remember Pizza Magia (Cincinnati, OH) pizza chain, I developed their frozen dough formulation and dough management procedure that was used by their commissary to provide frozen dough balls to all of their stores, we used static freezing but we also included ascorbic acid to provide a supplemental level of insurance against dough failure should a store fail to use the dough within the 15-day prescribed window of use time. In such a setting where we made A LOT of dough balls, and used them under different conditions (every store interpreted the ops manual differently) and there were about 100 stores, I can't ever recall having a massive dough failure, a few complaints from some of the stores yes, but never a failure of the dough itself where many dough balls were affected. Most of the complaints we received were due to poor management of the dough at the store, such as slacking out too many dough balls and putting the unused ones back into the freezer or putting the slacked out and warmed (50F) unused dough balls back into the cooler for use on the following day.....don't know why, but all of a sudden the dough balls are blowing! Right! Refer to ops manual, page 13, that should resolve the problem. I call it a self inflicted problem.

BTW: We also have an older, less energy efficient chest freezer that doesn't have an automatic defrost cycle and I agree with Norma that it's the best thing since sliced pizza when it comes to holding my frozen pizza dough. For home use I can often get three, sometimes four weeks of decent performance from my dough when held in this freezer but do not try this if you are in a commercial setting of any kind, failure is simply not an option, when dough fails due to a freezer temperature/defrost (we like to call it temperature abuse) problems everything in the freezer goes south all at once, and don't forget that temperature abuse in a commercial setting doesn't end at the freezer, it still happens throughout the entire distribution chain (that's why we used ascorbic acid in the P.M. frozen dough) but you won't know it until the store begins to report back to you that all of the dough is failing.....not a pretty picture.

Tom Lehmann/The Dough Doctor  
5046

### **Dough Clinic / Re: Bromated flour and extended fermentation**

Craig;

Where bromate comes into play is when the gluten structure has been severely stressed such as through excessive/over fermentation for the dough formulation and flour being used. Bromate is unique in that as an oxidant it doesn't really begin to "kick-in" until you have some fermentation on the dough. Then what you see is a

pronounced tightening/strengthening of the dough, at excessive levels of bromate this effect can be so pronounced that it actually reduces oven spring, in bread production a common indicator of excessive bromate is a lack of what we call break and shred (the shredded wheat looking area between the side wall and the top of the loaf, the top pulls completely free from the side wall leaving a ragged break with little or no "shred". At slightly excessive levels the amount of break and shred is significantly pronounced, so much so that in many cases the bread would not fit into the bags. In the report this was observed as a sharp departure and greater area under the base line in the extensograph data (indicative of a significantly tighter, more elastic dough).

Is bromate really needed in pizza production? I think there used to be some benefit to its use 40-years ago or more, especially when doughs would be subjected to days of fermentation but anymore the level used is so small so as to have little beneficial impact upon the overall dough performance which is achieved at bromate levels of 20-ppm and more. When bromate levels dramatically reduced in the early 80's the baking industry really didn't have too much of a problem in coping with its loss. Fact is, most bakers and researchers alike referred to bromate as an un-needed crutch. What bromate did was to allow for the use of a lower protein flour in applications best suited to a higher protein flour, then bromate was added to strengthen the weaker flour. The combined cost of the weaker flour plus the bromate addition was cheaper than the cost of a high protein flour so that's what the baking industry gravitated to.

Here's an interesting tid-bit, by the time the bromate level was being radically reduced the wheat breeders had accidentally stumbled upon wheat varieties with significantly stronger gluten characteristics (this happened while they were trying to develop wheat varieties with a higher protein content. What they ended up with, and we still have those traits in our wheat varieties today, was wheat varieties of essentially the same protein content as before but now with significantly stronger gluten characteristics than we ever had previously. Well, because of the new and stronger flours now available the bromate was no longer needed. I think the same can be said for pizza production, we have flour available to use today that is probably stronger than any flour before so like the bread bakers found out, bromate isn't needed for pizza production either.

I have talked to flour suppliers about the fact that they still offer a limited amount of bromated flour, most of it in bags only, not in bulk unless specified in a purchase contract. The reason for this is because there are still people out there who insist that they need the bromate so where there is a demand there is a product to fill that demand. It's also interesting to note that for the most part bromated flour seems to be a regional thing. I know for a fact that pizzerias have pondered and pondered the move to a non-bromated flour (social stigma to using bromate) and then finally made the switch and never really knew the difference. Add to that the fact that many pizzerias were inherited or bought from operators who used bromated flour because when they had the business almost all strong wheat flour was bromated, then when bromate was being reduced/phased out they thought that they still needed bromate in the flour and wouldn't let go of the idea, we still hear it today....gotta have bromated flour. In reality, we don't need bromated flour for pizza production, we have sufficiently strong flours available to us today to do just about anything we can ask flour to do, add to that most operators are gaining an understanding of effective dough management so we don't see as many issues with dramatically over fermented dough or excessively hot doughs which goes a

long ways towards reducing any dependency on bromate, and with biochemical gluten development becoming better understood you're right, there is even less need for bromate in our doughs.

Tom Lehmann/The Dough Doctor  
5045

### [\*\*Neapolitan Style / Re: Latest pizzas and... Chewing gum\*\*](#)

There can be a major issue with what is referred to as the "dreaded gum line". This is easily identified if you turn a slice over (top down) and use a razor blade or very sharp serrated knife to cut through the crust, then separate the cut slice and look at the cut side, if you see a well defined gray area immediately under the sauce, congratulations, you have a gum line. To further confirm the gum line take another slice, turn it upside down and beginning at the edge tear the slice apart in the middle as best you can, watch as the crust cleaves apart, if you see a web of dough being stretched (called feathering) between the two pieces as they are pulled apart this is confirmation of a gum line. There are about seven different issues that can cause the gum line (thoroughly discussed in one of my articles in PMQ Magazine) and until you identify the correct cause the gum line just won't go away, this is why it is called the dreaded gum line. Some causes: Dough stretched too thin; too much sauce; pre-saucing; baking at excessively high temperature; poor or incorrect dough management procedure or parameters; insufficient yeast level (generally correlates to poor dough management).

In any case the presence of a gum line results in a tough, very chewy eating characteristic.

Tom Lehmann/The Dough Doctor  
5044

### [\*\*General Pizza Making / Re: why my pie looks more a bread than a pizza?\*\*](#)

Additionally, do you allow the frozen skin/disk to slack-out/thaw and come to at least 50F/10C before you dress and bake it or do you dress and bake the skin/disk straight from the freezer? If you are not allowing it to warm to at least 50F/10C I can't see any way you will ever be able to get a decent bake on the pizza in a home oven within 3-minutes, much less in a home oven without a good pizza stone. Home type ovens are notorious for not having sufficient bottom heat to provide a decent bake on a pizza (pizzas are baked from the bottom up) this is why a good pizza stone does wonders for baking your pizzas, it provides that all important bottom heat. Also, it's not just a matter of putting a pizza stone in the oven, it must be allowed to pre-heat (typically for an hour or more), and placement in the oven will be critical to good success in baking your pizzas. If you can provide additional information on your dough formula, something about your oven and more information on how you manage your dough from mixing to baking, there are people here who can provide you with expert guidance to help you make great pizzas.

Tom Lehmann/The Dough Doctor  
5043

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma/Peter;

Those pans that they're using look an awfully lot like hamburger bun pans. Scaling weight about 75-grams for each dough piece. You could do the same thing by placing the dough balls on a floured sheet pan to rest for about 15 to 20-minutes, then using a rolling pin, roll/sheet each piece out to a size just a little larger than the cup diameter, place the formed dough pieces into the oiled cups, cover and

allow to rise for maybe 15-minutes, then put the sauce into a decorating bag with a plain tip to deposit the sauce onto each dough skin. It would be interesting to use a McDonalds (3-D) triple decker pan (that's the pan they use for the Big Mac buns), it's deeper than regular pans and might work even better? Used/damaged hamburger bun pans should be readily available from a used bakery equipment supplier, maybe R.T. Bundy and Associates, Urbana, Ohio (tel: 937-652-2151), an internet search might also locate some used bakery pans too (MUCH cheaper than new).

As for the ice crystal comment, Peter, you were "spot-on", the low temperature doesn't prevent the development of the ice crystals, it just allows for the development of smaller size crystals which do not harm the yeast cells or the gluten structure as much as large size ice crystals which are formed at higher freezing temperatures.

Regarding the "white powder" that was mentioned, can you direct me to a photograph or video showing it?

Thanks,

Tom Lehmann/The Dough Doctor  
5042

### **Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball**

Juran;

It looks like you're on the road to success. Let us know how the pizzas turn out at the party. :)

Tom Lehmann/The Dough Doctor  
5041

### **Dough Clinic / Re: Bromated flour and extended fermentation**

Danny;

Check with your supplier to see if they have the non-bromated All Trumps flour, otherwise any good, spring wheat flour with a protein content in the 13 to 14% range should work well.

Tom Lehmann/The Dough Doctor  
5040

### **General Pizza Making / Re: why my pie looks more a bread than a pizza?**

Minn;

Actually, the porosity of the crust looks pretty good so it might just be an issue of too much dough for the size of pizza crust you are making. What is the weight of dough that you are presently using to make a single crust? What diameter crust are you making?

Tom Lehmann/The Dough Doctor  
5039

### **Other Types / Re: Re: Bo Pizza**

Norma/Peter;

Hamburger bun pans are available in a number of different sizes, the common sizes that you find most often are 3.5-inches, 4.0-inches, and 5-inches (Whopper). There are also a lot of custom sizes floating around out there too. R.T. Bundy & Assoc. would be my first place to look at buying a used, un-straightened pan (don't worry is it's not been re-glazed, it will work just fine in this application. If the pans are too big to fit into your freezer that are pretty easy to cut down. I had a number of them at AIB that I cut down to fit our oven shelves when we were doing research on

different types of hamburger buns. Like I said, you might be able to find some on a internet search too. If the white powder was being applied to the surface of the dough we can safely assume that it isn't a functional ingredient like ascorbic acid which is dosed in parts per million (ppm). So, what could it be? My educated guess is that it was something to eliminate stickiness in the dough and the first thing that comes to mind is calcium sulfate. It really can't be overdosed, it's cheap (farmers put the agricultural grade of it on their fields to break-up clumps/clods of dirt), it is a wonder at reducing stickiness in the dough. After that, I would look at rice flour but excessive amounts on the dough can show up on the finished/baked product. Have you ever seen what are referred to as snow capped rolls? They look like a dinner roll but have a white powdery substance on the top crust.....rice flour. We used to make them all the time when I worked in production.

I hope this helps,

Tom Lehmann/The Dough Doctor

5038

### **Dough Clinic / Re: Bromated flour and extended fermentation**

Norma;

Yes, that's correct.

Tom Lehmann/The Dough Doctor

5037

### **Other Types / Re: Re: Bo Pizza**

Peter/Norma:

Any idea of the quantity added, For example: Poured from a cup/bowl into the dough mix, teaspoon/tablespoon.

There are not very many things that can be added to the dough that are a white powder which are not so functional that they need to be scaled or used with some level of caution.

Used to help keep the frozen dough fresh....translation: to help preserve the viability of the frozen dough. The only thing that I can come up with is some kind of dough strengthener that is added to the dough mix, back in those days we didn't have much to work with so the list is pretty short and includes oxidation: potassium bromate, potassium iodate (not very common), calcium peroxide, ascorbic acid.

Then there are the strengthening ingredients (compounds): Calcium stearoyl 2 lactylate (CSL), calcium sulfate. That's about the end of the list until early 1970's when we saw sodium stearoyl lactylate (SSL), and diacetoyl tartatic acid esters of monoglyceride (DATEM) and azodicarbonamide (ADA) come onto the scene. Since oxidation was and still is the key to successfully extending the shelf life of frozen dough I'm guessing that the "white powder" might have been a diluted form of ascorbic acid. Ascorbic acid back in those days was only available as a white powder while bromate was only available in a crystalline form, ADA was a yellow powder. The CSL and SSL as well as DATEM were/are in a whitish powder form but they are not known for their function in preserving the viability of frozen dough.

They are used in the Digiorno and Digiorno knock-offs to promote oven spring for a thicker finished crust but they do little or nothing for shelf life of the dough.

Any additional information would be welcome, maybe we can figure it out.

Tom Lehmann/The Dough Doctor

5036

### **General Pizza Making / Re: why my pie looks more a bread than a pizza?**

Minn;

Your dough weight for the 30.5cm (12") diameter crust looks good (comes out at

9.5-ounces for a 12" crust) and the 28cm assuming the same dough weight is still in the ball park for weight. Let us know how your next bake turns out, if you don't see any improvement you might reduce the amount of sourdough starter from your present 7% to 4% to see if that helps to control some of the volume you're getting which results in the bread like internal crumb structure.

Tom Lehmann/The Dough Doctor  
5035

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

They're good people (R.T. Bundy & Associates). Over the years I have had nothing but good experiences with them. They also have a leading museum in the U.S. dedicated to the baking industry. If anyone is ever in the south central Ohio area it is a highly recommended place to stop for a visit, for those of you who like to do research on dough systems they have all sorts of early dough rheology measuring equipment on display that can be easily replicated for your testing purposes, I've done it myself a number of times.

Tom Lehmann/The Dough Doctor  
5034

### [\*\*General Pizza Making / Re: why my pie looks more a bread than a pizza?\*\*](#)

Min;

I totally agree with all of the above. You have to realize that Domino's uses an air impingement oven to bake their pizzas in and those ovens are specially profiled to provide the best and fastest bake to THEIR pizzas, so it's not even a close call to baking in a home type oven of any kind so we find that some formula modifications as well as baking modifications are necessary to produce the same type of pizza in a home oven.

In addition to the recommendations already made you might want to experiment with baking your pizzas on a stone or steel in a higher rack position to achieve more top heat for more top crust color. Another thing you might try is to brush the edge of the crust with olive oil just before you place the pizza in the oven, the oil on the crust will help to intensify the crust color to some extent. If you find that you are getting too much bottom bake on a stone but getting the top bake you desire you can experiment with placing the pizza on a screen to create an air gap between the dough and the hot stone, this will reduce the bottom crust color/bake. A common "trick" is to then remove the pizza from the screen and place it directly on the stone for about a minute (sometimes less) to impart additional crispness into the bottom crust.

Tom Lehmann/The Dough Doctor  
5033

### [\*\*Dough Clinic / Re: Troubleshooting Help\*\*](#)

Compressed yeast (CY) is not intended to be frozen. Freezing is extremely deleterious to the yeast in this form. You can put ADY or IDY in the freezer for storage but not CY. The ice crystals that form within the yeast severely damage the yeast cells resulting in loss of plasma fluid containing glutathione from the cells which have a softening effect upon the dough (making you think you might have added too much water or short scaled the flour) while also contributing to a sticky dough feel.

CY is considered to have a maximum refrigerated (not frozen) shelf life of 30-days for home baking if consistent results are to be expected. In a commercial setting that is reduced to only 15-days since failure is not an option in a commercial

setting.

Why not change over to IDY?

Tom Lehmann/The Dough Doctor

5032

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

I think 75-grams would be a good starting point from what I've seen. You are much more familiar with the finished pizzas than I am so you should be able to make educated changes in the scaling weight to achieve the finished pizza you're looking for.

One thing that comes to mind, when you get your pan, be sure to season it a couple of times and then when you begin scaling the dough for the dough balls make each row a different weight (be sure to keep track of what scaling weight was used in each row of cups) this will allow you to quickly get on track with finding the ideal scaling weight for your pan, you will also be able to make side by side comparisons of the different scaling weights which should make selecting the best scaling weight a lot easier.

NOTE: When I was reading back through some of the posts I noticed that Peter made a reference to mineral yeast food. This would also make a lot of sense since prior to 1980 most of the mineral yeast food (MYF) was of the bromated type with the main constituent ingredients in the MYF being calcium sulfate, ammonium sulfate (the "yeast food" part) and potassium bromate. The calcium sulfate would provide dough strengthening and more importantly reduce any stickiness in the dough, the ammonium sulfate was never thought to have much of an impact upon yeast performance (in later years it was eliminated along with the potassium bromate and the MYF was replaced with just plain old calcium sulfate) the potassium bromate part of the MYF would be of some benefit in a frozen dough system since the typical bromate contribution was 15-ppm (based on a use level of 0.25%) from the MYF, that combined with the bromate in the flour at that time 12 to 15-ppm) gave a total bromate level of 30-ppm or a little less. This is easily sufficient bromate to have something of a beneficial effect upon an ordinary frozen dough, interestingly.....it's a free flowing white powder too.

Tom Lehmann/The Dough Doctor

5031

### [\*\*General Pizza Making / Re: why my pie looks more a bread than a pizza?\*\*](#)

Minn;

Sugar and fat are both what we refer to as "tenderizers" they help to reduce toughness, chewiness in the finished baked product. Think of the difference between white pan bread and a hamburger bun (very tender), the white pan bread contains about 5% added sugar whereas the hamburger bun contains upwards of 13% added sugar, aside from that their formulas and dough management procedures are essentially identical. The amount of bake-out that the crust receives during baking also has a great influence on toughness, a crust that is dense (small holes in the crumb structure) will not bake out as well as a crust with large holes (open porous crumb structure) so all things being equal it might be said that the more open and porous the crumb structure the better the bake out, the less chewy the finished crust will be and the more crispy it will be too.

Tom Lehmann/The Dough Doctor

5030

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

Wow! You got the best pan you could hope for, cleaned, straightened and re-glazed. Fantastic!!!

No, you don't need to season the pan at all, just give it a VERY LIGHT wipe with oil before using it and you should be good to go.

I think you'll like those 3-D pans as they are plenty deep.

Tom Lehmann/The Dough Doctor

5029

### **New York Style / Re: Evolution of the NY Style Pizza (Split Topic)**

I can add a little to this too, it was indeed the U.S. service men who were stationed in Italy and upon returning home were looking for a job but work was mighty scarce post WWII so many of them turned to doing something that they learned while in the service, my dad and 3 uncles opened a garage (that's a story in itself) while others did indeed remember that great Italian food "pizza" but rather than going looking for it they got busy and made it as a living. this is why a lot of the early pizzerias (since 1945) were run by vets. The problem was that no one knew where to put pizza on the daily menu, was it for lunch, or dinner? Neither, it was considered as a snack food for a good number of years with the majority of pizzas being sold after 7:00 p.m. and until the dough ran out or midnight, which ever came first. In the 60's the big pizza chains started to come into their own and pizza began to settle in as dinner fare. Then the wholesale pizza manufacturers jumped into the pool and the marketing of frozen pizzas was a big thing. The time during the late 70's and early 80's was known as the time of the "pizza wars" with all of the large wholesale manufacturers trying to out compete the competition, it got so bad that pizzas had to be labeled as being made with tomato product (sauce) and cheese product (cheese). They couldn't be called tomato or cheese because both were heavily extended with fiber materials to reduce the cost. Toppings were absolutely scarce too, people used to buy a pizza along with onion, peppers and sausage or pepperoni to build their own pizza on the store bought frozen pizza.

This was referred to as "doctoring the pizza". I helped develop the first heavily topped frozen pizza that broke the mold and made way for the quality pendulum to swing the other way and open the door to high end pizzas much as we know today. The pizza industry is unlike other segments of the food industry in that the independents are the true leaders of innovation, and then the chains jump on the idea and lastly the wholesale manufacturers jump on it too making that type or style of pizza available to the masses.

How popular is pizza? Pizza became more popular in the U.S. than our sacred hamburger by the early 90's, it is so popular that it is jokingly referred to as the great American food and this might not be too far off the mark in that the most popular types of pizza sold in the U.S. today are the "loaded" pizzas, much unlike pizzas sold any other place. As pizza has continued to evolve and tastes continue to change there has been a steady move fresh, natural, organic and combined with the demand for thinner crusts thanks to the low carb craze of a few years ago we got a lot of thin crust pizzas with a lot of toppings, but now the new direction seems to be leading us to seek out something different in pizzas, we are seeing a growing trend towards basic or natural eating styles, people want to see their food made before them, they want it to be made in a rustic/old fashion way so pizza is now beginning to come full circle and returning to its roots where it is made in a coal or wood fired oven, fresh ingredients are used, flavor and aroma are becoming important quality attributes, and less topping ingredients are becoming the rule instead of the exception. This is just a very rough thumb nail sketch of how pizzas have evolved as a mainstream food in the United States.

Tom Lehmann/The Dough Doctor  
5028

**[Other Types / Re: Re: Bo Pizza](#)**

Because of the weight of the pan (HEAVY) your approach to baking at 350F or something close to that is probably an excellent idea. Maybe that's why they were originally baked at that temperature. If you bake too hot the tops will be done before the bottoms, you might need to experiment a bit to find the correct heat balance in your oven.

Tom Lehmann/The Dough Doctor  
5027

**[General Pizza Making / Re: why my pie looks more a bread than a pizza?](#)**

Minn;

I would be reluctant to recommend brushing syrup on the rim of the pizza as it will most likely induce burning/charring. The pizza that you made with 70% absorption had the open crumb structure due to the ease at which the dough expended during the oven spring phase of baking but it was not crispy only because you did not bake it long enough. This may be hard to believe, but you will get a crispier crust by ADDING more water to the dough (just don't add so much so as to result in the dough collapsing) and you will get a tougher, more chewy crust by adding less water. The exception to this is when the dough absorption is reduced to something in the 40's to make a cracker type crust but in this case the dough must be sheeted/rolled very thin and the internal crumb structure is best described as looking something like the cross section of a saltine cracker.

Tom Lehmann/The Dough Doctor  
5026

**[Other Types / Re: Re: Bo Pizza](#)**

Norma;

I'm wondering if those plastic forms are just a form into which the dough balls are placed to allow the dough to be rolled to a uniform thickness, the form would then be removed and the flattened dough pieces placed into the pan cups? You can achieve the same thing by running the dough balls through a sheeter twice with a 90 degree turn between each pass, or make a couple of gauge strips out of wood or aluminum, lay on either side of several dough balls and using a rolling pin, roll the dough out to the desired thickness (which is determined by the thickness of the gauge strips).

Peter;

The only problem with using soy flour in the manner described is that it must be a full fat soy flour so along with any dough strengthening you will also get that wonderful raw soybean flavor imparted into the dough and finished crust (we used to refer to it as a "silage" flavor in the finished product). There was available for a time a product that was referred to as a lipase modified soy flour that was sold as an additive ingredient for its dough strengthening properties (I think it was marketed by the Breddo corporation), but it was never as effective as bromate at the time. When we see soy flour being widely used in bakery products this is a defatted soy flour (about 51% protein content) that was used as a replacement for dry milk which was not popular as an ingredient due to its high price as well as volatility in price. The defatted soy flour doesn't have a flavor problem like the full fat soy flour does.

If you look at the ingredient panel on the DiGiorno bake to rise pizzas you should see both SSL and DATEM shown, remember that once the ingredient falls to 2% or

less it doesn't need to be shown in order of dominance. The reason for showing both ingredients is strictly an economic one, since both ingredients provide essentially the same end result (improved/greater oven spring) they can be used interchangeably so when one is more expensive than the other they can just switch to the other one, thus staying with the least expensive of the two. To keep things on the up and up they use both ingredients in their dough but more of the cheaper one and a lot less of the expensive one (remember, they can change that around at any time because of the 2% rule).

Tom Lehmann/The Dough Doctor  
5025

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

I cut mine in half using a metal cutting band saw but you could probably do it as well using a hand held grinder and a cut-off wheel. Depending upon how good the person doing the cutting is you might lose a row of cups as we did.

For something larger in diameter you might look at the Whopper pans but the cups will not be as deep as the 3-D pans that you have. You can also find round cake pans down to just about any diameter you want. I used to have them in 5", 6", 7" and 8" diameters, they'll be about 1" deep.

Tom Lehmann/The Dough Doctor  
5024

### [\*\*General Pizza Making / Re: To mechanical mix or not??\*\*](#)

Carl;

I'm betting that if you take a small piece of dough from each test dough and stretch it out in your fingers to ascertain gluten development, aka "window test", you will find both doughs with essentially the same gluten development after 24-hours due to biochemical gluten development. In one of my articles on dough mixing I commented that you should only mix a pizza dough just until it takes on a smooth, satiny appearance, if you regularly mix your dough longer than this you will probably get to know your mixer repair man on a first name basis.

Tom Lehmann/The Dough Doctor  
5023

### [\*\*Dough Clinic / Re: Hard to close dough ball after bulk CF?\*\*](#)

Carl;

Yes, extremely over fermented dough will go through a stage where it becomes very tight and elastic, almost impossible to do anything with, then as fermentation progresses it will begin to slacken as the gluten is further relaxed due to enzymatic (protease) activity as well as the degrading effect of the acids formed during fermentation on the protein/gluten. This will continue until the dough is completely broken down.

When a dough is first mixed it is tough and difficult to manipulate in any way except to form it into balls and we all know how "easy" that is. Then as fermentation progresses the dough slowly becomes softer and more extensible BUT if worked to any extent it quickly becomes objectionably elastic (we see this as snap-back/dough memory after opening into skins), as fermentation progresses the dough becomes more relaxed (easier to open) and exhibits less snap-back/memory once opened into skins (this is the fermentation "sweet spot" that many operators are looking for as it provides a sufficiently robust dough structure for supporting the weight of the ingredients as well as holding up to awaiting its turn to be opened up into skins (in a pizzeria this might be anything from minutes to as long

as two or three hours). When the fermentation progresses beyond this point the dough begins to develop excessive elasticity (at least for a while) this is why when you re-ball the dough the dough balls get so tight that you have to wait quite some time before you can open them into skins. As fermentation progressed beyond this point the acids and enzymes begin to take their toll on the protein/gluten structure and the dough now becomes softer, more sticky, weaker and even re-balling won't do any good, the dough is now on its way to becoming something that looks more like a thick syrup than the "dough" that we're all familiar with.

Tom Lehmann/The Dough Doctor  
5022

### **Neapolitan Style / Re: How do I get a soft crust?**

I was in Pittsburgh, PA a number of years ago and we were making a crust similar to what you are describing, it was so soft that the customers would roll it up (like a jelly roll) and eat it with a knife and fork. My thoughts were that it was about as firm as a wet dish towel. To your standard dough formulation add 4% olive oil, keeping the water up at 60 to 62%. Immediately after baking place the pizza onto bright silver coupe pan for about 1-minute prior to serving. Watch the baking time as you don't want to get the pizza anything more than a light tan/brown color.

Tom Lehmann/The Dough Doctor  
5021

### **Off-Topic Foods / Re: Reheating precooked chicken cutlets and wings**

Lloyd Pans <[www.lloydspans.com](http://www.lloydspans.com)> makes a pan designed specifically to do just what you are asking. Give Paul Tiffany a call at 509-486-8691 Ext. 117 or e-mail him at ptiffany@lloydspans.com.

Tom Lehmann/The Dough Doctor  
5020

### **Chicago Style / Re: Deep Dish**

Clouddgn;

Your oven should work just fine as Chicago style deep-dish pizzas bake well at 450F.

Make it easy on yourself, make your own sauce, it's really easy to do and you might like it more than a prepared sauce. Start with very ripe tomatoes, six large tomatoes will get you started. Dip the tomatoes in boiling water for 15-seconds then immediately transfer to cold water and begin peeling the tomatoes. If you have a blender or food processor puree the tomatoes, if you don't just use your hands and break the tomatoes up into small pieces (don't worry about the chunks of tomato, they add a wonderful flavor). In a small plastic bowl put three cloves of minced garlic and about a tablespoon of minced onion and 1/2 cup of water. Using a microwave oven heat to a full boil (if you don't have a microwave just use your stove top burner BUT USE A METAL POT INSTEAD OF THE PLASTIC BOWL, as soon as it boils remove from heat to cool for 10-minutes. Add the boiled mixture to the pureed tomatoes flavor with dried or fresh oregano and/or basil, then add 1-tablespoon of olive oil, 2-tablespoons of sugar and stir well. You can use the sauce right away or store it in the fridge for use over the next 3-days (just be sure to stir it well before each use. You will want to use about 6-ounces of the sauce on a 12-inch diameter pizza).

The Oaxaca cheese should work OK, I've used it before but if you want a better flavor blend it with another cheese that has a stronger flavor. I can't say how much to use but if you start out with 12-ounces of the Oaxaca cheese and 4-ounces of the "other" cheese you should be able to bench mark the flavor and adjust the blend as

necessary to suit your taste, this will make enough of the cheese blend for two pizzas. One other thing, you will need to experiment with which rack position to bake your pizzas on. I normally use a lower rack position for the first 10-minutes then move it to a higher rack position for the second 10-minutes, turning the pizza 180-degrees when doing so, after the second 10-minute period look at the pizza to determine if it needs more top or bottom heat (color) if the top is too light place the pizza back in the oven in an upper rack position, if the bottom of the crust needs more bake place it in a lower rack position for the last 10-minutes. Be sure to use a dark colored pan or a well seasoned pan. The total baking time should be around 30-minutes. If you find that the vegetable toppings are scorching at any time just place a piece of aluminum foil over the top of the pizza, do not crimp it on, just lay it over the top.

Tom Lehmann/The Dough Doctor  
5019

### **Neapolitan Style / Re: How do I get a soft crust?**

I don't think the weaker flour will do much except possibly make the crust more tender (cracks easily on folding) if he cannot use oil a shorter bake, all things equal, is the only other alternative that I know of.

Tom Lehmann/The Dough Doctor  
5018

### **Chicago Style / Re: Deep Dish**

Clouddgn;

I'm glad you mentioned having a convection oven. With the airflow in a convection oven this might explain your comments about the toppings drying out excessively. I would suggest that you give thought to baking the pizza as directed but after the first ten minutes cover the pizza with a piece of aluminum foil to keep the convection air flow away from the top of the pizza, then uncover it for baking the top of the pizza for baking just long enough to achieve a decent top crust color. I would guess that the total baking time would be somewhat less than the 30-minutes I guessed at since we are baking in a convection oven. I'm guessing 22 to 25-minutes???

Let us know how it comes out.

Tom Lehmann/The Dough Doctor  
5017

### **Shop Talk / Re: I need some help from you all Pizza lovers**

Let's see, we already have the "rocker knife" and its variations, then we have "pizza wheels" aka pizza cutters in different sizes, there are cutting rings in just about any size one might ever find a reasonable use for, and then there is the slice cutter of which there are several variants, and then there is the old fall-back, the French knife aka chef's knife, and don't forget cutter pans.....What are we missing here that we can't live without?

Just curious????

Tom Lehmann/The Dough Doctor  
5016

### **Newbie Topics / Re: Hydration Basics**

In addition to what the others have said, here's my two cents worth too; Call me overly technical if you want but here is how I looked at it as a Baking Technologist during my early years with AIB.

There is total "flour" absorption. This is not the absorption reported by the flour

miller as that absorption value is based on only the amount of water needed to bring the dough to a fixed consistency (500 Brabender Unit line aka Farinograph Unit line). Peter did a very good job of explaining this) This absorption value allows one to compare two different flours with regard to how much water they might absorb to achieve a known dough consistency. Total flour absorption, on the other hand, is a reflection of the amount of water that a flour can carry before the addition of any more water will result in the dough becoming slacker/softer. The autolyse method is probably the best method for determining this as there are some things which impact the rate at which the flour will absorb water such as particle size and intrinsic characteristics of the wheat protein itself (this is the only method that can be used with whole-wheat flour due to the much slower hydration rate of the bran particles). I like to think of total flour absorption as an absolute absorption for any particular flour.

Total "dough" absorption is different, this is the amount of water that must be added to a dough made with a specific flour to achieve certain desired dough rheology characteristics and/or finished crust characteristics. We see this all the time when comparing cracker or thin crispy type doughs as compared to a New York style of dough. Both can be made from the same dough formula but one has a lot more water in it to provide a different handling characteristic to the dough as well as a different finished crust characteristic. All large scale operations (bakeries and pizza commissaries) develop what is known as a Farinograph factor for their doughs which allows them to make total dough absorption adjustments based on the Farinograph data supplied with the flour. Here is how they do it: (EXAMPLE) The dough handles best and provides the desired finished crust characteristics with a total dough absorption of 57%, the flour used in making that dough had a reported Farinograph absorption value of 60.2%. Divide 57 by 60.2 to get the farinograph factor for that flour, using that formulation and dough management procedure = 0.9468. When the next flour shipment of flour is delivered they simply multiply 0.9468 X the Farinograph absorption value to find the dough absorption with that lot of flour. Due to variations in the wheat used in the grist (wheat blend used to make the flour) further adjustments (though usually small) may need to be made. After these adjustments are made a new Farinograph factor is calculated and the process is repeated with each new flour shipment. If the dough formulation, or dough management procedure is changed a new Farinograph factor will need to be calculated.

Tom Lehmann/The Dough Doctor  
5015

### **Dough Clinic / Re: Dense pizza dough- need help! How to make lighter and more airy pizza?**

What kind of yeast are you using? Do you pre-activate the yeast before adding it to the dough? If you pre-activate it what temperature water do you use?

What are you baking your pizzas on (pan, disk, screen)? What color is it (bright or dark colored)?

What baking time have you been using?

The answers to these questions can help us in solving your problem.

Tom Lehmann/The Dough Doctor  
5014

### **Dough Clinic / Re: Weak Gluten Development?**

F.P.;

I fail to see the problem with your pizza :), that's a very decent looking pizza.

If the bubbles are a problem prior to baking it might stem from an over fermented

dough condition, you can test this by shaping the dough ball after only two hours after balling rather than three, if you see improvement fine tune the time, but if the problem is worse in the oven (it doesn't sound like it is) it might be from placing the top of the pizza too close to the heat source.

Tom Lehmann/The Dough Doctor  
5013

### [\*\*New Forum Members / Re: bus tub dough?\*\*](#)

Flour (strong bread flour) 100%

Salt: 2%

Sugar: 1.5% (depending upon what type of pizza you are making sugar amount will be variable, for a thin crispy or cracker type crust delete the sugar)

IDY:0.3% or ADY: 0.4% or CY: 0.75% (Regardless of yeast type used suspend in 95 to 100F water for 10-minutes before addition to the dough)

Water: 55% 80F (Variable with the type of pizza you are making, 50 to 55% for thin cracker or crispy, 60 to 65% for most other types)

Oil: 2% (variable) Delete for most N.Y. style crusts, otherwise 2% won't get you into too much trouble with other styles of crusts)

Procedure:

Put water in bowl/tub first, then add the yeast suspension, salt, sugar (if used) and the flour. Knead until a dough begins to form then add the oil slowly as you knead the dough. Knead the dough until it begins to get elastic then oil the tub and place the dough back into the tub, lightly oil the top of the dough ball, cover with a sheet of plastic and allow to ferment for 3 to 4-hours, punch down as necessary, turn the dough out of the tub and knead again until smooth, allow to ferment again for 90-minutes, turn out of the tub, scale and round into dough balls, lightly oil each dough ball and place into individual plastic bags, store in the refrigerator overnight, the dough balls will be ready to use on the following day. OR if you want to use on the same day allow the bagged dough balls to ferment for 1.5 to 2-hours before opening into skins. The only down side to the last method is that all of the dough balls must be used within a fairly short period of time while the refrigerated dough balls will keep longer out of the fridge without over proofing. A lot will depend upon how you plan to handle/manage the dough at the event.

Tom Lehmann/The Dough Doctor  
5012

### [\*\*Newbie Topics / Re: How do you experts recommend seasoning an aluminum sicilian pan?\*\*](#)

Wipe a thin layer of oil on the OUTSIDE of the pan, place in the oven for at least 20-minutes, repeat several times until you begin to see the development of a nice golden color on the pan then leave it in the oven until there is no more smoke. As you continue to use the pan it will continue to darken to an almost black color which is a thing to be cherished. NEVER, NEVER, EVER wash a seasoned pan in the normal manner, instead, just wipe it out with a clean towel and put it away. If you find that you absolutely must wash it here is how you do it:

- 1) Grasp pan in hand.
- 2) Dip into hot soapy water.
- 3) Clean pan using a soft, plastic bristly brush by LIGHTLY scrubbing.
- 4) Rinse in clear, hot water.
- 5) If you are a commercial establishment dip in a sanitizing solution, if not go directly to #6.
- 6) Wipe the pan dry using a clean dry towel.
- 7) Invert the pan and place it in a hot oven to dry thoroughly (10-minutes).

8) Remove from oven and allow to cool at room temperature until the pan can be safely handled before putting it away.

NOTE: At NO time should you ever release the pan from your grasp until you reach step #7.

Failure to follow this procedure can result in the seasoning coming off like a bad sunburn, then you will need to strip all of the old finish off of the pan(s) and start all over again, and oh, by the way, if you have to do that be advised that your pizzas will bake differently until you once again achieve the desired dark coloring to the pan.

This applies only to bright colored pans which are seasoned. Black colored anodized pans do not need any further seasoning (the black anodizing replicates the seasoning) because of this they can be washed in a more typical manner, they can even be soaked in soapy water BUT I do not recommend this practice as it can, under the right conditions, allow for alkali damage to the base aluminum, or if it is a steel pan it can result in the development of rust. It is still an excellent idea to force dry the dark colored anodized pans by placing them in a hot oven until they are too hot to touch, then remove, cool and put away for the next use.

I hope this helps,

Tom Lehmann/The Dough Doctor  
5011

### [\*\*Dough Clinic / Re: Dense pizza dough- need help! How to make lighter and more airy pizza?\*\*](#)

Remember that "luke warm" might be too hot. Your finger is already at 98.6F so you are looking for a water temperature that is only 1.4F warmer than your finger. The yeast should begin to froth or bubble by the time you add it, if it isn't, the yeast might be suspect. A dark colored baking tray is good because it absorbs heat during baking as opposed to reflecting it as a bright colored pan/tray would. Your dough formulation looks OK but there is a discrepancy between the "recipe" and the formula shown in bakers percent as the sugar is not shown in the formula. Just need to confirm that it has indeed been added.

At some point you might want to look into getting a dial/stem type thermometer for measuring the water and finished dough temperature (important aspects of effective dough management as well as a small oven thermometer to confirm your oven temperature. I've always said that thermostats are about as good as a sun dial on a cloudy day.

So, it looks like we now need to look at how you are managing the dough, this is everything you do with the dough from the time it is mixed until when you finally open the dough ball(s) into skins. One last thing, I see you are using a 200-gram dough ball weight, what size pizza are you making from this? How do you open the dough into a pizza skin (by hand or do you use a rolling/pie pin)?

Tom Lehmann/The Dough Doctor  
5010

### [\*\*Sauce Ingredients / Re: My Pizza Sauce\*\*](#)

M.R.;

I'm with you brother! :)

Tom Lehmann/The Dough Doctor  
5009

### [\*\*Newbie Topics / Re: How do you experts recommend seasoning an aluminum sicilian pan?\*\*](#)

1) I should have said that you only really need to season the inside of the pan only

once and this is to ensure a satisfactory release from the pan, after that it will continue to season itself due to the oil used in the pan.

2) In home use you can use 500F as quoted but in commercial practice we never recommend going more than 430F as the flash point of most oils is between 435 and 440F. and when you are right in the middle of seasoning a bunch of pans in a pizzeria nothing adds to the excitement of the day like your oven catching on fire. Home seasoning where you are doing only a couple of pans at a time don't pose this issue.

3) You can use 20-minutes between seasoning applications but the last one should be left in the oven at least until the pan stops smoking or 20-minutes, which ever is longer. This is sometimes called the "curing" of the seasoning.

4) Season pan, remove from oven, cool for a minute or two, apply oil, place back into the oven, repeat at least several times.

5) Pan is ready to be put into use after a minimum of three oil applications.

6) When would one want to clean a seasoned pan in the normal manner? I can't figure out why a person might be moved to doing something like that but wanted to make sure you were on board with the advice. Now you can't say that you were not warned. Trust me, I've seen it done many times.

7) You can use olive oil if you insist but just plain old salad oil is cheaper and it polymerizes better for a faster seasoning build up.

8) As for putting dough into a seasoned pan for storage, if the pan is well oiled there is no real problem but if you don't use oil in the pan the moisture and acids in the dough can damage the seasoning over time. It is perfectly OK to open the dough and fit it into the oiled/greased pan, give it some proof and refrigerate it for use later in the day (again, remember, we have oil/grease in the pan).

Be very careful when removing the pizza from a seasoned pan as the use of a knife, or metal spatula will damage the seasoning. I personally use a decorating spatula with a soft, flexible blade with a rounded end as opposed to a square end which will dig into the seasoning thus scratching it. By the way, a deep-dish pan gripper is a blessing when depanning deep-dish pizzas.

Tom Lehmann/The Dough Doctor  
5008

### [\*\*Dough Clinic / Re: Dense pizza dough- need help! How to make lighter and more airy pizza?\*\*](#)

Your procedure looks good to me (no need to add sugar to the yeast suspension or cover it either if you add it to the dough within about 10-minutes of suspending it in the water. You mentioned something about the yeast making a paste, possibly you don't have enough water in the yeast suspension, it should pour almost like heavy cream, or even thinner than that, but not paste like). With everything that you have shared it is beginning to sound like the problem might be with the oven (not hot enough). Can you send any pictures of your baked pizza? If so please be sure to cut a slice from the pizza and turn it upside down so we can see the bottom bake too.....a picture can be worth a thousand words.

Tom Lehmann/The Dough Doctor  
5007

### [\*\*Newbie Topics / Re: How do you experts recommend seasoning an aluminum sicilian pan?\*\*](#)

N.S.P.;  
Not a problem, glad to help.  
Tom Lehmann/The Dough Doctor  
5006

## [\*\*Pizza Toppings / Re: Oil application\*\*](#)

If you are adding the olive oil for its flavor add it immediately after baking so the heat of the pizza releases those wonderful aromas.

Tom Lehmann/The Dough Doctor  
5005

## [\*\*Newbie Topics / Re: Pizza dough fermentation\*\*](#)

Why did you remove the dough from the refrigerator and then put it back in again?

How long was the dough out of the refrigerator before you put it back in?

Tom Lehmann/The Dough Doctor  
5004

## [\*\*Chicago Style / Re: Deep Dish\*\*](#)

When the cheese seems to have a mind of its own and wants to part company with the rest of the pizza the problem is due to too much sauce.

Tom Lehmann/The Dough Doctor  
5003

## [\*\*Shop Talk / Re: I need some help from you all Pizza lovers\*\*](#)

Oops, Got Rocks reminded me of another method for cutting pizzas, not dough but the baked pizzas into slices...water jet. The same type of equipment that is used to cut out dashboards in the auto industry. Using high pressure water they can cut a pizza into as many slices as you might want with nary a crumb and absolutely no disruption to the toppings. I've seen ultrasonic cutters used too with good success for the same purpose.

Tom Lehmann/The Dough Doctor  
5002

## [\*\*Sauce Ingredients / Re: Why not cook sauce? Isn't it already cooked before being canned?\*\*](#)

Actually, when the tomato processors concentrate their products they use a process called vacuum distillation, is short, they put the tomato in a vat, pull a vacuum on it and apply heat. Since water boils at a much lower temperature at low pressure (vacuum) not nearly as much heat is required to distill off the water necessary to bring the product up to a predetermined solids content. The higher the solids content the thicker the product is. Normal sauce is around 12% solids while paste, if I remember correctly, is around 24% solids.

Tom Lehmann/The Dough Doctor  
5001

## [\*\*Sauce Ingredients / Re: Why not cook sauce? Isn't it already cooked before being canned?\*\*](#)

They only need to reach a "kill" temperature of 160/165F which is actually lower than a simmer, and the "cooking" time is pretty short as compared to using a non vacuum process.

Tom Lehmann/The Dough Doctor  
5000

## [\*\*Dough Ingredients / Re: Ideal Flour Protein Content and Favorite Flours\*\*](#)

When making pizza I just go by protein content of the flour. My "go to" protein content is between 12 and 12.8% protein, the one exception that I make is when making a New York style crust, then I look for flour in the 13.8 to 14.2% protein

range. In home baking I personally don't see much difference in U.S. flour performance based on the brand so I just go by protein content. The one thing that you do need to be aware of is if the flour is malted or not. If you're like most of us and don't have access to an oven capable of temperatures in the 800 to 900F range you will probably need to add a small amount of sugar to a dough made with non-malted flour, ditto if you will be managing the dough for more than 24-hours.

Yep, just divide the grams protein by the indicated serving size and multiply by 100 to calculate the protein content. If it is not indicated on the bag (it should be) you can always go to the manufacturer's web site to find both the protein content and the treatment the flour might have received such as (bleached, bromated, malted, ADA, ascorbic acid, enriched).

Tom Lehmann/The Dough Doctor  
4999

### **Shop Talk / Re: Temperature and humidity**

The reason why pizzerias get bit in the butt by temperature changes is because they don't practice effective dough management. When the shop heats up or cools down the dough temperature changes (I'm betting they don't monitor the finished dough temperature of each and every dough) the temperature of the dough changes, sometimes with disastrous results (blown dough), at the very least the dough changes or the finished crust changes but because they are not monitoring the dough temperature they never see the impact of the warmer/cooler shop on the dough temperature which upsets their entire dough management process, the way they see it "We did nothing different". Many of those daily changes in the dough can be traced directly back to changes in the finished dough temperature which they are not controlling. I've written a number of articles on effective dough management in both PMQ and Pizza Today Magazine and I've got a procedure posted here providing an outline for effective dough management.

Tom Lehmann/The Dough Doctor  
4998

### **Dough Clinic / Re: Wet and dry Gluten**

In the U.S. total protein has always been the standard for comparing different flours due to the fact that essentially all of the hard wheat varieties released for planting have very good gluten forming properties. In Europe where that is not always the case wet or dry gluten (dry being the more accurate) is a preferred method. By this method the Glutomatic instrument (Perten Instruments) is used to develop the gluten in a specified amount of flour and purify the gluten by washing out the starch (this is the "wet" gluten weight), the resulting gluten ball can then be dried to achieve the "dry" gluten weight, where as in the U.S. we report "total" protein, not just the gluten forming proteins (glutenin and gliadin). Because we report total protein content the process of determining the total protein content of the flour can be done in a matter of seconds as opposed to roughly 90-minutes.

The high Falling Number value indicates that the flour is not malted.

The protein content (11.5%) indicates that this is most likely a winter wheat flour (it could have a small amount of spring wheat blended into the grist to attain the desired protein level reported) and it is representative of a very common, typical bread type flour.

I hope this has answered your questions.  
Tom Lehmann/The Dough Doctor  
4997

### **Dough Ingredients / Re: Ideal Flour Protein Content and Favorite Flours**

Craig;

Good point about the "rounding" issue, I completely forgot about that.

Another thing to keep in mind regarding flour is that we are in a state of flux regarding flour as consumers are demanding more "natural", "organic" and "GMO free" foods we are beginning to see more of the flours taking this path too (mostly as an option) and this is where have to be very careful and begin reading labels to make sure we are getting the type of flour that we really want to have.

Tom Lehmann/The Dough Doctor

4996

### **General Pizza Making / Re: Breakfast Calzone**

P.M.

This is an idea that I have been promoting for a number of years now to pizzerias. Several years ago I worked with a fellow in a pizzeria in Newark, N.J., his store was right across from a train station and there was a lot of early morning foot traffic but he wasn't open until 11:00 a.m. or so. We introduced a breakfast calzone much like you are making only we baked it, put it in paper sleeves and held them under the heat lamps for sale. We bundled it with a cup of coffee, turned the lights on at 7:00 a.m. and sold the heck out of them. We used retort package eggs (these are the scrambled eggs you see at the Holiday Inn Express breakfast buffet), we cooked (actually reheated Jimmy Dean breakfast links) which we chopped into pieces, then added bacon bits, mushrooms, onion, hash browns, fresh tomato and a little cheddar cheese. In other countries variants of this are known as Empanadas or Patty Pies. When I was in Caracas, VZ I used to get one with a cup of coffee every morning for breakfast from a street vendor just outside of my hotel. If hamburger places can do a breakfast there is no reason why a pizzeria or enterprising entrepreneur couldn't do it too.

I agree with you, THEY ARE VERY GOOD! :)

Tom Lehmann/The Dough Doctor

4995

### **Dough Clinic / Re: Dense pizza dough- need help! How to make lighter and more airy pizza?**

I would say let's stay with those changes for now and wait until you can bake on a stone or piece of steel. The pictures that you attached shows a very under baked pizza which the stone should help correct.

Brad also brought up a good point in observing that 220-grams is a bit light for the size pizza you are making (11-inch), you might want to use 250-grams of dough weight when making your next pizza.

Be sure to send us pictures again, they really help.

Tom Lehmann/The Dough Doctor

4994

### **General Pizza Making / Re: Breakfast Calzone**

Norma;

We got them from a local manufacturer, when my client contacted them he simply said that we needed an oil proof paper sleeve like McDonalds used to use on their fried pies. You could also just wrap them in a small square shaped piece of low cost parchment paper, like you can buy on a roll at the supermarket. I've not tried baking them from frozen but it would be interesting to try it. If you had a covered metal container (deep-dish pan w/lid?) you might try freezing a par-baked one too and then placing it in the closed metal container with the lid on to bake for the first 7 to 10-minutes? This would allow the filling to heat up, then remove the lid to

finish baking (Hummm, aluminum sheet pan with a heavy duty foil cover might work very well). Place into sleeves and hold in a heated cabinet or under heat lamps as we did. The don't need to be crispy to be good.

Tom Lehmann/The Dough Doctor  
4993

**[Dough Clinic / Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)**

Brad;  
You might be on to something there, even when looking at the photograph with the pizza wheel next to the pizza, the wheel looks to have a 2.5 or 2.75" wheel and the pizza appears to be about 3-wheels wide, making the diameter closer to 7" than 11". If the pizza is indeed a 7" pizza 100-grams of dough would be a better dough weight to use than 200-grams.

Tom Lehmann/The Dough Doctor  
4992

**[Newbie Topics / Re: my dough ball skin is dry , please help.](#)**

The pictured skin looks pretty good and it appears to have a nice dry surface without excessive adhesion of dusting flour. When you say the skin was dry do you mean the dough ball was dry and crusty or did the skin dry out and develop a crust?

Tom Lehmann/The Dough Doctor  
4991

**[Shop Talk / Re: Temperature and humidity](#)**

Harry;  
Humidity has little to no impact at the commercial level, neither does temperature as long an effective dough management procedure is in place which means that the temperature of the water added to the dough will be adjusted to provide the target finished dough temperature on a consistent basis. Granted, if the dough management procedure is one which calls for the dough to set out at room temperature for a couple of hours before scaling and balling one can expect to experience significant impacts to both dough and finished crust quality characteristics as a result of wide swings in room temperature BUT again, with effective dough management procedures in place it doesn't have to happen that way. How would effective dough management change the outcome? If one were to develop a quick reference chart showing the correct water temperature to use (it may include ice) based on the room temperature to give a finished dough temperature at the target temperature around which your dough management procedure was developed the impact would be minimal. But doesn't a large dough heat up when allowed to remain at room temperature? Very little. The surface of the dough will warm but the dough is such a good insulator that anything much below 1/2-inch beneath the surface will only be controlled by the actual dough temperature as it came off of the mixer and by the heat of fermentation created as the yeast metabolizes nutrient (this warms the dough at a rate of approximately 1F per hour). Even the largest bread bakeries have discovered this since they no longer use fermentation rooms (temperature and humidity controlled rooms) to ferment their doughs in, instead they just leave the doughs/sponges in the dough troughs and loosely cover to eliminate drafts which might dry the dough creating a crust, the doughs/sponges ferment at a very predictable rate because of the great efforts made to achieve a consistent finished dough temperature at the mixer which

is within the target temperature range. Again, it's that nasty word "temperature", that's 50% of the key to achieving effective dough management, the other half is time. This simply means that if you want to get consistent dough with predictable handling properties and a consistent quality finished product time also has to be managed, this means if we leave dough balls at room temperature while they are being opened into skins there has to be a limit on the time (typically 2 to 3-hours with good dough management), if you are making deep-dish pizzas you have to control the length of time that the dough is allowed to proof/rise in the pan or you will end up with variations in crust characteristics and thickness. You don't need to look any further than the big box chains to see effective dough management procedures in action, Domino's and Papa Johns are possibly the most visible chains that practice effective dough management to provide a consistent quality dough from their many commissaries to their stores nation wide while all the time providing dough that performs very predictably so every store can follow a single operations manual and produce a consistent quality pizza to their customers. Once you enter into the commercial side of the business consistency is the "name of the game". But we make the best pizza ever! Not if you can't make it consistently so each one of your customers can enjoy the same experience. The big box chains do not make the best pizza, but they do provide their customers with the confidence that every time they go into one of their stores they will know what they will get....like it or not. We like to refer to this as the "McDonalds philosophy" they don't make the best hamburger (they will admit to that) but regardless of where you are (in the world) you know what to expect even before walking through the doors. Consistency, consistency, consistency....they spend millions of dollars every year working to improve it.

I relinquish my soap box.

Tom Lehmann/The Dough Doctor  
4990

### **Neapolitan Style / Re: Dough Handling**

JH;

Nope, can't think of any way. There is a product called Through Dough used to practice tossing/spinning the dough but that's totally different from opening the dough balls into skins.

The method that I like to teach for opening the dough by hand goes like this. Use a rolling pin or pie pin to open the dough ball to about 2/3 of the finished diameter.

With the partially opened dough on a lightly floured surface hand stretch the dough (keep your hands/fingers about 1/4-inch away from the edge if you want a raised edge) to full diameter.

I have a video showing this procedure at the PMQ web site <[www.pmq.com](http://www.pmq.com)> or you can also view it at my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> look for the link How To Make Pizza Dough (Part 3). In this video we are using a dough sheeter to pre-open the dough ball but you can accomplish the exact same thing using a rolling or pie pin.

With time as you get better at handling the dough you will probably find that you can do the entire procedure without the sheeter/rolling pi/pie pin.

Tom Lehmann/The Dough Doctor  
4989

### **Dough Clinic / Re: Autolysis through fridge and Ph**

Are you saying that the dough is too elastic and difficult to stretch?  
Tom Lehmann/The Dough Doctor

4988

### **Newbie Topics / Re: My 48 hour emergency dough is flavorless, WTH?**

Actually, most people don't particularly like a "yeast" flavor which is probably best described as that of old, wet newspapers :(

The flavors that most people describe as yeasty are actually those flavors derived from fermentation of the dough which intensify as the dough is allowed to ferment for longer periods of time. However, everyone may not like the flavor of fermentation so that would explain your personal preference for a dough with little or less fermentation. It's the same story with sourdough, some love it, some hate it, just a personal preference. The best thing about making pizzas for yourself is that you can make it the way YOU like it.

Tom Lehmann/The Dough Doctor

4987

### **Shop Talk / Re: Temperature and humidity**

All I can say regarding humidity is that when I was in Dhahran, Saudi Arabia (humidity in the single digits) we really didn't have a problem with any of our dough drying out. The dough absorption was indeed increased by roughly 2% but not because of moisture evaporation from the dough but instead from the lower moisture content flour that we were receiving (it averaged just over 11% as opposed to 13 to 14% here in the states where we get fresh flour from the mill, all of our flour there came from the states too but it came to us in those large land/sea cargo boxes...wanna guess how hot it got once in country with an average day time temperature of 117F?) We did store the flour inside under air conditioning but it still sat in those containers outside with a sun shade only for several days until we rotated it into our at hand inventory. Why didn't the dough dry out under those conditions? because we kept it covered with a large sheet of plastic at all times. Additionally, in Quito, Ecuador (elevation over 10,000-feet) we did the same thing without any problems at all. Baking at high altitude brings with it a whole different set of challenges of which low humidity is the easiest to address.

I realize that there are a lot of pizzerias not controlling their dough management and as long as their customers are OK with the pizzas they get, and they are successful as a pizzeria one can't say that they that they are doing anything wrong for where they are at. I remember in Chicago when the first wood fired oven pizzeria opened. They got off to a really bad start as the customers were all sending the pizzas back because they were "burnt" in their view. It took a little education to correct the problem and now all is good. It's just the customer expectations that you have to meet to be successful, if that's consistency or inconsistency or type of bake is a matter to be decided by the customers.

Tom Lehmann/The Dough Doctor

4986

### **Shop Talk / Re: Temperature and humidity**

Any oxygen exposure in that case would only be on the outer surface where as the far greater part of the dough is contained within that outer skin, additionally a huge amount of air is incorporated into the dough during the mixing process, work that was done many years ago shows that what we see as bubbles aka cell structure is actually formed by a nuclei of air cells entrapped within the dough during mixing. Each cell is lined with yeast cells which during the feeding process (fermentation) produce carbon dioxide, alcohol and acids which are then contained within each of those nuclei, as more fermentation takes place the pressure within each nuclei increases to form a larger size hole/bubble/ nuclei/crumb structure,

then when the dough goes into the oven the dough is heated, causing the gas within the cells to expand (Boyle's Law) forming even larger holes/crumb structure, as this expansion is taking place the dough actually grows in size which is what we call oven spring.

I'm guessing that the underlying truth as to why the dough boxes are left open is to allow for ventilation (remember the dough is continuing to heat up) and also to reduce the humidity build up within the dough boxes which can result in wet or tacky feeling dough when you go to open it into skins. Try making some dough and tightly cover/seal the dough box(es) and I bet you will see dough that is wet or sticky and if allowed to go the full distance it might even blow or at least grow to the point where it is difficult to remove from the box or even handle.

If you want to read more about yeast fermentation I would encourage you to read Baking Science and Technology by E.J. Pyler, it might be available at your local library or you can buy it on-line. This book is considered the "bible" for college students taking a baking science class.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

4985

### **Dough Clinic / Re: Autolysis through fridge and Ph**

Your dough has the same problem when using a sourdough starter or biga and 1% compressed yeast even when fermented for 24-hours at 18C/64F. Correct me if that is wrong.

For a dough with 1% compressed yeast that is a lot of fermentation so I am wondering if the problem isn't just one of over fermentation. As a first course of action I would suggest reducing the compressed yeast to only 0.25% (one fourth of what you are presently adding). By any chance are you re-ball the dough after the 24-hour fermentation period? If you are how long do you allow the dough ball(s) to rest before attempting to open them into skins? I would think that anything less than about 2-hours would contribute to this type of problem too.

Tom Lehmann/The Dough Doctor

4984

### **Dough Clinic / Re: Brick oven vs NY style pizza Doughs**

You bet, here's a pretty good one to start with.

Flour: high protein 13 to 14.2%. (All Trumps) 100%

Salt: 2%

Olive oil: 1% (while not traditional I still like to use it to help control moisture migration from the sauce into the crust)

IDY: 0.3%

Water: 68%

Tom Lehmann/The Dough Doctor

4983

### **Neapolitan Style / Re: Dough Handling**

Remember, you are using the rolling pin to open the dough to ONLY 2/3 to 3/4 of the full diameter. Doing this does not "squish" the dough at all, what it does is allow you to fully open the dough without that annoying thin center that is a common problem with novices. I've been teaching this method for a number of years now and all I can say about it is that I can have a total novice opening quality skins (without a thin center) within 15-minutes, I've done so many times when training college students to work in a pizzeria. I've got a video of this being done in

a pizzeria. If you would like to see the video just send me an e-mail at

<thedoughdoctor@hotmail.com> and I'll be glad to send it to you.

Tom Lehmann/The Dough Doctor

4982

**Chitchat / Re: Pizza themed bric-a-brac and knickknacks**

I've got a great pizza clock hanging here on my office wall. If you Google "PIZZA CLOCK" you can get one for yourself.

We also have several Christmas tree ornaments shaped like pizzas too, pretty neat.

Tom Lehmann/The Dough Doctor

4981

**Dough Clinic / Re: Brick oven vs NY style pizza Doughs**

Yup, see above response where I gave an example of General Mills All Trumps flour. This is the flour that is popular in N.Y. but any other high protein flour will work as well.

Tom Lehmann/The Dough Doctor

4980

**Newbie Topics / Re: my dough ball skin is dry , please help.**

What I see in the close-up photographs appears to be tearing which is most likely due to insufficient dough absorption. I would recommend increasing the dough absorption by at least 5% of the flour weight. This will provide a softer dough that is easier to open and one which will not tear as easily during opening. If you see an improvement with a 5% increase in dough absorption fine tune the absorption to get the best handling properties for your dough.

Please keep me posted on your progress.

Tom Lehmann/The Dough Doctor

4979

**Stones/tiles/steel, Pans & Accessories / Re: Is this steel usable?**

Sure looks like it. Now all you need to do is to season the steel to seal it and you're good to go. While you don't really need to season it if you are going to bake only pan style pizzas on it, it will need to be seasoned if you will bake pizzas directly on it. The seasoning process will effectively seal the baking steel thus preventing any further rust development as long as you keep it out of the water (NEVER WASH A SEASONED PAN OR BAKING STEEL IF AT ALL POSSIBLE, and the seasoning will greatly help with the release of the pizza from the steel).

Tom Lehmann/The Dough Doctor

4978

**Prep Equipment / Re: Spiral Mixer - Mecnosud 44kg 240v single phase review**

I wrote an article on the different types of dough mixers a short time back and you are absolutely right, they're second to none for mixing dough, plus the fact that they will effectively mix doughs that are as small as 25% of the rated bowl capacity to as large as 110% of bowl capacity. The only cautionary note regarding single speed mixers is that there are some out there where that single speed is 'HIGH'. The speed is so high that it flings ingredients out of the bowl until the dough becomes sufficiently adhesive to remain in the bowl. Add to that the fact that when using a spiral mixer you may never get the chance to meet your mixer repair man :( . Good choice, I'm sure you will continue to be happy with it.

Tom Lehmann/The Dough Doctor  
4977

**[Prep Equipment / Re: Spiral Mixer - Mecnosud 44kg 240v single phase review](#)**

A good way to clean the bowl at the end of the day is to put a gallon of VERY HOT water into the bowl and cover with a sheet of plastic then let it steam for a while, then scrub using a plastic bristly pot brush. If your bowl has a drain plug (something that I've been an advocate for for years now) pull the plug to drain and rinse with hot water then finish with a sanitizer. If the bowl doesn't have a drain plug you will need to sponge out the hot (now much cooler) water and dough debris, then rinse using as little water as possible, sponge out and follow by the sanitizer rinse. For cutting the dough out of the bowl be sure to pour a small amount of oil down the inside of the bowl during the last 15-seconds of mixing, if you're not already doing this you'll see what I mean when I say that it makes it much easier.

Tom Lehmann/The Dough Doctor  
4976

**[Dough Clinic / Re: Thin crust pizza dough for dough press](#)**

Alvin;

Here is a dough formula with over 25-years of success in making thin crust pizzas using a hot press like the Dough-Pro or Summerset press.

Flour: 10.8 to 11.2% protein content (General Mills King Wheat is a good example)

Salt: 1.75%

Sugar: 2% (optional) For the crispiest crust omit the sugar.

Yeast: 0.4% IDY

Reducing agent: PZ-44 (1 to 2%) or dead yeast (RS-190) 2% (adjust as necessary to provide an extensible dough ball with good pressing properties.

Olive oil: 2.5%

Use the delayed oil addition method for mixing the dough.

Target finished dough temperature: 80 to 85F

Dough management: 24 to 48-hours cold fermentation.

Remove dough from cooler 2-hours prior to pressing (be sure to keep box covered at all times)

Set head temperature at 250F and use a 7-second dwell time.

Use your preferred scaling weight or 9 to 10-ounces for a 12-inch crust.

Be sure to oil the platen for the first press, after that the oil on the dough balls should suffice.

Dock the dough skin, dress and bake.

Once you begin using the dough balls they will remain good to use for about 2-hours. Any unused dough balls that are not opened for pizzas within this period of time should be opened, placed on screens and stored in a wire tree rack in the cooler. Leave rack uncovered for 30-minutes then cover to prevent drying. To use, remove from cooler, allow to warm at room temperature for 20 to 30-minutes, dock, dress and bake.

If you need a dough management procedure I have a good one posted here.

Tom Lehmann/The Dough Doctor  
4975

**[Dough Clinic / Re: Thin crust pizza dough for dough press](#)**

Alvin;

Sure, put water in mixing bowl followed by salt and sugar (if used) then add flour and remainder of dry ingredients on top of the flour. Mix for approximately 2-minutes at low speed of JUST until you don't see any dry flour in the bowl then while still mixing at low speed pour in the oil and mix for 1-minute, then mix at medium speed for about 6-minutes or just until the dough takes on a smooth, satiny appearance, immediately take to the bench for scaling and balling. Don't forget to cross-stack and down-stack. With the reducing agent in the dough you will have a mess the following morning if you don't.

Tom Lehmann/The Dough Doctor

P.S. I forgot the dough absorption in my dough formula: It should be 63% (variable).

4974

### **Shop Talk / Re: Mobile Business Growing**

A numbe of years ago there were a lot of postings on pizza trailers through Paul Nyland/Pizza Paul and Ottis Gunn/Pizza Wheel. Their trailers both incorporated the smaller (30" +/-) air impingement ovens with good success.

Tom Lehmann/The Dough Doctor

4973

### **Newbie Topics / Re: Pizza dough fermentation**

Mobo2;

During those four hours that the dough was out of the fridge it most likely began to ferment to some extent, when you put it back into the fridge I'm betting that it did not cool back down sufficiently to arrest/slow fermentation to a manageable rate for at least a full day, so it appears that the dough might have been still actively fermenting when you removed it to make a pizza. You said the dough was "saggy" or excessively soft which would be one of the characteristics of an over fermented dough which due to the action of enzymes contained within the yeast, and the degrading effect of fermentation acids on the flour/wheat proteins becomes excessively soft, sticky and generally just difficult to handle or form into pizza skins. A lot would also depend upon the temperature of the dough when you placed it in the fridge. Under most conditions a good temperature would be 70 to 75F or 21 to 24C with 80F/26C being the maximum recommended dough temperature.

Tom Lehmann/The Dough Doctor

4972

### **Dough Clinic / Re: Thin crust pizza dough for dough press**

Alvin;

Break out your calculator.

Enter the amount of flour you want to use in the dough.

Enter the ingredient percentage you want to find the weight for.

Press the "%" key.

Read the ingredient weight in the display window. Remember that the ingredient weight will be given in the same weight units that the flour weight was shown in (pounds, ounces, grams, kilograms, etc.)

Example:

You want to use 40# of flour . 40-pounds = 100% (flour weight ALWAYS equals 100% regardless of the amount)

Salt: 1.75% (enter 40 X 1.75 (press the "%" key) and read the salt weight in the display window. 0.7-pounds or 0.7 X 16 = 11.2-ounces.

Repeat this for each ingredient percentage and you will have your formula correctly sized for your flour weight.

Tom Lehmann/The Dough Doctor  
4971

**Dough Clinic / Re: Thin crust pizza dough for dough press**

Alvin;

Base on your question I just finished writing and submitting an article on dough presses for Pizza Today Magazine. It will probably appear in the issue following the one coming up.

Tom Lehmann/The Dough Doctor  
4970

**Pizza News / Re: 5 Chefs on How They'd Doctor Up Frozen Pizza**

Peter;

In the closing years of the great pizza wars (1987 to 1990) the frozen pizzas were so bad that nobody even thought of them as "pizzas" instead, they were considered to be a cheap and easy source of ready made crusts just begging for the addition of toppings. Tracking of consumer buying patterns showed that when frozen pizzas were purchased fresh vegetable produce was also purchased....gee, I can only speculate as to why? I helped develop the first really gourmet type pizza sold from the frozen food case for a fellow in Topeka, KS. Going off of my "Dough Doctor" he developed a television commercial with doctors wheeling a gurney into the operating room (filmed at St. Mont Veil Hospital in Topeka) and upon entering one of the doctors pulls the sheet back and announces "Why this is a Fellini's Pizza! It doesn't need to be doctored!" Corny, but it got the message out and for quite some time it was a top selling pizza throughout a good piece of the mid-west, then all of the big boys introduced their own versions, the cheap pizza wars were over and premium topped, premium priced pizzas were the order of the day. If anyone doesn't remember how bad those frozen pizzas were, they could not be legally shown to contain cheese, only "cheese product", no tomato either, only "tomato product". I'm not sure there was anything REAL in those pizzas, but they were pretty good once suitably "DOCTORED".

Tom Lehmann/The Dough Doctor  
4969

**Dough Clinic / Re: Thin crust pizza dough for dough press**

Alvin;

With the growing popularity of the Chipolte system concept a lot of people are now getting into pressing their dough and there have been a multitude of questions of how to do it and how to address the dough snap-back/memory problems experienced with the use of a hot press. While it was still fresh in my mind I thought it to be a good time to write an article on it. If you pick it up you might keep it as a reference.

I've also written some other articles on pressing pizza dough, if you can dig them out from the PMQ and Pizza Today archives they might provide interesting reading.  
Tom Lehmann/The Dough Doctor  
4968

**Dough Clinic / Re: Pizza too soft after baking, hand stretch issue.**

QJ;

Actually, when you're hand kneading the dough it doesn't make nearly as much difference as mixing in a mechanical mixer does. All of the things mentioned can/will impact the way the pizza retains its crisp after baking, additionally what the pizza is placed on can have a significant impact. If it is placed on a flat surface

it allows for the steam/moisture to be forced back into the crust rather than escape. The best surface to place the pizza on is some type of elevated rack that holds the pizza up off of any surface and allows for air ventilation on the underside (bottom) of the pizza. Even the amount of sugar used in the dough formula will impact the way the pizza retains its crisp. In this regard, the crispiest pizzas will be made without any added sugar and baked for the longest possible time without excessively drying the toppings. While on the topic of baking if your oven is an electric oven we have found that we cannot achieve the same level of crispiness in an electric oven as a gas fired oven.

Tom Lehmann/The Dough Doctor  
4967

### **Hearth Ovens / Re: Chimney Sweep? How often?**

With that little amount of use I'd probably clean it once a year just to control the build-up. There are any number of good chimney cleaning brushes available on the internet (Google: chimney cleaning brushes) While I don't have a wood fired pizza oven we do have a wood fired furnace that we use for several months every year during the winter and I clean it before each heating season with a brush kit that I bought a number of years ago for about \$50.00. There are some more expensive and some a lot cheaper to choose from. It's a little messy but easy to do.

Tom Lehmann/The Dough Doctor  
4966

### **Thick Style / Re: Papa Murphy's-esque butter flavored oil for bottom of pan pizza?**

Butter flavored Crisco.  
Tom Lehmann/The Dough Doctor  
4965

### **New York Style / Re: All Trumps gluten development at home can't be done?**

Carl;

Have you ever wondered why high gluten/high protein flour is synonymous with "pizza" flour? Was it used to make pizzas in Italy 200-years ago so that's why we use it today? No. Flour was pretty weak back then and pretty much of unknown strength but one thing was is sure, the wheat breeders back then were not developing varieties of wheat high in protein content just for making pizza. Wheat breeders? What wheat breeders? The use of high protein flour came about when pizzerias began to open up in North America. The pretty well accepted method of making pizzas back then was to mix the dough (temperature control? what temperature control?) and allow it to bulk ferment for several hours until the pizzeria was ready to open (typically 6 to 7:00 p.m.), a piece of dough was pinched off from the bulk dough piece and formed, using a dough sheeter (for the most part the operators didn't know how to open dough by hand) into the pizza skins which were made, dressed and baked to the order. As the fermentation progressed through the evening hours the dough became more and more fermented, to the point where it became over fermented and started getting sticky....time to close. Pizzerias were seldom open after mid-night for this reason. As operators complained of their problem to their flour suppliers (who were very well informed on flour back in those days) suggested a type of flour which had better fermentation tolerance....high protein flour. It worked much better than the flours they were previously using and it didn't take long before the flour suppliers were recommending it to other pizzerias....pizza flour was born! Then came the big box chains with their own concept of dough management allowing the dough to be

much more consistent over a much longer period of time. This concept allowed for the management of fermentation to avoid over fermentation of the dough. The procedure was quite similar to the one which I put together a number of years ago. Call it "modern" dough management if you want. I just call it effective dough management. This method of dough management didn't need the high protein flour to provide a quality pizza, it only required flour with a protein in the 12% range which is where we still are today when the dough is managed in such a way so as to control fermentation. Today we don't have just cake flour, pastry flour, cookie flour, biscuit flour, bread flour, hard roll flour, and pizza flour by name, instead there is a huge amount of cross over between the different flour types, for example, you can make pizza from any flour shown above with the exception of a chlorinated/high-ratio cake flour, so would the "real" pizza flour please step forward?

Just a bit of trivia.

Tom Lehmann/The Dough Doctor  
4964

**New York Style / Re: All Trumps gluten development at home can't be done?**

Carl;

Thank you.

I feel blessed to have had the opportunity to begin working with pizza in the early 1960's when pizzas were primarily sold by independent pizzerias and the box chains were either on the cusp of growing or were not even incorporated yet. Frozen pizza was a rare thing but Chef Boyardee? Pizza in a box, as bad as it was still made a big hit with families across the country. I had the golden opportunity to consult with all of the big box chains and a whole lot of the frozen pizza guys but my greatest joy came from my work to unravel the technology behind the making of pizza dough and sauce, then came several years of research on the freezing of pizza (the frozen pizza industry was growing at an astronomical pace and they had questions and problems in need of solutions). Once the chaos began to subside I focused my research efforts to the growing pains being experienced by the independent operators and looked for solutions to their issues such as bubbles, gum line, dough mixing, effective dough management, how different dough forming methods affect the crust characteristics, the list goes on and on. Once I had found the solutions to these and many other questions and problems I needed a soap box to stand on from which I could disseminate that information to those needing it. Along came Pizza Expo, Pizza Today Magazine, PMQ Magazine, PMQ Pizza Shows, PMQ Pizza Cruises :), as well as the AIB Technical Bulletin Series on pizza related topics and the AIB Annual Pizza Seminar which has become the longest continuously offered seminar ever offered by the AIB. I initially wrote the course context and was the primary instructor (more than 35-years ago) and then enlisted Jeff Zeak an energetic lab assistant to work with me in all things related to pizza, together we continued to research all the nooks and crannies of pizza at all scales of operation. Two years ago there was a mass exodus of senior talent from the AIB, A couple of us retired, others took positions in other segments of the food industry and Jeff went on to claim his new found fame with the Reiser Corporation where he is now the Manager of National Development, Bakery Division. I mention this because Jeff, like me still continues to work with pizza but in his case he brings his years of pizza talent to using the Reiser Veemag Screw type divider to large wholesale pizza manufacturers and commissaries where they need to divide thousands of pounds of dough per hour into very precise weight pieces (+/- 1.5-grams per piece). And yes, the AIB does continue to offer the pizza seminar <[www.aibonline.org](http://www.aibonline.org)> but don't ask me anything about it as I no longer contribute

or participate in it.

That, combined with years of domestic and international consulting is where one gets sufficiently educated in pizza and the like to know that just around every corner there is yet another unsolved problem or unanswered question just waiting for a little research time to find that elusive answer.

This is why I have so much respect for everyone here at Pizza Making.Com who takes the time to gain a true understanding of what it takes to produce pizzas in a home environment. It doesn't come fast, and it sure doesn't come easy but the personal satisfaction of knowing that you have done the work and have a new found knowledge is worth every minute of the time spent.....BUT it doesn't add up to a "hill of beans" if that knowledge is not shared (not a problem here at PMC). I used to tell my students that "knowledge gained but not shared is not knowledge at all, it's just a bunch of memorized words".

And then there was the time that I liquified 750-pounds of pizza dough, a lesson in starch damaged flour.....I'll share that one another time.

Tom Lehmann/The Dough Doctor  
4963

### [\*\*Dough Clinic / Re: Is my NY Style dough formula ok ?\*\*](#)

Peter nailed it with all the right questions :)

It might also help to know how you slack-out/thaw the dough and how you manage it after slacking it out.

Tom Lehmann/The Dough Doctor  
4962

### [\*\*Newbie Topics / Re: Par baked/frozen skins\*\*](#)

Par-baked pizza shells can be frozen for up to about 90-days if you eliminate any/all head space from the packaging to eliminate any freezer burn/desiccation of the shell(s). While there is some loss of flavor when you freeze any baked product it really isn't as much of a problem with pizza as it is with other par-baked products due to the other flavors present during the final baking/recon which permeate the shell giving it a boost in flavor.

Textural differences between frozen and fresh are the greatest difference. Because the shell goes through the critical temperature range for staling (+20 to +50F) twice ,once during freezing and once during thawing the impact can be significant BUT the good news is that the textural difference is one of increased firmness (like stale bread) BUT (lots of buts here) the reheating process temporarily reverses this characteristic so if the pizza is consumed while still hot I seriously doubt that anyone would recognize that the pizza was made using a frozen par-baked shell, however after cooling the crust will be perceived as being firm (crispier?) but dry also. One of the big chains tried doing this a number of years ago but soon discovered that college students eat a lot of cold pizza for breakfast and that cold pizza with a firm, dry crust wasn't all that popular. Oops! They ended up going with refrigerated dough balls like everyone else. Remember this experience, I developed a formula change requiring the addition of Ticaloid Lite, a gum blend from Tic Gum Company, Belcamp, MD to give the par-baked shells a higher moisture content but when baked for the second time as a dressed pizza the moisture content of the crust approximated that of a crust that was baked from fresh dough...pretty slick! It worked very well, so well that one of the big box chains had me go to their product development facility to demonstrate it. How did it fare? Their in-house sensory panel rated it above their regular, made from fresh dough crust. Why isn't it being used today? Because no one wants it to be said that they use a par-baked crust/shell that was made two or more months ago. Fresh is the name of the game

that the big boys play. But back on point, par-baked and frozen shells should work just fine if the pizzas will be consumed hot, reasonably hot or reheated. I personally think that par-baked deep-dish crusts are hard to beat. By the way, rather than pressing those bubbles down after the par-bakes come out of the oven just invert the shells onto a screen or cooling rack for a minute or so, then place onto a pizza screen and place in the freezer for freezing, it will take about 2-hours for a thick crust or about an hour for a thin/thinner crust. You should make an attempt to freeze the crusts on the screen until the internal temperature of the crust reaches +15F, they can then be individually wrapped for frozen storage.

Tom Lehmann/The Dough Doctor  
4961

### **Dough Clinic / Re: Is my NY Style dough formula ok ?**

You say "freezer" but do you mean refrigerator/cooler/retarder?  
Tom Lehmann/The Dough Doctor  
4960

### **Dough Clinic / Re: Is my NY Style dough formula ok ?**

In reviewing your pre-ferment aka sponge in this case, your water is fine at 56% but the IDY is rather high at 1% which is about twice of what it should be for a 4-hour sponge based on a typical sponge temperature of 75F and fermented at room temperature. The salt is also high at 2% as it would be better at 1% (0.25-ounce). Perhaps you are adding the extra salt to control the rate of fermentation from the high yeast level?

As for the sugar level, your finished crust has a decidedly sweet taste. If you are familiar with Papa Murphy's (take and bake pizza chain) their crust is also decidedly sweet as it contains an estimated 5% sugar, just like yours, but their pizza is designed to be baked in a home oven at 425F for nearly 20-minutes. In your oven, baking at 525F your baking time must be pretty short, at around 3-minutes I would guess which is robbing the pizza of potential crispiness, additionally, the residual sugar is concentrated in the crust where it draws moisture from the surrounding air as it cools thus changing the crust to a more soft, limp crust as opposed to a crispy one (if that is what you are looking for), and as Peter noted, 5% oil is high for a New York style pizza. I'd suggest cutting the oil amount in half.

One question that just begs to be asked is why are you freezing the dough balls (if that is indeed what you are doing) when you are using them on the very next day. It would make a lot more sense to manage the dough for an over night cold ferment in the cooler. You will get better finished crust flavor, the dough will open easier too, just curious?

Tom Lehmann/The Dough Doctor  
4959

### **General Pizza Making / Re: Old dough in new?**

Carl;

In Mexico we used to call it Madre de la masa"/Mother dough, in the U.S. as in other parts of the world when done commercially it is referred to as the sponge-dough method of making dough. You might think of biga, sourdough starter, dough starter, and a brew as variants of this method. There are two variants to the method, one involves adding an undetermined amount of old dough to the new dough (great way to use up old dough or left over dough) and the other involves the addition of a measured, predetermined amount of fermented dough. Commercial bakeries call this the sponge-dough method where up to 80% of the

flour is allowed to ferment as a sponge consisting of flour, water, yeast and a small amount of salt, for periods of 2 to 6-hours before addition to the dough side with the other ingredients. The brew is just a liquid form of a sponge but it contains only 20 to 50% of the total flour, yeast and a small amount of salt with a much greater amount of water to develop a liquid, pumpable fermented mass which is added to the dough side after 2 to 6-hours of fermentation time under highly controlled conditions.

The "old or fermented dough" provides some dough conditioning to make the dough easier to handle, shape/form while also imparting a desired fermentation flavor to the finished product be it bread, rolls, pizza crust, pita, etc.

When the amount or age of the fermented dough is not controlled there can be significant differences in the way the dough handles as well as differences in the finished crust flavor profile and possibly even the crust color characteristics due to the acidity in the fermented dough.

The book Baking Science and Technology by E.J. Pyler has a very thorough description of all the different dough making processes in commercial use.

Tom Lehmann/The Dough Doctor

4958

### **Newbie Topics / Re: Par baked/frozen skins**

As baking is critical when making par-baked crusts there is always a tendency to under bake. When this happens you will notice two things:

- 1) With significant under baking you will see the crust collapse into a flat poker chip upon cooling.
- 2) With only very slight under baking you will see what appears to be oil spots on the surface of the crust after cooling. These are NOT oil spots, instead, they are areas where the dough has collapsed due to under baking. This has blind sided even some of the commercial par-baked crust manufacturers as well as the frozen pizza manufacturers.

Additionally, if the crusts are over baked, developing too much color during the par-baking process they will color up too fast during the finishing bake giving a pizza with a properly colored crust but with under baked toppings or lack of top color or a perfectly colored top to the pizza but a crust with too much color. For the commercial producers it is absolutely critical that they control the color of the par-baked crusts, so much so that some are now installing automated color monitoring equipment on their production lines much like that which is used on commercial hamburger bun lines. This equipment is designed to monitor color and "predict" changes in color before it is perceived by the human eye and make oven adjustments as needed to maintain the color at the target specifications.

Tom Lehmann/The Dough Doctor

4957

### **Newbie Topics / Re: Par baked/frozen skins**

I have always found that 400F is a good starting point for par-baking shells of any thickness but due to variations in different ovens you may find that a different temperature works better for your specific dough formulation, thickness and oven. Regarding bake times, unless you have a conveyor oven where you have near total control over the baking time I wouldn't worry about baking time, I would just bake the shell until you just begin to see some development of color. If you find that you are getting the color development but signs indicate that the shell is still not completely baked your oven is too hot.

I should have mentioned earlier that there is also one other way to make par-baked

pizza shells. That is to apply a light application of sauce to the skin prior to baking, about 1/2 of the normal sauce amount is a good amount to use. The sauce on the skin reduces bubbling and allows you to bake the shell a few seconds longer to ensure a complete bake. We do this at AJ's New York Pizzeria here in Manhattan, Kansas and it works just great.

Tom Lehmann/The Dough Doctor  
4956

### **Dough Clinic / Re: Is my NY Style dough formula ok ?**

If your cooler is operating within the recommended safe food temperature range of 34 to 40F (more typically 36 to 38F) your problem with refrigerated dough might have been due to any of the following:

- 1) Dough temperature too high when coming off of the mixer (75 to 80F is a good temperature range).
- 2) Failure to cross-stack dough storage boxes. If using bags instead of boxes cross-stacking is not used as there is nothing to cross-stack.
- 3) With heavy weight dough balls you can vastly improve the rate at which they cool by flattening the dough balls into pucks (like large hockey pucks).
- 4) Something is wrong with your dough management procedure which impedes the effective cooling of the dough.

There is also a process referred to as "super cooling" the dough, by this process the dough pucks or dough balls are placed into the freezer for a specific length of time (maybe 90-minutes) to super cool the dough, it is then transferred to the cooler for normal storage. The advantage here is that you don't need to go through the slacking out/thawing period that you have to go through with frozen dough.

With the above taken into account the room temperature will have little or no impact upon the cooling of the dough.

Tom Lehmann/The Dough Doctor  
4955

### **Dough Clinic / Re: Question on preferment**

Oh yes, those fond memories of mixing in the "sponge" mixing room, you will NEVER forget that smell of fermentation.

The only difference between a sponge and adding old dough is that, as you know, the time and temperature that the sponge is fermented at is closely controlled so it's consistent ALL THE TIME, plus the amount of sponge added to a specific dough is always consistent too. Adding old dough is somewhat more inconsistent unless it is well controlled from the time that it is captured to the time it is used and this means using the same amount of it all the time too. It's all in consistency, sponges are made to be consistent, old dough is just that, unused dough. In the production of commercially made pizza crusts using the sheet and die cut forming method there is what is referred to as a web scrap (when you cut circles out of a continuous ribbon of dough you are left with a web between the cut circles which has to be removed (it can be anywhere from 22 to as much as 45% of the total dough weight, meaning that if you sheet and cut 100-pounds of dough into circles of a given size from a ribbon of dough of a specific width you will generate 22 to 45-pounds of scrap dough. This scrap dough is captured (removed from the line) immediately and automatically and conveyed back to the dough mixing station where it is incorporated back into fresh dough. Note that the dough is always captured from the same place on the line and it is immediately conveyed back to the mixer(s) for incorporation into the new/fresh dough for consistency. Like we always say: GIGO (garbage in, garbage out).

From the perspective of a home pizza baker or bread baker for that matter the

addition of old dough to your new/fresh dough might improve the flavor as well as the handling properties of the dough (it can help be making the dough a little softer and more relaxed/reduced dough memory) and for any inconsistency, every one of our pizzas is a "one off" so why even worry about any slight inconsistency the "old dough" might bring to the party (pizza party).

Tom Lehmann/The Dough Doctor

4954

### **Shop Talk / Re: Opening a new store, recommendations ref ovens**

Oh boy! sooo many questions to ask.

What kind of pizza are you thinking of making? Dine-in or DELCO (delivery & carry out)? What kind of utilities do you have (gas or electric), how much space do you have? Make sure you have overhead room for a hood over the oven, probably with a fire suppression system. Pizza prep area/make line.

If you are looking at a deck oven make sure you have at least 1.5 times the depth of the oven for free space in front of the oven for the oven tender to work in. Marsal <[www.marsalsons.com](http://www.marsalsons.com)> also makes a some very good ovens with excellent recovery times. They are known for their thick baking decks. I wrote an article in PMQ on choosing the right oven a short time back that you might want to research and take a look at.

Tom Lehmann/The Dough Doctor

4953

### **Dough Clinic / Re: Question on preferment**

You're right about the "old dough" in this case still having a lot of life in it, for all practical purposes it is really more of a frozen fresh or young dough than an "old/long in tooth" dough. For this reason I would simply down size my new dough to 70% of the original size, add the frozen, fermented dough and you should be good to go.

Tip:

How to down size a dough to 70%.

- 1) You must have your dough formula in weight measures and bakers percent.
- 2) Add up the weight of all ingredients to get the original dough weight.
- 3) Now, add up all of the bakers percentages and divide by 100. You should get something around 1.7?
- 4) Calculate 70% of the dough weight. dough weight X 70 (press the "%" key) and read the 70% dough weight in the display. Still with me?
- 5) Divide the new dough weight (70% of the regular dough weight) by the number you got in #3 above. This will give you the flour weight needed to make a 70% size version of your regular dough.
- 7) Use bakers percent to calculate your new ingredient weights for the new dough size.
- 8) Add the fermented/frozen dough to the bowl along with the ingredients for the new dough size and you should be good to go.

Note: But what if the fermented/frozen dough doesn't contain all of the ingredients in my dough? That being the case for those specific ingredients just use the amount correct for a full size dough. If you find that the frozen/fermented dough contains more of an ingredient (IDY) than your regular full size dough calls for do not add any more IDY (I have yet to devise a way to remove yeast from a dough).

If you want you can compare the ingredient contribution of each ingredient ingredient in the frozen/fermented dough and compare it to the amount of that ingredient needed in a full size dough then if you need to adjust the amount you can make that adjustment when adding the ingredient at the dough stage.

Tom Lehmann/The Dough Doctor  
4952

**[General Pizza Making / Re: Trying to get crust crispy++](#)**

For ADY your yeast amount should be at 1 to 1.25-ounces. Your dough might not be getting sufficient fermentation or oven spring with only 6-grams of ADY. Your dough absorption is also on the low side at only 56.6%, I think you might achieve a crispier crust by going to at least 60 or 62% absorption (9 to 9.3-pounds).

Depending upon what temperature you're baking at and what you're baking the pizzas on, the sugar could also be a contributing factor.

Tom Lehmann/The Dough Doctor  
4951

**[Sauce Ingredients / Re: Opinions on canned tomato products](#)**

You might also take a look at using the Stanislaus 74/40 tomato filets (drained for 30-minutes) in lieu of a regular sauce. It has the appearance, flavor and texture to make an outstanding pizza, or try adding them to a pizza lightly topped with 7/11 ground tomatoes to complete the sauce. Makes for a really flavorful sauce.

Tom Lehmann/The Dough Doctor  
4950

**[Shop Talk / Re: Doughpro PP1818 pizza press](#)**

Alvin;  
If it were me, I'd upgrade to something like the Dough X Press Model DXM or the equivalent from Dough Pro. They're actually easier to use and they have a thickness adjustment. Remember though with press forming the dough weight will have a great influence on the thickness of the pressed skin.

Tom Lehmann/The Dough Doctor  
4949

**[Dough Clinic / Re: Question on preferment](#)**

A number of years ago it was discovered that the addition of 1% salt to the sponge resulted in a more consistent fermentation rate making the age of the sponges more predictable in a large scale production environment.

Tom Lehmann/The Dough Doctor  
4948

**[General Pizza Making / Re: How Elevation Affects Baking Performance](#)**

The work that Klaus did was based on bread and cake systems and because they address certain laws of physics the results are the same for both large and small batch sizes, BUT keep in mind that this work was done using typical bread formulas which utilize three times or more yeast than pizza doughs, also the bread doughs are much softer than the average pizza dough (62% absorption, 3 to 5% yeast (CY), 3% oil, use of a 70 to 75% sponge, and mixed much more than we do a pizza dough (typically mixed beyond full gluten development to achieve the desired dough extensibility characteristics. The way a pizza dough bakes at increasing altitude is the same though as reported, more moisture loss during baking, higher baking temperature and longer baking time are needed at any thing much above 4,000-feet. We generally don't make any absorption adjustments when making pizza at high elevation because we look at the increased moisture loss as a positive feature and the stiffer dough pretty well resists the expansion due to the lower atmospheric pressure (but bubbles do seem to be more common). When baking pizzas in an air impingement oven at high elevation we find that we commonly max

out the temperature which means that we then need to re-profile the finger configuration to accommodate a longer baking time. A few years ago I was consulting for a large box chain with stores at both sea level and at 5,000+ feet elevation and they just couldn't figure out why the high elevation stores couldn't follow the "ops" manual and bake the pizzas at the specified time and temperature (which were established at an elevation of only 750-feet).

As I've said before, there is a fork in the road where bread technology goes one way and pizza technology goes another way.

4947

### **Dough Clinic / Re: Question on preference**

Ryan;

A "flying sponge" is really designed to be used when a bakery receives a late order for more bread but they only have sufficient sponges on hand to make the doughs needed to produce to the order which was received the night before. So a flying sponge is set to allow the production of additional doughs from which the additional breads will be produced. Think of it as the commercial bakeries version of an emergency dough, that's really all it is and that's how it is used. The flying sponge is used only to add flavor to a dough which would otherwise be made using little to no fermentation so the finished bread will have a flavor profile somewhat similar to that of the regular production bread made with a conventional sponge at about 70 to 75% for bread or 80 to 85% for soft buns (hamburger buns).

A straight dough using the same fermentation time as the flying sponge will impart significantly more flavor into the finished bread than a flying sponge. So, why don't the large wholesale bakeries just use a straight dough for their "pluses" (bread orders received to late to include in the normal production run), it has to do with the size of the dough troughs on hand. The troughs in a sponge-dough bakery are sized to accommodate the fermented sponge but not a full size dough with any significant amount of fermentation on it, additionally, in automated equipment a straight dough handles quite differently than a sponge-dough so rather than re-set the entire line they just use a flying sponge.

Which brings me to one of the great mysteries of commercial pizza production. Why don't commercial pizza producers use a sponge-dough method for making their dough? It offers many benefits over what they are presently doing, it improves the flavor of the finished crust, gives better oven spring, the dough is softer and more extensible for improved forming by just about any commercial forming method, and it's easy to implement. Two reasons have come up, 1) They don't have the space to ferment the sponges in. 2) Huh...we never considered it, how did you say you do that?

No figure!

Tom Lehmann/The Dough Doctor

4946

### **General Pizza Making / Re: How Elevation Affects Baking Performance**

When it comes to making pizza at home when that home is located at around 5,000-feet (I'm thinking Denver, CO) or more, you may have some challenges if you're making pizza using a very high absorption dough as it may overly expand during oven spring and baking, or even over expand (not to be confused with over fermenting though the appearance is identical) during the fermentation period requiring more frequent punching of the dough. You will also most likely need to reduce the amount of yeast used in the dough. How much to reduce it? I can't answer that as there are just too many variables involved, but the way I do it is to begin reducing the yeast level until I achieve the desired finished crust

characteristics that I'm looking for. Then again, maybe high altitude is the ingredient that's been missing and you are now getting the finished crust that previously you could only dream of getting. Remember that the effect of altitude on a dough works in both directions (up and down) so if you formulate a dough and dough management procedure as well as baking parameters at high elevation and them move to a lower elevation (say Denver, CO to San Diego, CA) you will need to make some changes too, such as more yeast and possibly more water(absorption) to allow the dough to expand as it previously did in Denver, and if you are baking in an air impingement oven you will most likely need to adjust the baking time and temperature (lower temperature and shorter time). When you're trying to make pizzas in Quito, Ecuador all cards are off of the table as the rules just don't seem to apply anymore, moderate yeast level, slight adjustment in absorption (lower) just to control the dough from turning into a pita during baking, with baking temps around 600F, from there you just manipulate the formula and dough management procedure to get a dough that doesn't flow all over the place and which gives you a finished crust close to what you're looking for. Yes, it is a bit of a challenge.

4945

### **Cracker Style / Re: Shakey's nutrition, a clue?**

One thing to keep in mind about the nutritional labeling is that in most cases it is generated through the use of a computer program, as such the total fat reported will come from the tomato, the flour, and anything else that will contain fat, it's not just the added fat. Sodium can come from the sauce, cheese and dough including constituent ingredients for each. Protein can come from the tomato, flour, yeast, as well as constituent ingredients in the sauce. Fiber will come mainly from the tomato and flour but there could also be ingredients in the sauce which would also contribute fiber. I won't go into all of the details here but this just gives you an idea of what you might be up against Pete is absolutely correct, the ingredient panel would show you a lot more useful information. When we used to do a lot of reverse engineering if we didn't have good solid data to work from we took the "duck" approach. Develop a product that has all of the attributes of the target product and then do a nutritional profile on it, you'd be surprised at how similar the products were most of the time.

Remember a huge amount can be learned about a product by just looking at it and then feeling it and tasting it so this will narrow the formulation down, then looking at and tasting the sauce will provide some direction for the sauce. In the end, we have found if it looks like the target, tastes like the target, has the same or similar textural properties, and the sauce comes close, the nutritional profile will tell you just how close you came, or look at it this way...if it has all of the attributes of the target, close enough, that's what most people are looking for anyways.

Tom Lehmann/The Dough Doctor

4944

### **General Pizza Making / Re: How Elevation Affects Baking Performance**

Parallei;

What kind of pizza do you make? I would agree with you totally if your pizza is made using a lower absorption dough (under 65%). Then again, your dough may have already been optimized for the Denver altitude. Remember, all of the recommendations are intended as guidance for those going from something closer to sea level to 5,000-feet or more. It's just a matter of physics, when there is less atmospheric pressure pressing on the dough it will expand to a greater degree than when there is more atmospheric pressure pressing on the dough (the internal pressure within the dough will remain the same). It's like a balloon, blown up in

San Diego, it will actually increase in size if taken to Denver.

Tom Lehmann/The Dough Doctor

4943

### **Dough Clinic / Re: Do i have to wash my starter?**

Chris;

It isn't that your starter was contaminates but it certainly sounds like it was initially cultured at a temperature other than what was specified. When this happens you end up with different bacteria becoming the dominant bacteria in the starter which gives a different flavor and aroma profile. This is what it sounds like happened. I'm not aware of any practical way to re-culture the starter where the favorable bacteria is selected for growth (culturing) over any other bacteria that are present. You might try dividing up the starter material that you have to make several smaller starters and take great care to hold them at the recommended culturing (some refer to it as the "ripening" temperature) to see if the original bacteria (it will be one of the many forms of lacto bacillus) is still viable, if it is it might grow to become the dominant bacteria and you will have your original starter back. Be sure to follow the instructions for feeding the starter. It might take as long as a couple of weeks to recover the starter if it is recoverable. If the starter is not recoverable your only option is to start all over again but in that scenario I would divide the culture into at least two containers so I'd have two identical starters culturing at the same time, this way if one is lost I would still have the other one from which to make more. Always keep multiples of your starter...just in case. In use you would use from one starter one time and use from the other starter the next time thus allowing you to continually feed the starters keeping them active, if you don't use enough of the starter don't be afraid to either discard some of it or share it with a friend. The bubbling and aroma are the indicators that you look for to determine if something has gone wrong with the starter.

Tom Lehmann/The Dough Doctor

4942

### **Dough Clinic / Re: Does oil affect gluten development**

Gluten is formed when wheat flour (proteins) is agitated in the presence of water. If the oil is added along with the water we see a significant variation in dough consistency from batch to batch, this used to be blamed on the weather but now we know that it was due to the fact that some of the flour was absorbing oil and unable to form gluten. To eliminate this problem we developed the "delayed oil addition" method of mixing where the dough is mixer without oil for about 2-minutes, or just until all of the flour has been hydrated, the oil is then added, the dough mixed for 1 more minute at low speed and then medium speed is used to develop the dough to the desired level of gluten development. If a plastic fat (butter, lard, margarine, shortening, etc.) is used it can be added right on top of the flour without using the delayed "oil" addition method. The plastic fat will not readily adsorb into the flour and impact gluten development.

Tom Lehmann/The Dough Doctor

4941

### **Newbie Topics / Re: Par baked/frozen skins**

Pizza Pap;

There is no hard and fast rule for par-baking pizza skins except to say that they are baked at around 400F for about 4-minutes, but depending upon the typ of oven used that could be as short as 2-minutes. Every dough formula par-bakes differently, you have to match baking temperature against baking time to control

bubbling, then look for opaque spots or what appear to be oil spots on the par-baked crusts, there are NOT oil spots. They are areas of crust collapse due to insufficient baking (longer baking time is normally used to address this). Docking the skins helps to control the amount of bubbling on the crusts. A couple of tricks that work well with par-bakes is to invert the crust immediately upon removal from the oven onto a screen for cooling (flattens out and bubbles) and if you want an absolute minimum of bubbles just apply 1/2 of the sauce to the skin before baking, works great. No need to refrigerate either as the sauce will be RT stable for the day.

Does a par-baked crust change due to refrigeration or freezing? You bet it does! It stales very rapidly under those conditions. The crumb structure becomes firmer (could be perceived as a good thing) and there is also a loss of flavor as compared to one that wasn't refrigerated or frozen.

Tom Lehmann/The Dough Doctor  
4940

### **Dough Clinic / Re: I want dough with lots of air pockets.**

First of all, I'd suggest replacing that scale and converting your "recipe" into a "formula" based on weight measures as this will give you the reproducibility needed to zero in on a target characteristic. With the formula in weight measures we can put it into bakers percent to better manage and formula changes.

From your description it sounds like they are using a commercial frozen dough, but you don't need to freeze it to replicate it. Adjust the water temperature to give you a finished dough temperature of 80 to 85F (you'll probably need to start with 70F water), mix the dough as you are presently doing and immediately after mixing scale the dough to desired weight and form into a dough ball. Oil the dough ball and place it into a plastic food bag (NOT A ZIP-LOCK BAG), or a bread bag, twist the open end to form a pony tail and tuck it under the dough ball as you place it in the fridge for 18 to 24-hours. Remove from the fridge and allow to warm at room temperature for 1-hour, then invert the bag over a bowl of dusting flour allowing the dough ball to strip the bag inside out as it falls from the bag. Flour the dough ball well and hand shape it to desired size.

Here are a couple of things that should help you achieve the characteristics you're looking for:

- 1) Increase or adjust the IDY to 0.5% of the weight of the flour.
- 2) Increase the water (absorption) to 65% of the weight of the flour.

With these formula and procedure changes I think you will be a lot closer to where you want to be.

Tom Lehmann/The Dough Doctor  
4939

### **Dough Clinic / Re: dough mixing and biochemical gluten development**

John;

Providing dough "B" wasn't over mixed (highly unlikely in the real world where high protein flour and modest mixing speed is the norm) both doughs would be considered on a gluten development plateau. We used to show this in our annual pizza class by mixing one dough just to cohesiveness and the other to a very smooth consistency and the students would always ask "why don't we just mix the doughs longer if it doesn't hurt them in any way?" The answer was that while you could see a difference between the two doughs at the bench during cutting and balling there was no perceptible difference between the doughs on the following day after a period of biochemical gluten development the additional mixing time took its toll even on our 80-quart planetary mixer as you could feel the motor

heating up after mixing the dough for the longer period of time. Bottom line, it makes life a lot easier for your mixer and reduces the probability that you will develop a first name relationship with your mixer repair man. Occasionally, when using a mechanical rounder the dough does not handle as well as it should during rounding if mixed just to the point of having a smooth, satiny appearance so we need to mix the dough a minute or two longer to get it to perform correctly at the rounder.

I think this is why there are so many questions regarding the mixing of pizza doughs, while we can mix the dough for different periods of time we don't see any significant difference in the end, and like I said above, that is a valid observation, but what we are missing is the impact that the longer mixing time is having on our mixer. My philosophy when it comes to mixing pizza dough is to mix it just enough to allow for decent bench handling (so it isn't sticky during scaling and balling) and let biochemical gluten development do the rest of the work for me.

Tom Lehmann/The Dough Doctor  
4938

### [\*\*Newbie Topics / Re: Cold fermentation\*\*](#)

It's true, commercial yeast does not multiply, in fact you cannot grow yeast under normal conditions encountered in baking procedures/processes. If yeast did multiply during fermentation it would be impossible to control the rate of fermentation due to the rapidly and ever increasing yeast cell numbers. You can reference this in the book Baking Science and Technology by E.J. Pyler. What happens during the fermentation process is that the yeast cells mature (swell in size) but do not bud (that's how yeast multiplies), any daughter cells present in the yeast will mature but again not bud. So technically there is essentially no increase in the actual number of yeast cells present.

Sourdough is quite different from a cold fermented dough, even one which has been fermented for the better part of a week. It has a much greater acidity and the acids present (primarily acetic, lactic and propionic) are in different proportions giving the finished product (pizza crust) a totally different flavor. To achieve this difference in acids sourdough is normally made using wild yeasts and lactic acid forming bacteria common in the air.

Tom Lehmann/The Dough Doctor  
4937

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Dockers.. Plastic vs. Metal pins.. any good plastic ones recommended for docking in the pan?\*\*](#)

There is some confusion over what dough docking really is. Some liken it to "perforating" the dough but this is incorrect and serves little function. Dough docking is actually pressing the dough together, much like spot welding, where the top and bottom of the dough is physically locked together. Properly docked dough does not show a hole in the dough, instead it shows an indentation. You can see this very clearly by looking at club crackers or especially saltine crackers, there are few if any holes through the cracker, there is a thin layer of dough covering the bottom of the indentation. It is the locking together of the top and bottom of the dough which controls bubbling of the dough. The best dough dockers, by far, are those with the flat tipped wheels like those from American Metalcraft which MartyE showed in his response. I always like to reference a tool or anything else from a supplier that anyone can access as this allows one to actually see what I'm talking about, then, like Peter said, you can go out on the Internet to see if you can find the same item at a lower price, which is usually possible once you know exactly what you're looking for.

As for docking dough in the pan, by all means protect your pans by using a plastic docker as opposed to a metal pin docker....the Lloyd Pans don't come cheap. By the way, there is a plastic docker which has long plastic pins (American Metalcraft Long Pin Docker #DD5703) which in my over 50-years in the industry I've never found an excuse for using.

Tom Lehmann/The Dough Doctor  
4936

**Dough Clinic / Re: dough mixing and biochemical gluten development**

John;  
What year did you attend my pizza class?  
Tom Lehmann/The Dough Doctor  
4935

**Dough Clinic / Re: I want dough with lots of air pockets.**

That being the case, just begin slowly increasing the amount of IDY but not more than double of what you are presently using. Pick the yeast level that gives you the most improvement then begin slowly increasing the dough absorption (amount of water added) by one or two tablespoons at a time until you see the improvement in crumb structure that you are looking for. If the dough begins to get a little sticky while you're handling it don't be afraid to use a little oil on your hands and/or dusting on the bench (counter top). Keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
4934

**Dough Clinic / Re: New to dough and having same problem**

Peter is absolutely correct. Making pizza in a controlled or somewhat controlled environment such as a pizzeria is pretty easy as compared to making pizza in a home environment where the number of variables are endless. That's what keeps us young and alert, trying to unravel the everyday problems experienced by professional and novice home pizza makers.

Just look at the number of posts made to the Think Tank at <[www.pmq.com](http://www.pmq.com)> as compared to here. It's also interesting to look at the differences in questions/problems posed too.

Tom Lehmann/The Dough Doctor  
4933

**Dough Clinic / Re: Crust Color and Pre-Ferment**

Mitch;

I think your suspicions were pretty close. The crust has that dull, chalky color that is common with over fermented, high acid dough. There was no sugar of any kind to participate in the browning reaction and the acidity of the dough is blocking the browning reaction with the flour. Where the crust is in direct contact with the oven hearth the dough is receiving enough heat to develop some color but not very much. During normal fermentation the enzymes in the yeast convert a portion of the starch in the flour to sugar (glucose and fructose) which can be metabolized by the yeast but when fermentation is excessive those sugars are all consumed by the yeast (less crust color) and the acids developed during the long fermentation time pretty well block the browning process (again contributing to the "funky" crust color). Where you have the crust in direct contact with the oven hearth sufficient heat is delivered to the dough/crust to begin browning due to the presence of the proteins in the flour (the crust color is pretty light under these circumstances). Here is a test that you might try sometime: Find some sweet dairy whey (health

food store?) and add 5% based on the total flour weight. Whey contains roughly 70% lactose (milk sugar) which is not fermentable by bakers yeast, and it is the least sweet of all the sugars (less than 10% as sweet as sucrose (table sugar) so it will not impart a sweet taste but it will participate in the browning reaction to provide improved crust color. If this works it would confirm the above postulation.  
Tom Lehmann/The Dough Doctor  
4932

### **Dough Clinic / Re: Last Little Bit of Elasticity**

Depending upon the protein level of your existing flour you can probably go up in protein content to achieve a stronger gluten film and with all that fermentation chewiness shouldn't be a problem, and it might even help contribute to the crispiness of the crust.

Tom Lehmann/The Dough Doctor  
4931

### **Dough Clinic / Re: Crust Color and Pre-Ferment**

Mitch/Ovenray;

Mitch, your dry milk will work as well but you will need to use more of it as the average lactose content is around 45% as opposed to 70% for whey, I would suggest using non-fat dry milk solids to limit any flavor contribution from the butter fat content of dry whole milk solids or dry butter milk solids. Additionally, whey has very little impact upon the dough absorption but when using any of the dry milk products the rule is to add an equal amount of water as dry milk solids to compensate for the absorption properties of the dry milk solids.

Ovenray, I don't have any idea of what the lactose content of the liquid would be (maybe an internet search would turn something up) but yes, it can be used, however due to the amount of water present the amount used would be significantly higher. Also, that thin liquid floating on top of yogurt is high in lactose too but I have no idea of the lactose concentration. Coffee creamers can also be a good source of lactose too with some of them as high as 50% lactose. You might Google the brands you have available to you to see what their lactose content is. Unless you want a different flavor be sure to use an unflavored coffee creamer, but then too it might be interesting to play with different flavored coffee creamers just to see how they would impact the finished crust flavor, you might come up with something interesting there.

Tom Lehmann/The Dough Doctor  
4930

### **Neapolitan Style / Re: Pizza bottom sticking to the WFO floor - WTF?**

Additionally, when you first put a dressed skin in the oven it will always stick to the hearth until it has a chance to sear (like searing a steak) but after 20 to 30-seconds you can use the spinning peel to move the pizza around in the oven or rotate it for an even bake. What are you using for your peel dust? With a very thin skin and no peel dust you can get a condition where the moisture from the sauce or toppings enters into the dough making it sticky and this will glue itself to the oven hearth, but we normally see problems with peeling the pizza into the oven when this condition is present. If you are pre-saucing or prepping the skins there is a possibility that the skin is tearing when peeling it into the oven thus creating a condition like that mentioned previously. If you are prepping the skins in advance, it's always a good practice to very lightly brush the skin with oil before applying the sauce, this creates an effective barrier to moisture migration into the dough while it's waiting for its turn in the oven.

Tom Lehmann/The Dough Doctor  
4929

**[American Style / Re: SO, how big are your dough balls?](#)**

The lightest I go for a 12" skin is 250-grams (about 8.75-ounces), but my normal dough weight is 275-grams (just over 9.5-ounces).

Tom Lehmann/The Dough Doctor  
4928

**[Dough Clinic / Re: dough mixing and biochemical gluten development](#)**

John;

That was back when we used to have guest pizza experts to work with our students too. Big Dave (Dave Ostrander), Pizza Paul (Paul Nyland), Evelyn Slomon and Chef Ted Rowe (Mulberry Street Pizzeria, San Rafael, CA) were regulars back at that time as well as representatives from all of the major pizza oven, equipment/tool, and ingredient manufacturers. My "right hand man", understudy and assistant with a huge amount of pizza research was Jeff Zeak (The Pizza Practitioner). Jeff left the AIB at the same time as I did and he now works for Reiser Equipment Company specializing in V-Mag rotary extrusion dividers.

Tom Lehmann/The Dough Doctor  
4927

**[Newbie Topics / Re: What does gluten development look like?](#)**

Properly developed gluten in a dough to be used for making pizza is developed just enough to provide a little elasticity, a smooth skin and relatively non-sticky handling properties at the bench during scaling and balling of the dough. Unlike bread bread doughs pizza doughs are not mixed to full gluten development, we let biochemical gluten development take care of that for us during the fermentation period whether it be a cold fermentation or warm (room temperature) fermentation. When mixing pizza doughs all you need to do is to mix the dough until it takes on a smooth, satiny appearance and exhibits decent handling properties at the bench.

There has been quite a bit of discussion on this lately.

Tom Lehmann/The Dough Doctor  
4926

**[Prep Equipment / Re: Need advice on how to make it easier for people to make pizzas](#)**

BMK82;

I also have a video of the procedure that Peter referenced being used in a local pizzeria here in Manhattan, Kansas where they are making New York style pizzas at AJ's New York Pizzeria, Manhattan, Kansas.

If you would like to see the video please send my your e-mail address and I'll send it to you.

Tom Lehmann/The Dough Doctor  
<thedoughdoctor@hotmail.com>  
4925

**[Dough Clinic / Re: dough mixing and biochemical gluten development](#)**

John;

That was John Crow, President of Lloyd Pans. Pizza Paul (Paul Nyland) passed away about four years ago.

Tom Lehmann/The Dough Doctor

4924

[\*\*Newbie Topics / Re: Par baked/frozen skins\*\*](#)

PizzaPap;

You're always going to lose a certain amount of flavor when using a par-baked crust. Texture on the other hand is a mixed bag. When pizza is made on a par-baked crust and consumed fresh and hot after the final (finishing) bake there is not much if any difference in texture, BUT after the crust cools (eating cold pizza) you can really appreciate just how dry the crust has become as a result of baking it twice.

BTW: In the pictures of your latest par-bake crust you have too much color on the top of the pizza so I'm assuming the bottom will also have too much color too. Do you have any pics of the bottom? All you are looking for is just a faint indication of color beginning to form.

Tom Lehmann/The Dough Doctor

4923

[\*\*Newbie Topics / Re: Par baked/frozen skins\*\*](#)

PizzaPap;

That being the case reduce the baking temperature to 375F and again bake JUST until a little hint of color begins to develop.

Tom Lehmann/The Dough Doctor

4922

[\*\*General Pizza Making / Re: Adding a powdered cheese \(ie: parmesan\) to your sauce\*\*](#)

In addition to all of the above the addition of powdered/grated cheese to the sauce also helps to neutralize some of the acidity of the tomato in the sauce. This is due to the calcium content of the cheese. We have seen this many times over when we presented pizza sauce to sensory panels and asked them to rate the tartness of the sauce (less perceived tartness when cheese was added). Additionally, when judged on a hedonic scale the sauce with cheese consistently received a higher preference value over that made without cheese. Because of these findings we have been adding cheese to our pizza sauce for about 20-years now.

Tom Lehmann/The Dough Doctor

4921

[\*\*Newbie Topics / Re: Each time I bake a \(Sicilian\) pizza lately, kitchen smokes up.\*\*](#)

How long do you bake your pizzas and at what temperature? Also, do you pull the dough up slightly into the corners of the pan?

Tom Lehmann/The Dough Doctor

4920

[\*\*Newbie Topics / Re: Each time I bake a \(Sicilian\) pizza lately, kitchen smokes up.\*\*](#)

It sounds like the center of the dough is rising more than the edges forcing the toppings to the edges of the pizza especially during the oven spring phase of baking. You might try using a rolling pin to open the dough to full pan size, then place the dough into the pan and fit it as well as possible, allow the dough to rise in the pan for 45 to 60-minutes (cover with a piece of plastic to prevent drying) then lightly oil your fingers and re-fit the dough into the corners of the pan being sure to pull the dough slightly up the sides of the pan. Using a rolling pin to open the

dough will result in a more uniform dough thickness across the pan.

Tom Lehmann/The Dough Doctor

4919

### **Dough Ingredients / Re: Home milling high gluten flour**

The types of wheat that you will have to choose from are:

Hard white wheat (good for bread and deep-dish pizza)

Soft white wheat (cookies and pastry)

Hard red winter wheat (bread and deep-dish pizza)

Hard red spring wheat (Artisan breads, rolls, thin crust pizza) This type of wheat will provide you with the highest level of protein. Keep in mind when selecting your wheat that you want to select a wheat that is approximately 1% higher in protein content than the protein content of the flour you have been using, this is because approximately 1% protein content is lost when milling the wheat into flour. Note: Home "flour mills" are typically more of a wheat grinding mill than an actual flour mill (commercial flour mill) where the wheat is ground on a roller mill and separated into its different flour fractions. If your mill has a screen for sifting the bran out of the flour to make something resembling white flour you will lose that 1% protein as much of it is attached to the bran particles (that 1% lost protein by the way has rather poor gluten forming properties).

Just remember, select a wheat that is 1% higher in protein content than the flour you want to use. If you want to use a 12% protein flour select a 13% +/- protein content wheat.

Tom Lehmann/The Dough Doctor

4918

### **General Pizza Making / Re: Adding a powdered cheese (ie: parmesan) to your sauce**

Inver;

I add some cheese to my sauce but also add Parmesan and/or Romano to the cheese blend to add dimension to the cheese flavor.

Tom Lehmann/The Dough Doctor

4917

### **Newbie Topics / Re: Balling (issues?)**

In addition to Craig's comments I might also add that the dough appears to be quite dry/under absorbed. Are you experiencing any difficulties opening your dough ball into a skin?

Tom Lehmann/The Dough Doctor

4916

### **Off-Topic Foods / Re: Burger Bun Recipe**

Potato has been used as an effective bread softener for more than one hundred years, it is possibly one of the very first bread "additives" ever used. Originally the potatoes were boiled and mashed then the mashed potatoes were added to the dough as an ingredient but the modern approach to this now involves the addition of dehydrated potatoes, just like you buy in the supermarket. Based on research that I did for the U.S. Potato Board a number of years ago something between 2 and 5% dehydrated potatoes will produce the softest bread/buns without developing undue gumminess in the crumb structure. If you would like to get more information on this you can contact Teresa Kuwahara she goes by "T.K." at <teresak@uspotatoes.com> to request printed information. By the way, we also did a very thorough study utilizing different forms of dehydrated potato in pizza too. I

have a formula for an excellent potato bread shown in the Recipe Bank at the PMQ

web site <[www.pmq.com](http://www.pmq.com)>

Tom Lehmann/The Dough Doctor

4915

### **Shop Talk / Re: How to planning**

Something else to consider is attending the Mid-America Restaurant Expo (formerly the NAPIC Show) in Columbus, Ohio. The dates are January 29 - 30, 2017. This is an excellent and well attended pizza show, second only to Pizza Expo. This is also a much less costly show to attend than Pizza Expo but still with excellent representation by vendors of ingredients and equipment and a good variety of low cost and even free seminars to attend. If you're serious about planning to open a pizzeria in the future this would be an excellent opportunity to talk with vendors and gather information for future reference (a very valuable resource). To get more information on this excellent show just Google The Ohio Restaurant Association.

Tom Lehmann/The Dough Doctor

4914

### **Newbie Topics / Re: Balling (issues?)**

I like to do the easy things first so I'd recommend increasing the dough absorption by an initial increase of 5% and if the dough is still tight/stiff begin increasing the absorption in 2% increments until you achieve a softer dough that is both easier to round as well as easier to open into a skin.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor

4913

### **New York Style / Re: Dough ripping**

And we can also add insufficient dough absorption for the dough management procedure employed. Even flour that is too low in protein content can cause tearing of the dough at the time of opening. To get even more complex, add insufficient fermentation due to low yeast level, poor yeast quality, low finished dough temperature or even a dough management procedure which does not provide for sufficient dough fermentation time for biochemical gluten development to take place.

I think everyone would agree that we really need to know more about your dough formulation and dough management procedure (everything you do with/to the dough from mixing to opening) to really answer your question.

Tom Lehmann/The Dough Doctor

4912

### **Dough Clinic / Re: fresh milled flour**

For optimum performance fresh milled flour should be stored in a dry but warm location for approximately 30-days to achieve optimum performance as compared to a commercial flour. At the turn of the century, before oxidation (Maturex) was added to the flour to achieve rapid oxidation bakers used to store their pallets of flour behind the oven for up to a month prior to use to achieve natural oxidation which improved the baking properties of the flour. If you're making bread and pizza dough at home and you can live with a little stickiness in the dough handling properties and perhaps a little less oven spring you can use the flour straight off of the mill. In bread I would say that you might be able to pick-up a different flavor between fresh milled and commercial bag flour but in a pizza application with all of

the herbs and toppings I have never been able to identify any significant difference in taste or aroma. If you have a ready made source for fresh milled flour you can save the expense of buying a mill, all things equal, it should perform as well as any flour that you will grind from your own wheat. Just make sure you know what kind of wheat is being used to make your flour.

Tom Lehmann/The Dough Doctor  
4911

### **Dough Ingredients / Re: Article on Protein in Baked Goods**

Peter;

This is a very good article but readers must remember that the thrust of the article is on protein supplementation of wheat flour based doughs where we are typically trying to supplement with 30% or more additional protein. Back in the mid 1970's I did a huge amount of research on protein supplementation and one thing that we found was that as mentioned the added protein, in many cases, would interfere with the development of the gluten film or at least the integrity of the gluten film. What we found that worked very well was to find out how much additional water would be needed to hydrate the added protein, then make a dough with that level of absorption (but without the added protein) the dough would be mixed to full or nearly full gluten development and the protein would then be added to the dough allowing the added protein material to be "tacked onto the existing gluten film". This was confirmed through the use of micro-photographs. The process worked very well in that it allowed for the addition of up to 35% addition of non-gluten forming protein to the dough BUT all good things have a price and the price in this case was that we could not add much more than about 35% added protein, if we did the absorption increase was sufficient to interfere with the development of the gluten film prior to the addition of the protein. It was about this same time that we took a play from the play book of the old bakers and started using soakers to pre-hydrate the added protein material prior to addition to the dough, this same approach was used when we developed methods for adding huge amounts of fiber material to the doughs when high fiber was all the rage.

Pretty neat stuff!

Tom Lehmann/The Dough Doctor  
4910

### **Prep Equipment / Re: 50lb+ Flour Storage**

Agreed, unless you can run through your 50-pounds of flour in less than a month, the flour should be stored under refrigeration or better yet, freezing conditions. Even though the flour is run through an entilator at the mill there are always some insect eggs that survive the process, they will hatch into larvae (many call them "worms") in less than 28-days, depending upon when they were laid prior to milling. In any case it takes roughly 28-days from egg to mature insect (most likely confused cigarette beetles) where more eggs are laid and the population explosion begins. You can usually find these insects either on top of the flour or more commonly around the top edge of the bag, just above the flour where they are looking for a place to fly from to increase their infestation. Refrigerating the flour greatly slows the life cycle and freezing the flour for 45-days will kill any eggs that are present, then you can transfer the flour to the fridge for long term storage if you wish. Considerations: Flour is VERY DIFFICULT to freeze. A 50-pound bag might take as long as two weeks just to freeze (yes, it's that good of an insulator) you can get much more effective freezing by breaking the flour down into smaller bags (I use 5-pounds in a bag). Sperry is an organic flour and as such, it deteriorates to a great extent after only 2-weeks of storage at room temperature so

if you use an organic flour it really must be refrigerated to maintain its quality.  
Ditto for whole-wheat flour too.

I hope this helps.

Tom Lehmann/The Dough Doctor  
4909

### **Dough Ingredients / Re: Article on Protein in Baked Goods**

Peter;

Protein has been a topic for some time now but when the schools came out with their new nutrition guidelines and pizzerias were approved to provide pizza to schools it became a hot topic. How to get all that protein into the dough????? Trust me, it couldn't be done! We ended up using protein as a stabilizer in the pizza sauce.....worked like a champ! In that application you need to select the protein very carefully as it must not create grittiness, and more importantly interfere with the flavor of the sauce, for this reason protein concentrates and isolates are commonly used (the purer the protein the less it resembles the parent grain), by this I mean that soy flour has a "funky" flavor, much like silage , but defatted soy flour (think of it as purified soy flour/most of the fat removed) has a much more tolerable taste, then when you further purify the protein to a concentrate (90% protein)it is for all purposes flavorless and when you take it to an isolate 95%+ protein content we are looking at near 100% pure protein that has no resemblance to its parent....soy flour.

On a different topic, would you please send me your e-mail address.

Tom Lehmann/The Dough Doctor  
4908

### **Prep Equipment / Re: 50lb+ Flour Storage**

Just think of all those little spaces between the flour particles. For its volume flour is very light, lots of air in there taking up all that space.

Tom Lehmann/The Dough Doctor  
4907

### **Prep Equipment / Re: 50lb+ Flour Storage**

It will work for the developed insects and larvae but not for the eggs. Freezing for roughly 45-days will effectively destroy both the insects and their eggs, after that you can store at room temperature BUT any oil present in the flour will oxidize thus impacting the flavor of anything you make from it. The other option is heat treating the flour but that also impacts the flour in a negative way too BUT then there is always irradiation, works great but my unit just happens to be down at the moment for repairs :).

Tom Lehmann/The Dough Doctor  
4906

### **Prep Equipment / Re: 50lb+ Flour Storage**

Germ oil aka wheat germ oil. Some flours available today are ground (they call it milled) and then sifted to remove the larger pieces of bran which leaves the flour with a higher level of germ oil than conventional "white" flour. Germ oil is highly unstable so it oxidizes (turns rancid) rapidly. This is why you should always refrigerate or freeze whole-wheat flour (because in whole-wheat flour all of the germ oil is still present in the flour). In commercial bakeries the whole-wheat flour is milled and shipped to the bakery where it is typically used in 10-days or less from the date of milling. If grinding/milling your own flour this is something that you might want to consider if you don't mill your grains as you need flour.

Tom Lehmann/The Dough Doctor  
4905

### [\*\*Prep Equipment / Re: 50lb+ Flour Storage\*\*](#)

Best to store it in a small air tight container (plastic bag that you can roll down onto the malt is best). The object here is to maintain "0" or as little head space as possible in the container and then store in the fridge BUT be sure to remove it at least an hour prior to opening the bag, this will prevent condensation from forming on the dried malt resulting in one large cube of malt. I store my malt in a small plastic bag that I roll down onto the malt powder, secure it with a rubber band and then place it in a plastic jar (don't worry about head space in the jar, that's what the plastic bag addresses). I use a soda spoon to remove what I need as quickly as possible and then reseal and place back into the fridge. Seems to keep forever.

Tom Lehmann/The Dough Doctor  
4904

### [\*\*Newbie Topics / Re: Sticky dough and pre ferment questions\*\*](#)

Ross;

The "00" flour may not have the same absorption properties as your bread flour so if you are adding water as a constant (always adding the same amount) it might be too much for the "00" flour, hence the stickiness. Using an autolyse may help as it allows the flour to better absorb the water. I've found the best way to do this is to just put the water in the mixing bowl first, then add at least 75% of the flour and mix just to incorporate. Allow to hydrate for a period of time (I like to use 1-hour), stir any dry ingredients into the remainder of the flour and add to the dough along with any other ingredients, mix the dough just until it comes together and begins to form a ball in the bowl, with the mixer running at low speed pour a small amount of oil down the inside of the bowl, mix for 10 to 15-seconds, immediately remove the dough from the bowl and take to the bench for kneading.

Tom Lehmann/The Dough Doctor  
4903

### [\*\*Dough Clinic / Re: Hydration/dough opening\*\*](#)

PizzaPap;

One to two hours? Big difference. Here's a better way to determine when to open the dough. Get a dial aka stem type thermometer (\$10.00 to \$15.00) Wallmart and auto stores usually have them for about half of that, they're used to check the air temperature from the car's air conditioner) and insert it into the dough ball until the tip of the stem is about in the center of the dough ball, when you record a temperature of 50 to 55F it's time to begin opening the dough ball(s). Since all doughs are different in one way or another you can experiment with the temperature to find the temperature that allows for the easiest opening of YOUR dough then from that point on all you need to do is to look for that temperature. Don't worry about the ambient temperature as it will have little or no effect upon the internal temperature of the dough ball.

Tom Lehmann/The Dough Doctor  
4902

### [\*\*Sauce Ingredients / Re: My Pizza Sauce\*\*](#)

Mindflux;

Garlic and many other herbs can carry the organism clostridium which can produce the botulinum toxin which is deadly. For this reason it is highly recommended that you make any infused oils daily and discard at the end of the

day, or you can freeze it immediately after preparation and remove just enough for your immediate use (keeping the rest frozen). This has always worked well for me (you won't hear from me anymore if it doesn't). To learn more about this just Google (Can clostridium grow in home made garlic infused oil?). There is quite a bit of good information on it there.

Tom Lehmann/The Dough Doctor  
4901

### **Prep Equipment / Re: 50lb+ Flour Storage**

None that I'm aware of. But note that I said to "roll the bag down onto the product", this is done to eliminate the head space in the bag, Zip Lock bags allow for a huge amount of head space. Every time you open the bag you allow moisture to enter the bag, this moisture is present in the head space, so the more head space, the more moisture, this moisture condenses on the malt and is absorbed into it.....did you want to use one lump or two in your dough? :). With the malt in a plastic bag rolled down upon the malt and secured with a rubber band you can place it into a Zip Lock bag for added protection.

When I remove malt from the bag I like to lay the bag on its side, unroll the top allowing access to the malt, then opening the bag just enough to insert a soda spoon remove what I need, remove the spoon and roll the bag back down tightly against the malt. I know all this sounds silly, but remember that moisture is not your friend in this case.

Tom Lehmann/The Dough Doctor  
4900

### **Dough Clinic / Re: fresh milled flour**

It's not that flour can't be used in baking on the same day or soon after milling, it's just that the overall baking performance is significantly improved and issues with stickiness during handling/processing are greatly reduced (that's what oxidation does for a dough). If dough is going to be manually processed or processed using a minimum of automated equipment there is usually no problem at all as adjustments can be made during handling to accommodate the handling properties, this is not possible in an automated or semi-automated bakery environment.

As for whole-wheat flour the legal definition of whole-wheat flour is flour that is milled to varying fineness from 100% of the wheat berry, including the germ portion. It is true that the bran is removed during the milling process and then added back when making whole-wheat flour. When wheat has been "just" milled into flour certain aromatics are released as a result of the milling process (you can smell this in a commercial flour mill too) but as the flour ages such as during distribution and sitting on a store shelf awaiting sale, these aromatics are dissipated resulting in a different aroma. Believe it or not, essentially EVERY commercial user of wheat flour (bakeries, pizza commissaries, etc.) are all using flour that is between 4 and 36-hours old between the time that the flour was milled and the time it is being used to make dough. The reason why we can do this is due to the addition of maturing agents to the flour which provides the oxidation needed for optimum flour performance in high speed processing equipment. I might add that in Germany they do not use these maturing agents but instead have a process where the flour is exposed to heated air in something resembling a cyclone separator, the mechanics behind this are that heat, like burning is an extension of the oxidation process so they can achieve the desired amount of oxidation within a reasonably short time without any maturing agents. This is just like the old bakers used to do by storing their flour behind the oven for weeks but just accelerated.

Tom Lehmann/The Dough Doctor

4899

**Dough Clinic / Re: fresh milled flour**

As I said, this is possible due to the use of maturing agents added to the flour at the flour mill. In the rare cases where a bakery might receive "green" flour (completely untreated and freshly milled) the bakery will add oxidation such as ascorbic acid in the dough formulation to improve the performance of the flour through their automated processing equipment.

The most commonly used maturing agent added by the flour mills to the flour to allow almost immediate use of the flour is Maturox. If you Google (flour additive maturox) you can get more information on it.

Tom Lehmann/The Dough Doctor

4898

**New York Style / Re: Plan On Using Whey Left Over From Making Yogut, anyone tried It?**

Didn't we just recently discuss this topic?

Tom Lehmann/The Dough Doctor

4897

**Chitchat / Re: Is this safe to use?**

Bromated flour is a "state" thing, some states allow it, others may not. California doesn't ban it but it does require that the flour and anything made with it have a labeling stating something to the effect that (this product contains potassium bromate which has been shown to be a potential carcinogen) This is the same type of warning label that is carried on a pack of cigarettes or bottle of alcohol. Bromate is illegal in all of Canada though.

By the way, you really don't need the bromate, the amount that is added is much less than what it used to be so the impact on flour performance isn't as dramatic as it once was.

Tom Lehmann/The Dough Doctor

4896

**Chitchat / Re: Is this safe to use?**

One other thing, I would have never accepted a torn (compromised) bag of flour. Would you have accepted a bottle of milk if the cap was not tight and sealed, of course not, so why accept a bag of flour that has been torn open. In a commercial setting we will never accept anything that cones in damaged, especially something like a bag of flour. Who knows how or why it was torn open? Who know how long it was allowed to remain open to let insects or rodents access the flour? What caused the bag to be torn open, a piece of wood, fork from a fork lift, dropped? How do you know nothing was put into the flour? You get the drift, file a claim and tell the carrier to come and get it.

Tom Lehmann/The Dough Doctor

4895

**Sauce Ingredients / Re: Homegrown tomatoes and frozen sauce question**

We just scald ours to help remove the skin and then freeze just as they are, later we thaw and manually tear apart and place in a colander to drain off any surplus liquid and then use in building my sauce. We also dry a lot of our tomatoes then bag and freeze for use as dried (like in sun dried) tomatoes. They are great in soups, chili, and roasts during those long, cold winter months. I'm not averse to soaking a few of them in olive oil over night in the fridge for use on my pizzas the

following day, not bad in salads this way either.

Tom Lehmann/The Dough Doctor

4894

### **Dough Clinic / Re: Saucing help..or maybe it's the dough**

For a thickness factor of 0.07 you would have a dough weight of 8-ounces for a 12-inch diameter skin. Normally when we see a lot of wrinkling especially towards the center of the skin the problem is related to dough memory/snap-back but if the problem is seen over the entire skin the problem is just the opposite, dough that is too relaxed or weak. I'm guessing that this more closely fits into your description. Between the bulk fermentation and the freezing of the dough you might be getting a dough that is simply too weak. You open the dough to a size a little larger than what you want and then fit it onto the peel and by carefully lifting the edges you shrink the dough skin back to the desired diameter or something close to it. The outer edge comes in but the center doesn't which results in the wrinkling you describe. This makes saucing the dough extremely difficult and can even result in tearing of the dough, but the real problem is in the fact that the center of the skin didn't shrink as planned so it is really made with a thickness factor somewhat less than what you think you have. This is not as much of a problem when working with a higher thickness factor but when you are working at or close to the minimum thickness you really end up with a center section that is too thin and the moisture from the sauce immediately penetrates the dough making it sticky on the peel.

Some times a VERY THIN coating of oil on the skin prior to application of the sauce can help as can using fine corn meal for your peel dust but even then we find that the dough is just too thin and weak to withstand the stretching required to transfer off of the peel so the dough tears making transfer impossible or if it does transfer with a tear it can weld itself to the oven hearth/deck with obvious results.

My suggestion is to try the oil approach combined with the fine corn meal on the peel, if that doesn't work you have two options as I see it, one is to begin reducing the amount of fermentation that the dough is exposed to or increase the thickness factor to something closer to 0.08 which figures out to 10-ounces of dough for a 12" diameter skin. If problems still exist at 0.08 TF I would really begin to look at dough strength as the culprit and begin reducing the amount of dough fermentation.

Tom Lehmann/The Dough Doctor

4893

### **New York Style / Re: Yup, humidity levels do affect pizza**

Just to pour a little gas on the fire, in the summer months when the weather is hot and humid we have our air conditioning running full blast to keep us cool and reduce the humidity in the air for comfort, then when the cooler months come upon us the air conditioning is either reduced or turned off so there is a period for most of us where the temperature and humidity in the fall are about the same as they were in the summer with the air conditioning (those are those beautiful fall days we all love so much). The low humidity really doesn't enter into the picture until the air temperature drops to a point where we now need to turn the heating side of our furnace on, so now we are heating the lower humidity air further driving the R.H. (relative humidity) down. This is why we get dry skin and the wood joints in our furniture begin to creak and loosen during the winter months. If your furnace was not heating your home at the time I'm guessing that what you might have been experiencing was due to a difference in dough temperature (cooler) which would impact both the rate of fermentation as well as the way the dough feels at the end of the fermentation process (6-hours at ambient room temperature).

Tom Lehmann/The Dough Doctor  
4892

[\*\*Newbie Topics / Re: Welded to a pan. Advice please\*\*](#)

Was the entire crust stuck to the pan or just the bottom or sides? Can you provide any pictures of the crust, or what's left of it, especially the bottom and sides? This might help in determining what might have gone wrong. In the meantime I'd suggest trying it again but this time use Crisco, butter or margarine rather than oil in the pan and let us know if it releases any better. Oil can be absorbed into the dough over time resulting in compromised release properties. We used to see this quite frequently in bread production. The solution was to use what is referred to as a liquid shortening (think of it as a thick, just barely pour-able shortening which when heated a little can be sprayed into the pans but upon contact with the cooler pan re-solidifies as a shortening which doesn't absorb into the dough.

Tom Lehmann/The Dough Doctor  
4891

[\*\*Sauce Ingredients / Re: Homegrown tomatoes and frozen sauce question\*\*](#)

Rob;  
We also dry/dehydrate a bunch of the cherry tomatoes every year too, (they are like candy). When we do anything larger we cut into quarters (top to bottom) and slice into 1/4-inch thick pieces then dehydrate to a point where they are still soft before bagging and freezing. Don't forget those last tomatoes that are too green to ripen are great when sliced 1/2-inch thick, dipped in egg and floured, then fried golden brown (we use a fry pan), sprinkle with grated Parmesan cheese immediately upon removing from the frying pan and serve. I like mine with a side of ketchup. Fried green tomatoes!

Tom Lehmann/The Dough Doctor  
4890

[\*\*New York Style / Re: Yup, humidity levels do affect pizza\*\*](#)

Actually, air conditioning cools the air by removing moisture from it, just look at the condensate drain for all the water flowing from it. And then there is the question of actual dough temperature, do you keep track of your finished dough temperature? In many cities the summer time water temperature is considerably higher (5F is significant) than during the cooler seasons of the year, this might explain why the dough tended to brown faster (cooler/lower dough temperature = reduced fermentation rate = more sugar left for participation in the browning reaction and with less fermentation there would be less acid formation to block the browning reaction).

You're right about large wholesale bakeries using humidified final proofers in which to proof their dough in, but it isn't for the reason cited, it is for two basic reasons. One is to provide a consistently soft dough with known expansion properties which allows the dough to proof/rise at a controlled rate which is only possible when there is no skin or crust formation on the dough, failure to have this humidity (86% R.H.) can result in cracking or tearing of the dough during the proofing phase. The second reason for the humidity is to provide some moisture on the surface of the dough as it transfers from the final proofer to the oven. Bakeries are hot places to work (this is why we find it difficult to recruit new people into the baking industry) often exceeding 85F in the cooler places and 100F when you're close to an oven or near to where the bread is exiting the oven. To make life more bearable we have air handlers installed throughout the bakery to provide air circulation but when you have air circulation and heated air you are drying

anything that air contacts very fast so when the bread is making that transfer from proofer to oven (measured in seconds) it will dry the top of the proofed dough to the point where it will not expand (oven spring) as desired during baking resulting in loaves that are too small, mis-shapen, or worse yet develop a torn break and shred which will cut the bread bag like a razor blade as it is being automatically bagged. I've mentioned this before but in essentially all bakeries today the fermentation room (temperature/humidity room where the dough is bulk fermented) no longer exists, instead, they use what is referred to as a "fermentation shelf", this is a large stainless steel sheet that is in a fixed position about 3-inches above the top of the dough troughs (wheeled steel tubs holding 800 to more than 1500-hundred pounds of dough or sponge), the troughs are placed under the shelf which keeps and drafts off of the dough and allows for the development of a head of carbon dioxide gas (it's heavier than air) to form and remain over the fermenting dough thus further preventing it from drying out due to the low relative humidity in the ambient air within the bakery. Wholesale bakeries are pretty neat places to work and I would encourage anyone wanting to get a real feel for dough to work in one.....we need all the recruitment we can get. How bad is the recruitment issue? The last project that I was working on was with a team to develop the worlds first FULLY AUTOMATED bakery, and I do mean "fully automated" we were developing the instrumentation for measuring properties of the flour which would allow for instant (real time) determination of dough absorption and mixing time and make processing adjustments as needed, it would also use infrared technology to confirm the presence of each dough ingredient. We developed the ability to scan a flour sample (both white and whole-wheat) and accurately give you the correct mixing time for any kind of dough in approximately 15-seconds. I could write a book on the process but this will give you an idea of how sophisticated and controlled bakeries are today and where they are going with new technologies.

Tom Lehmann/The Dough Doctor  
4889

### [\*\*New York Style / Re: Yup, humidity levels do affect pizza\*\*](#)

Mitch;  
You're absolutely correct, humidity has very little impact. The temperature of the air during mixing can/will impact the finished dough temperature, this is why room temperature is one of the factors used in calculating desired finished dough temperature. It is also why modern bakeries use a fermentation shelf as opposed to a fermentation room like they used to use (they are also a lot easier to maintain over time too, but that's a different story, the actual air temperature has little impact upon the dough once it is mixed due to its bulk/latent heat and continued warming due to heat of metabolism, not to mention small surface area as compared to the size of the dough. Even when putting dough balls into the cooler/fridge it can easily take several hours to reduce the temperature of the dough ball 20 to 30F. In that case airflow and temperature have the greatest impact upon lowering the dough temperature due to the greater surface area to weight ratio, but still humidity has little impact. In most cases it isn't even taken into account when calculating cooling/freezing time for the dough.

Who ever said that dough was easy to understand? It's a complex mix of science, biology, and physics and to that you can also add the science of flow dynamics.

Tom Lehmann/The Dough Doctor

4888

### [\*\*New York Style / Re: Yup, humidity levels do affect pizza\*\*](#)

Mitch;

Are you sitting down for this? The fridge really doesn't have all that much of a drying effect upon foods that we put into it (uncovered). The physics: Cold air holds less moisture than warm air so the moisture of the food cannot transfer as readily to the air as it can to warm air. So why do things seem to dry out in the fridge??? Every time we open the fridge door the cold air (being heavier than warm air) flows out and is replaced by....you guessed it...warm air which has the capacity to hold more moisture than cold air, the warm air becomes saturated and it's time for another cold beer so we go to the fridge and open the door again.....repeat above process, what we now have is a rudimentary form of freeze drying. This is also why we get frost build up in the freezer and freezer burn in packaged goods with any amount of free head space in the packaging. Just look under the top flap of the carton of ice cream in your freezer, see the ice crystals, they came from the ice cream. During the defrost cycle the air in the freezer warmed which in turn warmed the packaging which warmed the air in the package (head space), now the defrost cycle ends and the air cools which cools the packaging and as the air in the package cools it loses its ability to hold moisture so the moisture condenses against the packaging and freezes there, repeat and the ice continues to build up. Remember, we're talking physics here so while the ice cubes aren't melting there is a change in temperature of only a fraction of 1F and that is all that is needed, then add the fact that your new, 5-star energy efficient fridge may defrost as many as 12 to 24 times in a 24-period and you have a ready made freeze drier, and if you have kids regularly taking the inventory of the fridge or freezer that just adds to it. So, getting back to things drying out in the fridge, yes they do, and now you know why, or like the guy on the radio used to say "Now you know the rest of the story".

Tom Lehmann/The Dough Doctor  
4887

### **Dough Clinic / Re: why not use virgin olive oil**

I like to save the "good stuff" for use as a dipping oil with a little balsamic vinegar, or for use in my salad dressing. I do like to use EVO once in a while to drizzle on top of a pizza when it first comes out of the oven, but in the dough I always use pomace olive oil, the flavor is stronger (more robust) and that's a good thing to have in the dough.

Tom Lehmann/The Dough Doctor  
4886

### **Dough Clinic / Re: need some assistance please**

Wholehog;

You should also remember that due to its larger particle size semolina flour is slower to hydrate than your regular strong bread flour, so if your dough feels normal after mixing it will most likely be under absorbed when the semolina flour hydrates about 30-minutes after mixing. You might try making a soaker out of the semolina flour and the water as the first step in your dough making process. Just lightly combine the semolina flour and water in the mixing bowl (you can use all of the water) and allow this to hydrate undisturbed for 30-minutes to an hour, time is not critical as long as it hydrates for at least 30-minutes. Then add the bread flour and the remaining dough ingredients and mix the dough as you normally do. If it feels too dry or too stiff you can now add more water as needed.

Tom Lehmann/The Dough Doctor  
4885

### **New York Style / Re: Yup, humidity levels do affect pizza**

Mitch;

The airflow is a contributing factor in that the fan provides for more air to flow over the product but IF the air is sufficiently cold and can't carry any more moisture (it's at its saturation point) the airflow will have no impact upon drying, BUT when we open the fridge and replace the cold air with warm air that fan is now moving the warm air over our product at a greater rate so the drying process progresses faster. This is the same principal used by a hair dryer aka blow dryer.  
Tom Lehmann/The Dough Doctor  
4884

### **Dough Clinic / Re: Saucing help..or maybe it's the dough**

Opening of the dough ball into a skin with a fairly uniform thickness across its dimension is by far the most difficult and problem-some part of making thin crust pizza, and the thinner the dough gets the more difficult it becomes. The dough must be soft, extensible and yet possess enough strength to resist tearing or just limply stretching into infinity. This means the first order of the day is to have/develop a dough with these properties and then starting out using a heavier dough weight (0.08 to 0.09) and working with that until you can master your opening technique after that your next objective should be to begin reducing the dough weight gradually (remember that your technique might need to be modified slightly as you reduce the dough weight), as you master each reduction in dough weight drop down again and repeat until you either reach the dough weight/thickness you are looking for or you can no longer open the dough with a uniform thickness or other without other issues.

One thing that I've mentioned a number of time here is the use of a rolling pin/pie pin/pastry pin to partially open the dough ball to about 75% of the desired diameter and then finish opening the dough by hand after that. I've found that this greatly reduces the learning curve for someone just learning how to open a dough ball and it gives a much more uniform dough thickness in the finished dough skin. You will probably find that if you use this method you will soon gravitate to opening the dough entirely by hand as you develop the dough opening skills.

Tom Lehmann/The Dough Doctor  
4883

### **Dough Clinic / Re: Hello from Montreal Canada**

Martin;  
I just saw your posting and I see that you are from Montreal, Canada. What you are looking for is the equivalent of the DiGiorno/Delicio pizza crust.

Which utilizes a combination of both yeast and chemical leavening. We have a ready made product here in the U.S. called "Wrise" <[www.thewrightgroup.net](http://www.thewrightgroup.net)> that is a fat encapsulated blend of soda and sodium aluminum phosphate (SALP), that's the good news, the bad news is that the SALP may not be allowed for use (or sale) in Canada. You can easily confirm this by looking at the ingredient declaration on a Delicio Pizza at your local supermarket to see if it appears on the label (it will appear towards the very end of the ingredient declaration). If it's there you can use it, just contact The Wright Group at the above address and request a sample or buy a bag, it's pretty cheap and it lasts forever if properly cared for. If it is NOT allowed check to see if they have a counter part for use in Canada (typically these are made with soda and calcium acid pyrophosphate (CAPP). To use the Wrise product, store it in the cooler/fridge and add it about 4-minutes before the mixing cycle is completed, then process your dough in the normal manner. A good starting level for Wrise is 2% of the total flour weight.

If you don't want to go this route you might try this to see if it will work for you (works only for the thicker crusts, NOT THIN CRUSTS). Increase the yeast level in

the dough to 1% IDY, mix, scale and ball, cold ferment NOT more than 24-hours, temper dough to 50F, open into a skin, proof at room temperature 30 to 60-minutes depending upon the thickness you want, dress the proofed skin and place into the freezer, after the dough is completely frozen (about 3-hours, wrap in shrink wrap for storage). To use, remove shrink wrap, place on baking pan and bake in a pre-heated oven at 425F. If necessary adjust the sugar level in your dough formula to achieve the desired crust color. NOTE: Lightly blanched vegetable toppings tend to work better in this application than raw, but if you do use raw vegetable toppings be sure to slice them thin, ALL meat toppings need to be fully cooked. If this process/pizza looks familiar it is because it is modeled after the Freschetta brand (Schwan's) pizza. The key to the Freschetta pizza is in blast freezing the fully proofed, dressed dough but with a bit of care and shorter shelf life expectations (7 to 10-days) it can be done at home too.

Tom Lehmann/The Dough Doctor

4882

#### **Dough Clinic / Re: Saucing help..or maybe it's the dough**

I've tried them all and worked with others trying to teach our students how to open the dough balls into skins and it always boiled down to "this is how you do it, now go and practice until you've mastered it". Knowing that this wouldn't work in a situation where we had a student that was only going to be with us for a few days I developed the method of using the dough sheeter/roller to open the dough to only about 75% of final diameter and then opening it the rest of the way by hand. This worked extremely well for use as we found that we could have a total novice opening the dough in less than 30-minutes....and making good pizzas. This is the procedure that I taught at AJ's New York Pizzeria here in Manhattan, Kansas and they still use it 8-years later because it works so well, by the way, they just got their third award in four years (best pizza in Manhattan, Kansas), (best pizza by Kansas State University), and just last week one of the three best pizzas in Topeka, Kansas). In Topeka they only select the 3 best pizzas without distinguishing any order. When executed properly the dough opens with a very uniform center thickness and a light raised edge. Crust porosity and crispiness are the trade marks of an AJ's pizza. The procedure is also being used in other commercial applications too. Each of the forming methods sheeting, hot pressing, cold pressing and hand forming gives the crust a different and unique finished crust characteristic, this is why the different forming methods are not interchangeable but when you take a dough ball and open it to only 75% of full diameter and then finish opening it by hand it is indistinguishable from a crust that was opened totally by hand. I have a video of the pizza dough being opened by a college student at AJ's using this procedure.

Tom Lehmann/The Dough Doctor

4881

#### **New York Style / Re: Thickness Factor (TF), what is it?**

The term "thickness factor" appears to have been coined here but I really don't like using it, though I know that a lot of people do. Instead, I use the term that we coined at AIB which is "dough loading", said in another way it is ounces of dough per square inch of surface area. For example, if you are making a 12" round pizza a typical dough loading (many just call it "factor" of 0.07 to 0.08 is about right for a thin crust. Translated: 0.07 to 0.08-ounces of dough per square inch of surface area, or  $0.07 \times 113 = 7.91$  to 9.04-ounces of dough. The thing about using a dough loading factor is that you can use it to calculate the dough weight needed for any

size pizza. For example, a 14" round pizza has approximately 154-square inches of surface area so  $0.07 \times 154 = 10.78$ -ounces of dough to provide a larger size pizza, using the same dough should provide about the same final dough thickness. Perhaps this is where "thickness factor" came from. We also use "dough loading" to calculate the amount of cheese and sauce to use when making a different size pizza. This is important in a commercial setting where we want to offer the same pizza in different sizes, additionally with the use of air impingement/conveyor ovens this also helps to provide the same bake to all of the different size pizzas as these ovens actually bake by dough loading, or weight of product per square inch going through the oven. If you wanted to, you could bake an endless ribbon of pizza through one of these ovens and as long as you maintained the same dough loading across the entire ribbon width and length the entire baked ribbon would be essentially the same at any point. For many years this has been a critical aspect in baking cookies and crackers in commercial tunnel ovens where the ovens are so finely tuned that if you get a part of the ribbon too thick it will not bake properly and if it is too thin it will either over bake or develop too much crust color. We now use infrared measuring devices to measure the dough thickness from a fixed position, in this case a thicker dough equals heavier dough weight (higher dough loading) and a thinner dough equals less dough or a lower dough loading.

Tom Lehmann/The Dough Doctor

4880

#### **New York Style / Re: Thickness Factor (TF), what is it?**

I forgot to add, to find the "thickness factor" aka "dough loading" simply divide the dough weight used to make the pizza by the surface area of the pizza that you made. Yes, the pizza does shrink a bit during baking so the factor is not 100% but then again, we're making pizza dough, not nitroglycerine (thank God!).

Tom Lehmann/The Dough Doctor

4879

#### **New York Style / Re: Thickness Factor (TF), what is it?**

Aside from New York pizzerias there are an awful lot of pizzerias today that are faced with high rent costs, ever increasing ingredient and labor costs, not to mention overhead. For all of those thousands of pizzerias they need to keep a close watch on their food costs (it's one of the few things that they can actually control) and they do this by weighing ingredients, weighing dough and using such things as dough loading to calculate their dough, cheese and sauce amounts for the various size pizzas that they make. It wasn't too long ago that it was common to see a pizzeria use maybe 10-ounces of dough, 5-ounces of sauce and 6-ounces of cheese for a 12-inch pizza (just as an example) but then when going to a 14-inch pizza and using 15 or 16-ounces of dough, 8-ounces of sauce and 10-ounces of cheese. The problem was that the 14-inch pizza is only 41% larger than a 12-inch pizza but the dough weight was more than 50% greater, the sauce was 60% more and the cheese was 66, almost 67% more. In view of the number of pizzas being sold each month these differences would easily amount to a difference of about \$500.00 a month in either saved or lost revenue. I well remember working with only a cash drawer, no cash register or POS. At the end of the week I only had to make enough money to pay the bills, but that isn't the case anymore. You almost need an accountant to just to track your expenses, so you add his/her cost to your expenses too, and in the end you're fighting to make both ends of the string come together, so yes, math is/has become a much greater part of being in business than it has in the past, and from what I see every day those independent pizzerias are doing everything possible to make the best quality pizzas possible for their customers, if they don't.....someone

else will.

Tom Lehmann/The Dough Doctor  
4878

### **Chitchat / Re: Food on Floor: Five Second Rule**

In our house you're going to have to be faster than three seconds if you're going to get it before the dog, even if we should beat him to it it still ends up in his food dish. Too many years training in food safety.

Tom Lehmann/The Dough Doctor  
4877

### **Dough Clinic / Re: Better Tasting Dough**

Agreed, your dough is very lacking in fermentation to develop the type of crust flavor that you are looking for. As Steve indicated in his response, if your yeast is compressed yeast aka wet yeast aka fresh yeast a good level to begin working with is 1% (3-grams). At this lower yeast level you will be able to allow the dough to ferment longer to develop flavor. An easy way to do this is to use 75F water when making your dough, after mixing scale the dough into desired weight pieces and form into balls, lightly oil each dough ball and place into plastic container or as I do, place them into individual plastic "food bags", twist the open end into a pony tail and tuck it under the dough ball as you place it in the fridge. After at least 24-hours in the fridge remove the dough balls, and allow them to warm to about 50 to 55F, then turn the dough ball out of the bag into a bowl of flour and begin opening the ball into a skin.

I would suggest that you experiment with allowing the dough balls to cold ferment in this manner for varying periods of time such as 1 to 5-days to see which time period gives the best results in making your pizza and also gives the improved flavor profile that you are looking for.

Tom Lehmann/The Dough Doctor  
4876

### **General Pizza Making / Re: Backup dough on the side or just for one bake ?**

After you know things are going well with your pizza, begin cutting pieces off of the other dough piece and roll out under your hands to form a "hot dog", place onto a lightly greased pan and brush with melted butter, when the pizza is ready to be served put the (bread sticks) in the oven to bake for about 8 to 10-minutes, when they come out of the oven brush with melted butter once again and sprinkle with cinnamon, serve with a dipping icing (powdered sugar, water and a couple drops of vanilla) for a simple dessert, save the cheese cake for later with a good cup of coffee.

Tom Lehmann/The Dough Doctor  
4875

### **Shop Talk / Re: Location and menu design**

Sam;

Additionally, you might want to post your questions in the Think Tank at <[www.pmq.com](http://www.pmq.com)>. George Mills is a regular follower of posts in the Think Tank and I know he does a lot of work in both equipment and design.

Tom Lehmann/The Dough Doctor  
4874

### **New York Style / Re: Thickness Factor (TF), what is it?**

I'm on record as stating that one should first determine the amount of dough

needed to make their pizza (pick a size, any size for testing) then use T.F. aka "density loading" to calculate the amount of dough, sauce and cheese to be used when making different size pizzas from the SAME dough. It's a "tool" nothing more, nothing less. Is it exact? No, but it will get you close enough to fine tune from there, it sure beats trial and error or SWAG.

Reminds me of when our boys were young and we would occasionally go to Pizza Hut for their pan pizza, this was back when they used fresh dough and proofed the dough in the pan right at the restaurant. We would always order a 16" large size but once we discovered that they would almost always run out of the large size pan pizzas by 7:00 p.m. and substitute two 12" pan pizzas for the same price we never again showed up before 7:15 p. m. reasoning being: One 16" pizza = approximately 201 square inches of pizza. Two 12" pizzas =  $113 + 113 = 216$ -square inches of pizza.  $216 - 201 = 15$ . 15 divided by  $201 \times 100 = 7.46\%$  more pizza = a better deal for us. :)

Tom Lehmann/The Dough Doctor  
4873

### [\*\*Newbie Topics / Re: some question\*\*](#)

Werty20;

I'm somewhat familiar with your flour situation. The "bread flour" option which you have is typically the all -purpose flour to which is added vital wheat gluten (VWG) to bring the protein content of the flour up to approximately 11%. If you can get VWG add 3% to the flour and blend it in by just stirring it into the dry flour for a couple seconds. If you can't find VWG you can still make good pizza using your bread flour option.

My advice is to start out making a very basic dough using 100% bread flour, 2% salt, sugar 2%, 2%, 0.15% IDY, and 55% water (23C).

Procedure:

Put water in mixing bowl, add salt and sugar, then add the flour and stir to make a thick, sticky paste. Scrape the dough out of the bowl onto a floured surface and knead/fold the dough for several minutes and form the dough into a ball. Oil a suitably sized bowl, oil the dough ball and place it into the oiled bowl. Drape a piece of plastic over the bowl to prevent drying. Allow the dough to ferment for 3-hours then turn it out of the bowl and fold it a couple of times, form back into a ball shape, lightly oil the dough ball and the bowl again and place the dough back into the bowl to continue fermenting for 3 more hours. Turn the dough out of the bowl handling as little as possible, and open the dough into a pizza skin, then dress the skin and bake as you normally do. As Craig said, if the dough feels too firm or dry add more water in 1 or 2% increments to following doughs. When you have an acceptable pizza by this method (this will confirm that your dough management, formulation, flour and ingredients are correct for your application) you can begin to experiment with the dough formulation by introducing a starter or biga. I would suggest that you start low (maybe 5%) and increase the amount in 5% increments. Remember to take into account the amount of water in the starter or biga when calculating the total dough absorption.

Tom Lehmann/The Dough Doctor  
4872

### [\*\*New York Style / Re: Thickness Factor \(TF\), what is it?\*\*](#)

PizzaPap;

You have brought up an interesting point that I had not before considered, that is using T.F./dough loading as a tool to figure out how much dough will be needed. T.F./dough loading = 0.085, we want to make a 12" round pizza. So,  $0.085 \times 113 =$

9.605-ounces so if you want to make two pizzas, as most of us do,  $2 \times 9.605 = 19.21$ -ounces of dough will be needed to make our two pizzas.

Here is where it gets interesting: Let's round that up to 21-ounces to account for normal dough loss. If you add up your total bakers percent:

Example: Flour: 100%, Salt:2%; IDY: 0.25%; Oil:2%; Water: 60%.

The total/sum is : 164.25%

Divide that by 100: 164.25 divided by 100 = 1.6425 (just move the decimal point two places to the left).

Now divide your dough weight (21-ounces) by 1.6425 = 12.785-ounces (this is the amount of flour that you will need to make your dough). If you're scaling ingredients in grams multiply  $12.785 \times 28.4 = 363$ -grams of flour.

Now that you know the flour weight you can easily calculate the other ingredient weights using bakers percent. (ingredient % X flour weight then press the "%" key and read the ingredient weight in the display window of your calculator). The ingredient weight will be in the same weight measure that the flour weight was shown in.

Just another way to use bakers percent.

Tom Lehmann/The Dough Doctor

4871

### [\*\*Newbie Topics / Re: some question\*\*](#)

Werty20;

Oops! Typo, that should read (Sugar: 2%).

Good catch! Thanks for bringing that to my attention.

If the yeast is IDY (instant dry yeast), yes, it can be put into the flour if you are machine mixing the dough, if you are hand mixing the dough without a mixing machine it is best to suspend the yeast in a small amount of warm (35C) water before adding it. In that case you should add the yeast suspension to the water in the bowl before you add the water.

Tom Lehmann/The Dough Doctor

4870

### [\*\*New York Style / Re: Thickness Factor \(TF\), what is it?\*\*](#)

Parallei;

In your example, DW should be total bakers% since you are adding up the bakers percentages.

Flour weight is (total of all dough ingredient weights) divided by the sum of the bakers percent after dividing it by 100.

Ingredient weight is: Ingredient percent X flour weight (press the "%" key) read the ingredient weight in the same weight units as the flour is expressed in.

Tom Lehmann/The Dough Doctor

4869

### [\*\*New York Style / Re: Thickness Factor \(TF\), what is it?\*\*](#)

Peter;

Taking that to the next level:

If you know the TF was can now calculate the amount of dough needed to make any number of skins/pizzas at that TF.

Example:

Let's say I want to make 75 pizzas, each 12-inches in diameter, using a TF of 0.085  
 $0.085 \times 113$  (number of square inches in a 12" diameter circle) = 9.605-ounces of dough will be needed to make each skin/pizza.

75 (number of pizzas to be made) X 9.605-ounces = 720.375-ounces of dough

needed. Or 720.375 divided by 16 (ounces in a pound) = 45.023-pounds of dough needed.

Divide the amount of dough needed (45.023-pounds) by the sum of the bakers percent (164.25) after dividing it by 100 (1.6425)

45.023 divided by 1.6425 = 27.411-pounds of flour will be needed.

Then use bakers percent or the calculator to find the weight of each ingredient to make a dough based on 45.023-pounds of flour weight.

P

Peter;

Is it possible to extend the calculator out so anyone can enter the TF, the diameter/size of the pizza(s) wanted and the number of pizzas wanted and the calculator will solve for the flour weight needed, then if the formula is entered you can get the complete formula in both bakers percent as well as weight measures for the amount of dough entered above?

Just a thought.

Tom Lehmann/The Dough Doctor

4868

### **New York Style / Re: Thickness Factor (TF), what is it?**

For anyone who might be "math challenged" all I can say is "NOW THAT'S A TOOL"!

Thank you Peter!

Tom Lehmann/The Dough Doctor

4867

### **Newbie Topics / Re: some question**

Those are the "wet" gluten weights. I'd have to look up the conversion from wet to dry gluten weight, if anyone has that information please jump right in.

Tom Lehmann/The Dough Doctor

4866

### **General Pizza Making / Re: Pizza at home methods-**

I bake my pan pizzas at 450F in a center rack position in our home oven (electric) while I bake my thin crust pizzas at 550F on a pizza stone in the same rack position. Just be sure to allow the better part of an hour for the stone to heat up properly.

I've also got a pretty decent home made pizza dough "recipe" posted in the PMQ Recipe Bank at <[www.pmq.com](http://www.pmq.com)>. This dough "recipe" does not require kneading to develop the gluten, but instead it uses biochemical gluten development. This is the same recipe that I was using when I was training local farm wives in mastering the making of great pizza without developing arms like the village blacksmith.

Tom Lehmann/The Dough Doctor

4865

### **Dessert Pizza / Re: our dessert pizza experiments**

I also do an apple dessert pizza, somewhat similar to what you are doing but I make a cheese custard that goes on first. I soak the apples in lemon juice (skin on), while the apples are soaking I brush a skin with melted butter then add a liberal amount of cinnamon and a sprinkling of sugar, then I apply a layer of the cheese custard followed by the apple slices, to top the pizzas I either apply a streusel topping or just sprinkle generously with raw sugar.

When finished wit raw sugar the pizzas are served "as is" either hot or cold but when topped with the streusel I always finish the pizza after about 5-minutes of

cooling with a generous drizzle of powdered sugar icing. To make the cheese custard I blend 16-ounces of cream cheese and 8-ounces of powdered sugar until smooth, then add 2-whole eggs and mix smooth, then 16-ounces of sour cream and 16-ounces of ricotta cheese and blend until smooth. If the mixture needs to be thinned for better spreading viscosity add a little cream until I get a good, spreadable consistency. Unused custard will keep for up to a week in the refrigerator. Note: Half size batches are better sized for home use. Spread the cheese custard over the prepared skin about 3/16-inch thick keeping it about 1/2 -inch away from the edge. In addition to apples I also use banana, berries, peaches, mango, kiwi, grapes, dates (date season in California) and even occasionally toss on a few chopped pecans.

Tom Lehmann/The Dough Doctor  
4864

### [\*\*General Pizza Making / Re: Need help to idenitfy a pizza style from just photos and description\*\*](#)

The crust appears to have a thickness of about 1/2-inch, the shape of the edge suggests that it might have been baked in a coupe pan and the slightly oily bottom is an indication that the pan was oiled as opposed to greased with a plastic fat. We used to make this type of pizza in our pizza class and we referred to it as a "thick" crust pizza, not to be confused with a pan style pizza which is thicker. I stand to be corrected on this but I think Straw Hat used to have this type of pizza on their menu at one time.

A starting point for the dough formulation might be this:

Flour (bread type): 100%

Salt: 2%

Sugar: 2%

IDY: 0.5%

Olive oil: 3%

Water (70F): 56%/variable

Follow your preferred mixing method but use the delayed oil addition procedure if machine mixing.

Immediately divide the dough into 14-ounce pieces for 12-inch pizzas.

Form the dough pieces into balls, lightly oil and drop into individual plastic bags, do not use Zip Lock bags, twist the open end of the bag into a pony tail and tuck it under the dough ball as you place it into the fridge to ferment for 24 to 48-hours.

Turn the dough ball out of the bag onto a floured surface and gently pat and stretch out "open" to about 12-inches in diameter.

Place the skin into the oiled coupe pan, cover and allow the dough to rise for at least 30-minutes (you will need to experiment to find the time that gives you the desired height/thickness), dress the skin and bake on a center rack position (home oven) at 450F for 15 to 20-minutes. Check the bottom of the pizza, when it's brown the pizza is done. Note: You will need to spin the pizza in the oven once or twice during the baking cycle to ensure an even bake.

Tom Lehmann/The Dough Doctor  
4863

### [\*\*Hearth Ovens / Re: some questions about curing my new WFO\*\*](#)

Just my two cents worth. Burning wood creates a different heat than say electric due to the amount of moisture released during the burning of the wood. This is why we see a difference in baking properties between electric and wood or gas (gas is similar to wood in this respect). My personal take, you have a beautiful oven there,

you have a significant investment, I'd be following the manufacturer's directions for proper curing of the oven as a means of protecting both, it might take you a month or more to do this BUT you will get a lifetime of use and enjoyment from it.  
Remember the old adage: "Good things come to those who wait".  
Tom Lehmann/The Dough Doctor  
4862

**General Pizza Making / Re: Need help to identify a pizza style from just photos and description**

Poniel;

Yep, you got it right!

By the way, be sure the coupe pan is well seasoned or better yet that it has a dark/black anodized finish. Walmart used to sell a similar pan BUT it was dark on the inside and silver on the outside???? Makes no sense at all! Just pick one up and season the outside of the pan using corn oil until it has an amber color (it will continue to darken with use) and you're good to go. If you are not familiar with seasoning a pan go into the archives here as there have been a number of excellent posts/discussions on the topic.

Tom Lehmann/The Dough Doctor  
4861

**Dough Clinic / Re: Here's my recipe. Why is it not crispy?**

Your yeast calculates out at only 0.08% in bakers percentage. This is not sufficient to provide the fermentation needed to properly condition the dough for pressing. This is why the dough exhibits "memory" and snaps back/shrinks after the first press. When properly conditioned the dough should only need to be pressed once. To correct this I would suggest increasing the yeast (assuming you're using IDY (instant dry yeast) to 0.4% or 41-grams based on your 10.2-kg of flour weight. Additionally, you should leave the dough set at room temperature after removing it from the cooler until the dough balls reach an internal temperature of 10C. This is especially important when forming the dough skins using a hot press as you are doing as the warmer dough temperature allows for much improved pressing properties. I believe if you look in the "RESOURCES" at the top of the page you will find a copy of my Dough Management Procedure which I believe you have modeled your procedure after. If you cannot find the procedure please e-mail me at <thedoughdoctor@hotmail.com> and I'll send you a copy.

The insufficient yeast level and double pressing of the skin are what I believe to be mostly responsible for the problems you are experiencing but information on your baking time will also be helpful.

Tom Lehmann/The Dough Doctor  
4860

**Dough Clinic / Re: Factors Affecting Gluten**

As a bystander, let me add this to the discussion above.

Flour enrichment is the addition of vitamins and minerals to the flour in a quantity to replace that which was lost through the milling process in making white flour. Fortification of flour is the addition of VWG to a flour to improve the gluten forming properties of that flour.

There are two main aspects to "gluten" quality and quantity. Most of the time these are just applied to the flour protein since flour protein is generally referenced to gluten content of the flour. It is entirely possible to have two different wheat varieties or classes with the same protein content and gluten content (balance of

glaiden and glutenin) but with entirely different performance characteristics, such as fermentation tolerance, mixing tolerance, absorption properties, elasticity, and extensibility. As such, these characteristics are intrinsic with the wheat from which a flour is made. The flour that we work with every day is made from a blend of wheat having at least some of these individual characteristics with the function of the miller in blending the wheat to balance out these characteristics to provide a flour with consistent and known properties (this is why so many of us describe flour milling as both an art and a science).

The method of dough management and the parameters of the dough management procedure are designed to address any of these unique characteristics to give us a finished dough suitable for its intended purpose be it pizza, bread, cookies or pastry. For example, if we have a lower protein bread flour we may find it advantageous to limit the amount of fermentation if we want to have a finished dough with suitable strength characteristics, and if we have an excessively strong flour which is characterized by overly elastic properties this can be addressed through additional fermentation (more yeast, longer cold fermentation time, finished dough temperature, fermentation temperature are the main ways these are accomplished).

If you have a weak flour and add several percent VWG to it you will need to add additional water to compensate for the hydration properties of the VWG and you may also find that the dough does not need as long of a mixing time as a dough made with a high protein flour does, the reason for this is because the VWG is already fully developed. We can see this using the Farinograph where a double peak is clearly seen, the first peak corresponds to the hydration of the VWG and the second peak corresponds to the development of the native proteins into gluten. We used to make dough at the PMQ Pizza Shows for the acrobatic competition, the formula consisted only of flour (ideally All Trumps), water, a double dose of salt, and just a little oil to allow the dough to stretch without tearing, we then mixed the dough until it had the desired balance of extensibility and elasticity. The dough could be used right away or it could be balled and refrigerated for use on the following day BUT it had to be allowed to warm to room temperature before it could be used or it would be too stiff to open.

Tom Lehmann/The Dough Doctor  
4859

### [\*\*Dough Clinic / Re: Here's my recipe. Why is it not crispy?\*\*](#)

Billy:  
I think with more crust porosity aka open cell structure, you will find that you will get a better bake, the gum line will go away and you will get a crispier finished crust. Do experiment with the baking time as suggested. My feeling has always been that the pizza is done when the bottom of the crust is done. If it ain't, you need to be looking at your dough formulation (which I think is OK in your case) or the way your pizza is being baked.

Tom Lehmann/The Dough Doctor  
4858

### [\*\*Dough Clinic / Re: Factors Affecting Gluten\*\*](#)

Thanks Mitch :)  
I'll try to keep this short and to the point.  
Dough Strength: Probably best defined as the extensibility and the elasticity characteristics exhibited by the gluten in a dough structure.  
How to Manage It: By management we can define this as doing something that will

alter the dough strength in some way.

The Role of Pre-ferments: The number one accepted role of a pre-ferment is to introduce flavor into the finished product and close behind is its ability to mellow/soften/weaken??? the gluten structure of the dough for dough handling/processing or finished product enhancement (mostly in shape).

Pre-ferments be it in the form of a biga, poolish, going out on a limb a little bit, starter or sourdough, or a sponge all serve to allow the yeast to impact the flour proteins glutenin and gliadin either directly through exposure to protease enzymes or through the by-products of fermentation carbon dioxide, alcohol and acids (primarily acetic, lactic and propionic). The carbon dioxide can work to block oxidation of the sulphydryl (S-H) bonds on the protein resulting in strengthening of the dough. The Chorleywood bread making procedure (Great Britain) which utilizes dough mixing (Tweedy Mixer) under a vacuum to capitalize on this concept. With a vacuum there is little or no oxygen to strengthen the gluten during mixing so the dough mixing time is significantly reduced resulting in an energy savings. Then there are the acids. These acids will degrade proteins with time eventually completely destroying them if given enough time to do so. The protease enzymes will act in a similar manner but are faster in their impact upon the proteins, in either case, if the proteins are completely hydrolyzed they are no longer proteins and do not function as a protein, hence the dough that has been exposed to fermentation too long will eventually lose its binding ability (from the gluten) and turn into something looking more like a syrup than a "dough". By incorporating fermentation of all or part of the flour into dough making/dough management procedure we can effectively modify the binding characteristics of the gluten to meet our specific needs, be it for dough handling or finished product characteristics. For the most part, especially in pizza production we want to have the characteristics imparted by a high percentage of a characteristically strong strong gluten formation which allows us to open the dough balls by a number of different methods, especially by hand tossing/slapping procedures where we end up spinning the dough in an acrobatic fashion, for these characteristics we really don't want to break down the proteins, we just want to mellow (soften) them allowing for their greater extensibility in that form. The impact of fermentation upon any dough is largely influenced by the amount of proteins (gliadin and glutenin) present as well as their intrinsic strength characteristics which are present in the wheat and influenced by type and variety of the wheat, as well as growing conditions under which it was grown. Here in the U.S. and Canada our flour millers are blessed with pretty good quality wheat from which to choose from (though you might get an argument from time to time from them on that point) for making the flour that we use. This allows then to change the grist (wheat blend) used to make our flour and keep things pretty constant for us. This is an art as well as a science in itself. Other countries are not so fortunate so they have to use what they have to make their flour, hence the flour quality is continually changing. At one time Mexico required that only Mexican grown wheat be used in making their flour, they don't have a wheat breeding program like we do so the expression "trigo es trigo" is most appropriate (wheat is wheat) with the end result being flour is just that "harina es harina" (flour is flour) was also appropriate. In other words you took pretty well what you got and made the best of it. This severely limited how the flour could be used and in what kinds of food applications. Today they import a lot of U.S. and Canadian wheat to blend with their domestic wheat and the quality has improved immensely, just ask any baker working for Pan Bimbo (the same baking company that now dominates the U.S. baking industry. The other side of the flour quality coin involves what to do with a flour that doesn't have the strength characteristics that we are looking for, the first answer is to add vital wheat gluten

(VWG) which is effective but also expensive which is why we use it only as a last resort or sometimes it might be used for its convenience factor such as when we specialize in making deep-dish pizzas using a lower protein bread flour but we need to have a higher protein flour for our thin crust pizzas so we fortify the lower protein flour with VWG thus eliminating the need to inventory two different types of flour and all its associated costs and challenges. Goodie bags is another way of introducing VWG into doughs where flours of different protein level are needed (again a convenience factor). The other way to strengthen flour is to add some type of dough strengthener as an additive ingredient to the dough. This might include ingredients such as sodium-stearoyl lactylate (SSL) or diacetyl tartaric acids of monoglycerides (DATEM) or (TEMS). Both of these ingredients improve the protein response either very late in the dough handling process ( proofing of the dough for a pan pizza) or by affording improved oven spring properties during the baking process. Neither will take a dough made with a very low protein flour and allow it to be easily tossed without difficulty or tearing so in that application these ingredients are limited in how they strengthen the dough. The other group of dough strengtheners are what we refer to as oxidation such as ascorbic acid (AA), azodicarbonamide (ADA), and potassium bromate (BROMATE) being the most widely encountered in the U.S. These oxidants work to oxidize/strengthen the S-H bonding links on the protein chain resulting in a rapid tightening of the dough (some oxidants are faster in this respect than others). The only problem with oxidants is that they are used at very low levels (measured in parts per million based on flour weight). For example, AA (60 to infinity (no top end limit but normally used at 60 to 200-ppm) ADA (10 to 20-ppm) and BROMATE (7 to 15-ppm). Bromate is the slowest acting of these so you might see some effect of it in doughs that are subjected to long periods of fermentation or shorter periods of higher temperature fermentation. Is BROMATE really needed today? No, it has always been referred to as a crutch, and at the present legal use levels there is not nearly as much benefit as there was in the past when the legal use level was 65-ppm. So why is BROMATE used on the label of high protein flours? Because its always been there and old habits can be hard to break but like I said, at the present use levels there is little if any real benefit to having it there from a functional standpoint. Other gluten modifying ingredients are known as reducing agents which include L-cysteine hydrochloride (the active ingredient in PZ-44), glutathione aka dead yeast and vegetable powders, primarily garlic and onion. These ingredients are all very fast acting (they act in the mixing bowl during mixing of the dough) and their function is to break the protein bonds at the S-H bonding points. This is important to know since these bonding points can be repaired through the use of oxidation, so, used correctly you can use a reducing agent to weaken the dough for a shorter mixing time and reduced processing (fermentation) time and then have the oxidant kick-in/react later in the dough making/management procedure to restrengthen it again. Glutathione is referred to as the first cousin to L-cysteine, meaning that they are very similar in the way and speed at which they perform, the biggest difference is in the fact that you can call glutathione derived from yeast as "yeast" on a product label (important if a clean label is part of the product identity) where as L-cysteine must be labeled as such. L-cysteine is a scary sounding name to many consumers but in reality both L-cysteine and glutathione are amino acids aka protein building blocks....it's all in the name. Deodorized vegetable powder is in the same boat as dead yeast, it's a reducing agent, capable of breaking down the glutenin and gliadin making a more extensible dough and it's consumer friendly. This is also why I don't usually recommend adding garlic powder and/or onion powder directly into the dough. If you want or need a softer, more extensible dough such as is the case where you might be pressing the dough to form your skins this

is a viable option, but if it is not, you might be in for a surprise when you find your dough becoming softer and softer. It has, does and will continue to happen. What about protease enzymes as a way to manage dough strength? They too are very effective as reducing agents but they usually require some time for them to work, typically about 45 to 60-minutes before you see any effect, but when they do work the effect is non-reversible since they completely break-down the proteins, and they continue to work over a period of time until the proteolytic enzymes are destroyed during baking. This is one where you need a pretty good excuse for using it.

Lastly there is dough absorption. The absorption properties of the flour are first dictated by the inerrant properties of the wheat from which the flour is milled. In some instances (outside of the U.S.) flour is milled to a much higher level of starch damage (3 to about 7% in the U.S. but what we are talking about is upwards of 18 to 20%), the damaged starch significantly increases the immediate absorption properties of the flour BUT those damaged starch particles are the first ones to be hydrolyzed into sugar by the amylase enzymes present in the yeast so we have a situation where the damaged starch allows for high absorption doughs but when subjected to much over about 45-minutes of fermentation time those starch particles are hydrolyzed into sugar and quickly release all the water they were carrying into the dough resulting in a dough consistency that more closely resembles a batter than a dough as we are used to seeing it. Been there, done that! What do you do in that case? Live with it, no magic ingredient to help in this case, or do as I do, seek out a different flour source if you can. This type of flour has been very common in Latin America but since Pan Bimbo and McDonalds have moved in there are now milling companies vying for their business and the good thing is that neither use or want a high starch damage flour so they are a potential flour source. Why is dough absorption all over the board when we look at different pizza doughs, you have to look at how the dough is managed to get insight into that question. Many hand mixed doughs and some machine mixed doughs employ the use of an autolyse (flour + water and allow to hydrate for a period of time) to effectively maximize the absorption properties of the flour. No other procedure allows you to really maximize the full absorption potential of a flour quite like an autolyse. Other processes, like a sponge-dough process may allow for more water to be added to the entire dough but it does not really allow for maximizing the flour's absorption potential. In the baking industry we say that dough mixing and absorption go hand in hand. A dough made with higher absorption will be softer, more fluid and not mix as well as a slightly firmer or stiffer dough while a dough that is made with less absorption will be stiffer and receive more mixing action allowing it to develop the gluten faster. If flour is made from wheat that incorporates all of these variables into the flour (remember flour will be the most variable ingredient that you put into your dough) why don't we see a significant difference in dough absorption? The answer is because most of us rarely work to maximize the absorption of the flour (remember this is accomplished by use of an autolyse), so we are working with significantly less water/dough absorption than what the flour might allow for BUT we all know that machine mixing the dough has a softening or mellowing effect upon the forming gluten structure and with all the water present that the flour can hold (or at least close to it) an overly soft and sticky dough condition is hard to prevent (no need to worry about hand mixing/kneading as the gluten development is so gentle, plus we are continuing to work in additional flour as we work the dough on the bench top).

As you can see, there are many options when it comes to managing dough strength (trust me, I did not cover them all) and when it comes to using pre-ferments we introduce a whole new set of variables into the equation of dough strength. As for

dough absorption, you either have to allow sufficient time for the flour proteins to fully hydrate (autolyse) or you can mechanically open the proteins to accept more water using a dough mixer but due to the interaction of mixing and dough softening due to increased absorption it is all but impossible to fully maximize the potential flour absorption properties.

Gluten/dough strength is really quite complex considering all of the variables and mitigating factors which is the main reason why so many people don't have a good understanding of it. It took me YEARS of bench work and years of working with some of the best protein chemists in the world (Kulp, Tsen, Klaus, Ponte, and Dempster) to gain even a rudimentary understanding of the topic.

Sorry to be so long winded Mitch, but you did ask :)

Tom Lehmann/The Dough Doctor  
4857

### **Dough Clinic / Re: dough mixing and biochemical gluten development**

QwertyJuan;  
How are you defining tenderness of the dough?  
Tom Lehmann/ The Dough Doctor  
4856

### **Prep Equipment / Re: Found this Hobart C100 at an estate sale**

Any Hobart mixer that was built prior to about 1975 was indeed a "tank" they used their own motors and they were awesome! After about that time they were required to use motors built by someone else and soon acquired a nick name of "gutless wonders" the mixer design was still great but the motors were not nearly as good as when built by Hobart. I was not very impressed with any Hobart mixer since then but now with their relatively new Legacy series of mixers I'm once again impressed.

I have the specifications, exploded views and parts list with part names and number for the C-100 mixer. If you are interested in getting a copy send me a mailing address at <thedoughdoctor@hotmail.com>

Tom Lehmann/The Dough Doctor  
4855

### **Dough Clinic / Re: Deactivated Yeast**

Yes, there is a difference. The trick is to heat the yeast just enough to kill it and collapse the cell wall without denaturing it. The thermal death point for bakers yeast is 136F so you might try making a water bath that will hold steady at 140F, then make a yeast suspension and place it into something like a glass test tube and insert into the water bath long enough for the yeast suspension to reach 140F this will ensure a sufficiently long exposure time to ensure the kill, to make a dried product like you can buy you will need to freeze dry the dead yeast suspension and grind it into a powder. If you have a dehydrator you might try drying it at around 120 to 125F to see if they will work (never did it that way). To test the product after drying make a dough that you are familiar with, and add 2% flour weight basis of the dead yeast powder and see if you get any dough softening. If you are machine mixing you should see it at the mixer but if you are hand mixing/kneading it may take until you open the dough balls before you see any significant effect. What you are looking for is dough that is softer than normal and which exhibits improved extensibility (stretches easier) and with less or no memory/snap-back at forming. This could be an interesting project.

Tom Lehmann/The Dough Doctor  
4854

## **Dough Clinic / Re: dough mixing and biochemical gluten development**

Actually, what you are referring to is the chewiness of the finished crust, not the dough. With hand kneading it is hard to be definitive about anything due to the inconsistency and normal variability of hand kneading. The difference in chewiness might be due to the fact that with 6-minutes of hand kneading you are incorporating less dusting/bench flour into the dough than you would with 10-minutes of kneading. That might create a slightly dryer dough condition after that flour hydrates which "could" result in a chewier finished crust. Like I said, there are just too many variables in hand kneading to say anything for sure, all speculation.

Tom Lehmann/The Dough Doctor  
4853

## **Dough Clinic / Re: dough mixing and biochemical gluten development**

How much flour are you using in your dough?

Tom Lehmann/The Dough Doctor  
4852

## **Dough Clinic / Re: Maximising gluten development for relaxed dough for handstretching**

Poniel;

Biochemical gluten development will take care of your gluten development for you. After mixing your dough on the bench/counter top divide it into desired weight pieces for the pizzas that you are planning to make, form into balls, oil the dough balls and place into individual plastic bags (Food Bags work well, bread bags are perfect, twist the open end to form a pony tail and tuck it under the dough ball as you place it in your fridge. I normally look at 24-hours as a good cold fermentation time but I think 48-hours provides a better flavor. To use the dough balls, remove from the fridge and place on your counter top to warm to at least 50F (usually requires something close to 2-hours depending upon room temperature), open the bag and invert over a floured surface letting the dough ball strip the bag inside out as it falls from the bag. Flour the dough ball and begin opening the dough into a skin. Your dough will have excellent gluten development. We have done this for well over 30-years and have never been disappointed. When I conducted our pizza class I used to open a dough ball made in this manner and then have three or four students gather in a circle and stretch the skin over the back of their hands to see how large of a skin they could make. We never measured the diameter but the skin was thin enough to clearly see details of your skin through it. There has been some previous discussion on biochemical gluten development here not too long ago.

Tom Lehmann/The Dough Doctor  
4851

## **Dough Clinic / Re: Deactivated Yeast**

I think what you are trying to do is an interesting project.

The yeast has to be in a suspension to achieve the results desired, that is to kill the yeast and collapse the cell wall but not to denature (destroy totally) the yeast cell. Remember, what we are trying to do is to allow for the release of the plasma material (glutathione) from the inside of the yeast cell. If the temperature is too hot or the time is too long the glutathione will be destroyed too.

You bring up an interesting approach when you propose putting the yeast suspension in a very thin layer on a sheet pan in the oven then carefully watching over it using an IR thermometer, (1) If you put the yeast slurry on the pan in a very

thin layer it will heat throughout pretty uniformly so you won't need to agitate the slurry to allow for uniform heating. (2) You will need to carefully monitor and possibly control the temperature to prevent things from getting up over 140F. I'd suggest doing a few trial runs using just plain water first to perfect your method. Why do I think your idea might work? Many years ago ADY was manufactured in a similar manner, it was sprayed onto a heated drum, the water evaporated off and the dry yeast was removed from the drum using scrapers BUT the problems encountered using that yeast was one of inconsistent dough softening when the ADY was used (this is why ADY was never used commercially, it was only promoted for home use where the inconsistent dough softening would not be a problem). As you might have guessed, the softening problem was due to the release of glutathione for the yeast cells which were killed as a result of the heating and drying process (sound familiar?) and remember this, they were not trying to damage the yeast in any way. In your case we are trying to kill the yeast so we are using a higher temperature than what that drying drum was at.....hummm, just might work!

The results might be very interesting to those who are experiencing problems with dough memory/snap-back and either can't or don't want to increase the fermentation time. It would also be of interest to anyone wanting to make a last minute pizza for dinner (emergency dough).

If you decide to pursue this please keep us posted.

Tom Lehmann/The Dough Doctor

BTW: ADY is now made using much improved drying processes by which very little yeast is destroyed during the drying process

(think spray drying).

TDD  
4850

### [\*\*Dough Clinic / Re: Maximising gluten development for relaxed dough for handstretching\*\*](#)

Pon;

If you have a couple of dough balls to work with you might want to pull one after 24-hours and another at the 48-hour mark to see which time works best for you.

Tom Lehmann/The Dough Doctor  
4849

### [\*\*Dough Clinic / Re: dough mixing and biochemical gluten development\*\*](#)

QwertyJuan;

Your dough size looks sufficient for the bowl capacity so we can take that off of the table now. I do have one more question regarding your mixer, I'm assuming that the agitator is working the dough without stalling or stopping for a second or so, and that the agitator you are using is a reverse spiral dough arm as opposed to the standard Hobart "J" hook. Are these valid assumptions?

Tom Lehmann/The Dough Doctor  
4848

### [\*\*Dough Clinic / Re: Deactivated Yeast\*\*](#)

Just make a water-yeast suspension (1-part yeast to 5-parts water) put the suspension into a shallow pan and place in your oven at NO MORE than 140F (verified with a thermometer) and let it remain in the oven until the water has evaporated, remove the dried yeast from the pan (scrape) and pulverize by rolling

with a rolling pin and then manually forcing the material through a screen (like a tea strainer) to break up any large lumps. If you have a very small food processor you could use that too.

Tom Lehmann/The Dough Doctor  
4847

### [\*\*Dough Clinic / Re: How to make homemade PZ-44 ?\*\*](#)

PZ-44 is a blend of L-cysteine and whey, the product is formulated so 1% (flour basis) provides approximately 20-parts per million L-cysteine. In almost every case the optimum level of PZ-44 requires will fall between 1 and 2% or 20 to 40-ppm L-cysteine. Due to the fact that the L-cysteine, in its crystalline form is very hygroscopic and the amount is so small it must be blended into something to make handling/scaling easier. In the case of PZ-44 whey was selected as the carrier since it doesn't impact dough absorption and is relatively inert in the dough except for its contribution to crust color owing to its lactose content (about 70%), but even at that, 1 to 2% isn't going to impact crust color very much at all.

If the "dead yeast" experiments prove successful it might provide a useful alternative to PZ-44 where it isn't available. As a side note: Remember that you can also add powdered onion and/or garlic to achieve a moderate level of dough relaxation. The amount needed isn't all that much either, start with 0.25% of either or both and go up to 0.5% if necessary.

Tom Lehmann/The Dough Doctor  
4846

### [\*\*Dough Clinic / Re: Factors Affecting Gluten\*\*](#)

A number of years ago Dr. Carl Hoseney, Kansas State University wrote a paper on comparing the Alveograph (used in Europe) to the Farinograph (used in the U.S.) with regard to the ability to measure flour performance. Results of the study indicated that the Alveograph gave better results with the softer/weaker flours used in Europe than it did with the stronger U.S. flours. The Farinograph was more accurate with the U.S. flours and less accurate with the European flours. This might stand to reason because the Alveograph is an invention of the French while the Farinograph is an invention of the U.S. so they were developed with their respective flours at hand. The Alveograph has been around for a good number of years now but it still is not used very often to measure flour quality here in the U.S. but the Farinograph is still widely used by both the milling industry as well as university and independent cereal grain/wheat research laboratories.

Tom Lehmann/The Dough Doctor  
4845

### [\*\*Dough Clinic / Re: Deactivated Yeast\*\*](#)

I don't think it will really matter since we are trying to kill the yeast. Just suspend the yeast in water (115F) since it is closer to the kill temperature, and immediately put it into the pan and place into the oven. If you have a fan in the oven I'd suggest turning it on to speed the evaporation.

Tom Lehmann/The Dough Doctor  
4844

### [\*\*Dough Clinic / Re: Saucing help..or maybe it's the dough\*\*](#)

Pon;

I think you'll find that you will have a stronger dough that is easier to open when you allow it to cold ferment for 24 to 48-hours. While you do get some biochemical gluten development taking place in three hours at room temperature, you should

see a significant improvement after the longer cold fermentation period.

Tom Lehmann/The Dough Doctor

4843

**Chitchat / Re: Do you eat the crust of a NY pizza or chuck it?**

A good crust is every bit as good as a slice of artisan bread in my book, the toppings just add variety and interest.

I eat the crust from every slice.

Tom Lehmann/The Dough Doctor

4842

**Dough Clinic / Re: Help - Pizza Dough too fragile**

AB;

My first thought was that possibly your flour was too low in protein content but with 12.3% protein content it should be OK. Your salt level is on the low side at 1-teaspoon (approx. 6-grams) or 1.2%. I would suggest doubling the amount of salt to 2-teaspoons (12-grams) 2.4%.

Your fresh yeast level is also on the high side for a 3-day cold ferment. I would suggest reducing it to around 3-grams. You didn't say what you put the dough in when you put it into the fridge, but oiling the dough balls and placing them into individual plastic bags (like bread bags), twisting the open end into a pony tail and tucking it under the dough ball as you place it in the fridge is a good method to start with. Lastly, you might be allowing the dough to warm too much before opening it, we always get better results when allowing it to warm only to 50 to 55F/10 to 13C.

You might incorporate these changes and let us know if you see any improvement in your dough.

Tom Lehmann/The Dough Doctor

4841

**Dough Clinic / Re: Factors Affecting Gluten**

I haven't followed any more work on the Alveograph since we got one in the (might have been mid 1980's???) We did a lot of work using it but the biggest problem that we encountered was that it might work well with one flour but then not with another flour sample, additionally with the work that we did with the Crop Quality Council we found that the Alveograph was not a good predictor of wheat/flour performance with new wheat varieties, some having performance characteristics not normally encountered in commercial flours. For example, we might encounter wheat which gave flour with a very strong protein with limited elasticity (much like a durum flour) which performed poorly using the Alveograph, but when using the Farinograph we could see that the flour also had a very good (long) mixing tolerance which while not good for the bakers (they like a flour that develops its gluten within a specific time period, 10 to 13-minutes) the flour, when mixed properly produced excellent finished loaf volume (pup loaves, miniature bread loaves) so the wheat from which the flour was made could be readily identified as a potential blending wheat. As for any new comparison research between the Alveograph and the Farinograph since the paper published by Dr. Hoseney at K-State, you would have to research that to see what there is.

One other thing, since the Alveograph works well with the softer, more mellow flours, it is commonly used in the quality assessment of soft wheat flours/wheats. In this application it seems to work quite well as might be expected since our soft wheat varieties are typically closer to the European hard winter wheat varieties. When I was on the McDonalds International Task Team working throughout all of

Europe helping bakeries make buns for McDonalds as they expanded into Europe, we found that local flours made from the local wheat varieties were not nearly strong enough to make a decent hamburger bun (many of the bakeries had never even made a hamburger bun) but the word was that there was French flour that was much stronger, it was stronger and it made excellent buns using the right dough management procedure (80/20 sponge dough procedure with a 4-hour sponge), then I got to thinking "So how is it that the French are milling such a strong flour when their domestic wheat varieties are not selected for the properties needed to make such a strong flour with good mixing and fermentation tolerance?" I got to making some phone calls to my friends at U.S. Wheat (government agency responsible for promoting U.S. wheat and flour into the international markets) and I soon found out that France was now importing greater quantities of DNS (dark northern spring) wheat from both the U.S. and Canada, it soon became apparent that what they were doing was to produce strong flours from imported wheat for use in the "new" expanding U.S. fast food applications throughout Europe and selling it under their name, not a problem as everyone was happy, U.S. and Canada were selling a premium wheat to France and bakers had a source of the strong flour needed to produce the new products on their production schedules, and yes, they were using the Farinograph to measure flour quality, I don't know if they were also using the Alveograph, but it wouldn't surprise me if they were. Remember, this was all back in the mid 1980's, I'm sure things have changed to some extent since then.

Tom Lehmann/The Dough Doctor  
4840

### **Off-Topic Foods / Re: Jamaican meat patties NY style**

I don't know if they were anything like those made in Jamaica but in Jamaica the dough is essentially what is referred to as a mealy type pie crust soft wheat/pastry flour 100%, salt 2%, shortening (lard or butter works best) 25%, whole egg 5% and just enough ice cold water to make a coarse textured dough (about 30% if I remember correctly). A pastry knife attachment is used to mix the dough but a flat beater can also be used, just take care so you don't over mix the "dough" into a homogeneous mass, if you do the crust will be tough rather than flaky and tender. Directions: Place lard in the refrigerator to chill thoroughly (it must be hard/firm or it will be mixed into the flour during mixing. Put the flour and chilled lard (best to break/cut it into pieces and add it all at once) mix at low speed just until the "dough" has a coarse sawdust like texture then add the ice water into which the salt and whole egg are suspended and mix just enough to incorporate the water (the dough should be slightly granular). Remove from mixing bowl, scale about 75-grams, form into a "puck" shape by pressing together with your hands, place on a lightly floured sheet pan and cover with stretch wrap and allow to hydrate overnight, on the following day roll the dough out to about a 6" diameter circle, add the filling, brush half of the circle with water and fold the dough over the filling onto the wet portion of the dough, crimp the dough together (a fork works well) and bake at 425F on a sheet pan/cookie sheet.

We have a Jamaican restaurant here in Manhattan and they use their jerk chicken and pork for the filling.

Note:

Use a pre-cooked filling

The yellow color is from the use of saffron and/or curry powder which can be added to both the dough (for the bright color) and the meat filling.

If the dough is too tender increase the mixing time slightly.

This dough is easy to make in a food processor, just mix it until it comes together

and it's done.

If you're in a hurry you can forgo the overnight hydration period by mixing the dough a little longer, just until it looks like it is becoming smooth.....but this crust will not be as flaky.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4839

### [\*\*New Forum Members / Re: Newbie from Northern Ireland\*\*](#)

P.R.

Congratulations! Nice looking trailer.

What kind of oven do you have in the trailer? Do you make the dough yourself or have it made for you/buy it? What kind of pizzas are you making? Tell us as much as you can about your trailer and we'll try to fill in the blank spaces for you.

Tom Lehmann/The Dough Doctor  
4838

### [\*\*Chitchat / Re: Wild mushroom hunters?\*\*](#)

One of my spring past times is hunting morels and then bringing them home to fry up in butter or mixing into my scrambled eggs for breakfast, a once a year treat! I am sure that there are other varieties that I'm overlooking but that's the only variety that I can positively identify without a supermarket label.

Tom Lehmann/The Dough Doctor  
4837

### [\*\*Dough Clinic / Re: Dough ball, how to end up with proofed nice, non flattened, dough ball\*\*](#)

Juran;

Those pizzas look great, and when you consider how far the dough had to be transported they look even better! You did well. Now with some success under your belt you can fine tune your dough management to make it even better (as if it needs to be any better). :)

Tom Lehmann/The Dough Doctor  
4836

### [\*\*Dough Clinic / Re: How to make homemade PZ-44 ?\*\*](#)

Wangji;

Reducing agents such as PZ-44, dead yeast, onion and garlic powder are most commonly used only when opening the dough using a dough press and only occasionally when using a sheeter/roller. When opening the dough by hand it is seldom used because we can make adjustments to our procedure in hand/manual opening the dough but when using a press or sheeter there isn't always a lot that can be done to address the snap-back/dough memory issue. The main tools to address snap-back are dough absorption and fermentation time with the actual dough temperature at the time of opening being a close runner-up in importance. If you are experiencing problems with excessive dough memory I would first see if the condition can be improved through the addition of more water (increased dough absorption), if that doesn't work use the dough absorption that gives you the best dough handling properties and then begin a series of tests incorporating more fermentation into the dough. Keep in mind that you can also increase dough fermentation rate by increasing the dough temperature or the yeast level. For the most part if your yeast level is something between 0.5 and 1% of the flour weight (compressed yeast) or its equivalent in ADY or IDY your yeast level is probably OK,

if the dough temperature immediately after mixing is something close to 21C/70F and the actual dough temperature at the time of opening the dough is in the 50 to 55F/10 to 13C you're probably OK there too so that might indicate that you just need to increase the total fermentation time of the dough.

Tom Lehmann/The Dough Doctor  
4835

**Dough Clinic / Re: How to make homemade PZ-44 ?**

One of the benefits to using PZ-44 or any other reducing agent for that matter is that you can make a low absorption dough such as Big Dave's and still achieve the necessary extensibility to open the dough by hand. A good many of the commercially manufactured pizzas crusts (frozen pizzas) are made in this manner due to the fact that the sheeters being used are not always compatible with the dough characteristics resulting from increased absorption needed to impart the right combination of extensibility and elasticity. When reducing agents are used (with highly controlled processing parameters) you can use a low absorption dough that exhibits excellent processing characteristics on high speed automated equipment and essentially "dial in" the extensibility and elasticity needed through manipulation of the amount of reducing agent used.

Tom Lehmann/The Dough Doctor  
4834

**Dough Ingredients / Re: La Romanella Hi Gluten Flour**

The "Bread Flour" comes in at 12% protein content (a strong winter wheat type of flour) and Superlative (Supreme) is a spring wheat flour coming in at 12.2% protein content. As Essen1 indicated, both are excellent general purpose pizza and bread flours. I regularly recommend the G.M. Bread Flour as a bench mark flour for someone just getting into pizza making at home.

Tom Lehmann/The Dough Doctor  
4833

**Shop Talk / Re: Steel Number Tents**

You might try making your own using 1.5 or 2-inch X 1/8-inch aluminum flat bar stock and a number stamp kit. Cut to length, stamp as desired, using a bench vice and a machinists hammer fold the flat stock to the desired angle so the number is on the outside, repeat.

Just a thought.

Tom Lehmann/The Dough Doctor  
4832

**Shop Talk / Re: Steel Number Tents**

Good point Craig, might try using 1/16-inch steel. I will stamp well and is still easy to work with.

Tom Lehmann/The Dough Doctor  
4831

**New Forum Members / Re: Newbie from Northern Ireland**

P.R.

You say maybe 4 or 5 basic pizzas, do you mean different toppings or different types of pizzas? If you are planning to sell whole pizzas why not just one pizza and let your customers decide on the toppings? If you are planning to sell slices and just reheat them at the time of sale you can probably get away with just 3 different topped (the most popular) pizzas.

Tom Lehmann/The Dough Doctor  
4830

### **Chitchat / Re: Wild mushroom hunters?**

Just as a cautionary note for those like me who are not well versed in mushroom identification you might want to take a look at (CTV Montreal News Videos) on the article about another victim of the Death Cap Mushroom.

Tom Lehmann/The Dough Doctor  
4829

### **Chicago Style / Re: Deep dish in WFO?**

About the hottest that I've been able to do a fresh baked deep-dish pizza at is 575F. The problem is that pizzas are baked from the bottom up and with the thicker crusts you need more baking time to achieve a complete bake so at the higher temperatures you end up with an over baked top and a charred or under baked bottom to the pizza. You will also probably need to bake a deep-dish pizza on a screen in the oven too so as to create an air gap between the pan and the deck to prevent over baking the bottom of the pizza.

Tom Lehmann/The Dough Doctor  
4828

### **Dough Clinic / Re: First time using a Deck Oven**

D.C.;

To avoid disappointment, don't bank on a 3 to 4-minute bake. The thermostat dial is for controlling the bottom (deck) temperature and the other one is for the top temperature. On some ovens this is just a damper which pulls out for less top heat and is pushed in for more top heat. Your best baking temperature for a balanced (top and bottom) bake will most likely be about 600F or a little less. As with all deck ovens be sure to check the calibration of the thermostat. This is easily done using one of the hand held infrared thermometers available for about \$15.00 (I just recently got one for \$12.00). Just to confirm, your oven has a composite deck as opposed to a steel deck, is this correct?

Tom Lehmann/The Dough Doctor  
4827

### **Chitchat / Re: Wild mushroom hunters?**

Gosseni;

You don't need to be trained all that well in identification of the morel mushroom, just learn the difference between a real morel and the false morel (very easy to do) and you're good to go, like I said, it limits your possibilities but allows us "uneducated" to go on hunting and eating mushrooms another day.

Tom Lehmann/The Dough Doctor  
4826

### **Dough Clinic / Re: Dough thin in middle**

JS;

As just about anyone on this site will tell you, I am a very strong advocate of using a method that we developed a number of years ago to train people in the art of opening a dough ball into a pizza skin without the issues that you are experiencing. This has been discussed many time here but here it is again.

Adjust the temperature of your mixed dough so it is between 75 and 80F (this is done through adjustment of the water temperature). Take the dough directly to the counter top/bench for scaling and balling. Oil the dough balls and place into

individual plastic bags (Food Bags or bread bags) and twist the open end into a pony tail to close, tuck the pony tail under the dough ball as you place it in the fridge. Allow the dough to cold ferment for 48-hours then remove from the fridge and allow the dough to warm to 50 to 55F (30 to 60-minutes). Turn the dough ball out of the bag onto a floured surface (the dough ball should invert the bag as it falls out of the bag). Flour the dough and flatten slightly using your hands than use a rolling pin or pie/pastry pin begin rolling the dough out to roughly 3/4 or a little more of the finished diameter, then begin table stretching the dough to final diameter. I have some videos on my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> which may help you. I also have a video showing this procedure being used very successfully in a pizzeria, just contact me at <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)> and request a copy of the video. I've found that I can have a total novice opening the dough as good as a pro in as little as 30-minutes using this procedure, this procedure allows you to produce good skins while developing your skills at opening the dough and in essentially every case the student soon progresses on to more traditional methods of opening the dough while still being able to retain the uniformity across the diameter of the dough skin.

Tom Lehmann/The Dough Doctor  
4825

### **Chicago Style / Re: Deep dish in WFO?**

So, the question that begs to be asked is "at what temperature will the pizza be baked at?" Remember, the oven is cooling down (from what temperature?) so there will be no constant temperature.

Tom Lehmann/The Dough Doctor  
4824

### **Dough Clinic / Re: Dough thin in middle**

JS;  
If your dough is fully relaxed after 48-hours of cold fermentation time, as it should be, it will only take a few passes with the pin to open the dough, remember to use the pin properly and use several lighter passes as opposed to a single heavy pass, and REMEMBER to only open the dough with the pin to 3/4 or a little more than finished size.

Tom Lehmann/The Dough Doctor  
4823

### **Chicago Style / Re: Deep dish in WFO?**

A bright silver colored aluminum pan (though not usually recommended) might help you in this case by reflecting a portion of the heat giving a slower more thorough bake.

Tom Lehmann/The Dough Doctor  
4822

### **Shop Talk / Re: Prep table that can keep temps in 100 degree heat**

In addition to any responses to your question here, you might also want to run your question across George Mills at the PMQ Think Tank <[www.pmq.com](http://www.pmq.com)>. George is the resident equipment expert at the Think Tank.

Tom Lehmann/The Dough Doctor  
4821

### **Dough Clinic / Re: Dough will not windowpane**

Islandguy;

Pizza dough is not mixed to full gluten development or actually, even close to it during the initial mixing stage so the "window pane" test is of little relevance. Bread yes, but not pizza unless you are making frozen pizza dough but that's a whole different story. So I wouldn't worry too much about gluten development for right now. Then you said you cold fermented the dough for 4-days after which it tore badly and was sticky when you opened it into a skin and tried to peel the dressed skin into the oven. From this description it sounds like the dough was over fermented. This can be due to formulation of the dough, the dough management procedure, or the temperature of the cooler/fridge where the dough was cold fermented. If you would share your dough formula, dough management procedure (including the temperature of the dough as it came off of the mixer), and confirmation of the temperature of the cooler/fridge I'm sure we can figure out what's responsible for the issues you are experiencing. Also please let us know something about your dough mixer, bowl size and type of mixing attachment, a picture would be great if you can provide one.

Tom Lehmann/The Dough Doctor  
4820

### [\*\*Off-Topic Foods / Re: Real Pizza Dough Flavor @ \\$52/lb\*\*](#)

Huh!  
My pizza DOUGH has never had a cheese and garlic flavor, just the good old fashion aroma and flavor of FERMENTATION which is transferred to the finished/baked crust to provide a great overall flavor as well as a more digestible crust (for whatever that's worth) and a more tender eating crust (high on my priority list).

If you're of the ilk that believes more flavor is needed in your crust and don't want to go the fermentation route try adding 1 to 2% of a dry, white sour aka dry French bread sour (this is NOT an active culture), you just add it to the dough and it imparts a reminiscent sourdough flavor to the finished crust. This approach does work and is being used commercially where fermentation is not an option.  
Additionally, keep in mind that "bread flavor" essentially pizza crust flavor has never been successfully synthesized, there have been a lot of attempts but no successes, finished crust flavor is just too complex.

Tom Lehmann/The Dough Doctor  
4819

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Anodized aluminum pans\*\*](#)

Enchant;  
You can have anodized finish pans in both bright (silver) and dark finish. If the pans are not a dark anodized finish they are a bright finish and need to be seasoned prior to use not so much for release properties but to improve the heat absorption of the pans. If the pans happen to be non-anodized bright finish they need to be seasoned both inside and out to improve the release properties of the pan and to improve the heat absorption properties of the pan. Since it looks like your pans have a bright anodized finish only the outside of the pans need to be seasoned. Seasoning the inside of the pan is not critical to release but it may improve the release.

Tom Lehmann/The Dough Doctor  
4818

### [\*\*Off-Topic Foods / Re: Full Strength vs Bread Flour and/or All Purpose flour for Sandwich Rolls\*\*](#)

Full Strength is definitely the way to go as opposed to an all purpose flour. If you

go to the PMQ RECIPE BANK and look under the heading of Sandwich Buns I have a formula and procedure posted at the bottom of the column. I good number of posters at the PMQ THINK TANK have reported excellent results using this formula and procedure. We used it locally here to produce a Chicago style Italian Beef sandwich sandwich.

You really need the protein content of the Full Strength or even All Trumps to get the desired "chew" in the finished bun without it falling apart after soaking up all that juice.

Tom Lehmann/The Dough Doctor  
4817

### **Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?**

That's a tough one, to answer as there is no real answer to your question. There is no way right now to bake a fresh pizza, stuff it into a box, place it into an insulated "moon" bag and run around with it in the back of a vehicle looking for a delivery address for much more than just a few minutes without the pizza steaming itself to death. With that said, there are some things that you can do to diminish the impact to your customers.

- 1) Allow pizzas to "steam-off" for about 2-minutes before boxing them.
- 2) Use a Pizza Savor mat or a ripple sheet in the box to hold the pizza off of the bottom of the box which will allow for ventilation under the pizza and to prevent the pizza from sitting in any oil or moisture released from the pizza.
- 3) Make sure your delivery boxes have steam vents and make sure they are opened.
- 4) Take your pick of delivery bags, the work that we did evaluating them showed little difference between them.
- 5) Deep-dish pizzas seem to hold up to delivery better than thin crust pizzas, at least the effects of the steaming process are not perceived as detrimental to quality as they are with thin crust pizzas.
- 6) If you go with thin crust pizza consider a thin cracker type crust, but don't target a super thin crust, instead shoot for something around 10 to 11-ounces for a 12-inch pizza (dough density loading of 0.088 to 0.097/ounces of dough weight per square inch of surface area).
- 7) Use as long of a baking time as possible to achieve the driest/crispiest crust possible.
- 8) After opening the dough ball into a pizza skin brush the skin VERY LIGHTLY with oil to help create a moisture barrier between the toppings and the dough.
- 9) Nothing beats an air impingement oven for baking DELCO (delivery/carry-out) pizzas. The reason for this centers around the moisture control afforded by the high velocity airflow used in this type of oven.
- 10) Whatever dough formula you opt to use it is suggested that you include not more than 2% fat in the formula. The fat in the dough formula will help to repel moisture, helping to keep it from entering into the baked crust.
- 11) When all else fails, EDUCATE YOUR CUSTOMER, encourage them to place the pizza into a preheated oven at 400F/204C for a few minutes to restore some of the lost crispiness. I have gone so far as to get some pizza stones with my name and contact information on them and sell them to my customers at cost, I then give them a free book of coupons good for \$2.00 off on their next pizza purchases (total value not to exceed amount they paid for the pizza stone, so in a way you might say that they are getting the stone for free).

You might search through my archived articles at PMQ <[www.pmq.com](http://www.pmq.com)> (In Lehmann's Terms) as I remember writing an article on this not too terribly long

ago.

Tom Lehmann/The Dough Doctor  
4816

### **[Stones/tiles/steel, Pans & Accessories / Re: Anodized aluminum pans](#)**

The pans appear to have a gray finish which is fine, no need to do any seasoning. The color absorbs heat almost as well as the black colored pans so. It looks like one of the pans has some mileage on it as I see some seasoning beginning to develop around the top inside edge.

Tom Lehmann/The Dough Doctor  
4815

### **[Dough Clinic / Re: Need help making dough more extensible](#)**

Pfhlad0;

The easiest way to look at it is this way:

Your total KABF is 100% or  $1566 - 44.84 = 1521.16$ -grams

The VWG weight is 44.84-grams or 2.9% ( $44.84 \div 1521.16 \times 100 = 2.94775$ )

Absorption of the KABF is let's say 62% so  $1521.16 \times 62$  (press the "%" key) and read 943.1-grams of water.

Absorption of the VWG is 150 to 200% so let's use 200%;  $44.84 \times 200$  (press the "%" key) and read 89.68-grams of water.

Total dough water is  $943.1 + 89.68 = 1032.78$

Total % dough absorption =  $1032.78 \div 1521.16 \times 100 = 67.89\%$

While some do it, it is not recommended that you combine the flour and VWG as your total flour. The reason for this is because the VWG is a variable in the formula, and it is also an added ingredient and it must be handled in the same manner as any other ingredient (not included in the flour weight).

Hopefully this clears up any confusion.

On a separate note, you indicate that your dough is "difficult to stretch" is it too strong? Too elastic? Those are the characteristics imparted by VWG so maybe you don't need any VWG for your dough management procedure. Truth is, VWG is not used very often if the dough is properly managed, form what you have said it appears that your dough is well managed and 2-days CF is not a long time so the question is, "is VWG even needed at all?"

Tom Lehmann/The Dough Doctor  
4814

### **[Dough Clinic / Re: Need help making dough more extensible](#)**

Phhlad0;

What you are experiencing first hand is too much elasticity in the dough and yes, the addition of VWG can contribute to increased elasticity, so before making any other changes I would suggest deleting the VWG and the additional water that was added with the VWG to see if that helps. If that doesn't help then my next step would be to increase the IDY to 0.33% (5-grams) this will provide for more fermentation all things equal which should result in a softer, more extensible dough that opens more easily.

Tom Lehmann/The Dough Doctor  
4813

### **[Off-Topic Foods / Re: Real Pizza Dough Flavor @ \\$52/lb](#)**

No, that's the real thing. What I'm referring to here is a commercial inactive dry

sourdough flavoring material that is added to the dough as a flavoring material. The way the stuff is made is by preparing a very strong sourdough starter and then inactivating it by pasteurization followed by freeze drying and then grinding it to a fine white (actually off-white) powder. Corion Food Ingredients Company out of Kansas City, Missouri as well as Puratos Corporation (Cherry Hill, N.J.) are two of the major suppliers of this type of ingredient.

Tom Lehmann/The Dough Doctor  
4812

**[Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?](#)**

Actually, they do have delivery vehicles which do exactly as you have suggested, reheat the entire pizza at the time of delivery. The problem is that you would need a fleet of the vehicles (thing of Domino's recent delivery project with special vehicles, but special heated delivery racks were explored many years ago. Pizzas were placed into a cabinet in the delivery vehicle and held at 140F and then just prior to arriving at the delivery address the heat was increased, then the pizza was boxed and brought to the customer. A few years ago it seemed like new delivery vehicles were on display at Pizza Expo every year. Lately it seems the interest has waned.

Tom Lehmann/The Dough Doctor  
4811

**[Shop Talk / Re: Cooked pizza display cabinet \(pizza sold by slice\) - heated or not?](#)**

Most of the pizza display/holding cabinets sold in the U.S. are heated to maintain the pizzas at 145F/68C for food safety reasons and because most food safety departments require it for the same reason. As an added benefit for you the time needed to re-freshen a slice can be a little as 60-seconds for a slice of thin crust pizza. With the pizza held at the heated temperature all you are now doing is "re-freshening" the slice by that I mean you are heating the bottom to restore the crispiness, bringing the oil back to the surface to improve the appearance, and enhancing the overall flavor of the slice. If you were holding the pizzas in a non-heated cabinet you would need to "re-heat" the pizzas to bring the internal temperature back to 165F/74C for food safety reasons and to ensure the center of the slice is uniformly heated to serving temperature which with a fresh baked pizza will be something between 165F/74C and 185F/85C. This will take longer to accomplish so it will impact your "turn-around" time. In any case you will want to experiment with re-freshening or re-heating (which ever way you decide to go) by placing the slices directly on the oven deck and on a pan or pizza screen to see which method works best in your application.

Tom Lehmann/The Dough Doctor  
4810

**[Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?](#)**

Pete;  
It will vary with your equipment used to re-heat (from cold) or re-freshen (from warm, such as a delivered pizza). Before we got our toaster oven we used to place a slice of pizza over the top of our 4-slice toaster and start all four. The heat did little for the top of the pizza but it did dry off the bottom. Now that we have a toaster oven it takes about 1.5 to 2-minutes for a cold slice or about half of that to re-freshen a delivered (actually a carry-out for use as we live outside of any local

delivery area) pizza slice.  
Tom Lehmann/The Dough Doctor  
4809

**Dough Clinic / Re: Here's my recipe. Why is it not crispy?**

Billy;  
From what you are saying it sounds like a dough sheeter might have been a better choice for opening the dough. The reason being is that a thin crispy or cracker type crust would come closer to providing the characteristics it appears you are looking for. Using what you have, let's think about some dough changes and see if we can press the dough...no promises.

- 1) Reduce the dough absorption to 50% (5,100-grams) The dough will be a lot STIFFER.
- 2) Mix the dough JUST until it comes together in the mixing bowl.
- 3) Adjust the water temperature to give you a finished dough temperature of 85F/29C (water temperature of about 75F/24C will be needed).
- 4) Immediately after mixing scale and ball the dough.
- 5) Box the dough balls, oil the top of each dough ball, stack the dough boxes (covered) and allow to proof at room temperature for 30-minutes, then take to the cooler and cross stack for 2-hours then down stack, cover and cold ferment for AT LEAST 24-hours (48-hours will be better).
- 6) Remove dough box from the cooler and allow to warm to 60F/16C before removing from the dough box, oiling the dough ball and pressing.

This is not a typical dough management procedure for a pressed dough but what we are trying to accomplish is to make something closer to a cracker type dough and manage it in such a way so as to allow it to be effectively opened using a dough press. Fermentation is going to be the solution here. When you remove the dough fro the box for pressing it should show signs of being well fermented, handle it gently as you remove it from the box, oil it and take it to the press (DO NOT EVEN THINK ABOUT RE-SHAPING IT). Let's see where this brings us out at (pictures of the dough after the C.F. period and pressing would help).

Tom Lehmann/The Dough Doctor  
4808

**Shop Talk / Re: Cooked pizza display cabinet (pizza sold by slice) - heated or not?**

Nat;  
Some say two hours, others say three hours.  
Tom Lehmann/The Dough Doctor  
4807

**Dough Ingredients / Re: Salt and Yeast**

Kosher salt with its larger crystal size takes longer to dissolve while the salt used by commercial bakeries for regular and frozen dough production has a smaller particle size than even regular table salt, it is almost, but not quite to a powdered form. In addition to regulating yeast activity and strengthening the dough salt also helps frozen doughs by reducing water activity in the dough (only salt and sugar will reduce water activity) for this reason salt is normally maximized in frozen dough production with levels at 2 to 2.25% or even slightly higher, at the same time because frozen dough is not fermented the products made from it are inherently lacking in flavor so with the higher salt level the flavor is improved slightly at the same time.

Tom Lehmann/The Dough Doctor  
4806

**Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?**

Pete;

We'd better break the news to Adam Peyton, owner of AJ's New Your Pizzeria (two stores in Manhattan, KS and one in Topeka, KS.) Voted best pizza by the student body at K-State University and best pizza in Manhattan, KS, plus he just got the honor of best pizza in Topeka, KS at his Topeka store. His whole business is based on finishing a par-baked crust as a pizza slice using a commercial pizza oven (XLT air impingement oven). We used the air impingement oven approach as it afforded us the ability to tailor the airflow to the top and bottom of the pizza to achieve the best bake. We also have a Marsal deck oven but when we tried to reheat slices in the deck oven (pizzas placed right on the deck) we got pizza that was not thoroughly heated throughout (we have to reheat to a minimum of 160/165F). By using the XLT oven and 3-minutes reheating time the slice or whole pizza is thoroughly reheated and so hot that it cannot be eaten without letting it cool a little (much to the delight of the customers) We did a lot of work using microwave to assist in the baking of pizzas and what we found out was that it can be done (Turbochef uses programmed magnetic resonance very similar to microwave) as part of their combined technology approach to fast baking (bakes a 14-inch pizza in just over 2-minutes from raw dough). The biggest problem that we encountered with using microwave as a reheating tool was that it has a very fine line between reheating and toughening and to compound the issue the time and power setting as well as the age of the microwave oven all influence the actual time it takes to reheat and then the dough formulation will impact how much microwave baking the crust will tolerate before experiencing the undesired toughening. If you are working with a single dough formula using a known type of fat (oil or shortening/it does make a difference) it can be done with good success but if anything changes as it so often does in a commercial setting things go south in a hurry.

Tom Lehmann/The Dough Doctor  
4805

**Dough Ingredients / Re: Salt and Yeast**

Norma;  
Diastatic malt?  
Tom Lehmann/The Dough Doctor  
4804

**Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?**

Pete;

You are absolutely correct in getting the crisp/crunch without excessive drying of the crust when re-crisping the pizza/slice over an open flame. It's just that it doesn't work in a commercial setting as we are required to get the internal temperature up to not less than 160F before serving. The toaster oven I admit can be a real challenge as the time and temperature setting are critical, the reason for this is because the toaster oven is a source of very dry heat (electric resistance heating) which can really raise havoc on a crust by getting it too dry (insipidly dry) in short order if not done correctly for the product at hand. The same thing might be said for microwave re-heating of pizza. Pizza that has a higher finished moisture content as well as a higher oil content tend to re-heat better than a pizza made on

a crust having a lower moisture and oil content. When re-heating over an open flame the temperature can be over 1,000F (depending upon the distance from the flame) but that flame is actually pretty high in moisture content as compared to heat that is produced by electric resistance (very dry). We refer to this as direct heating (flame is in the baking chamber or flame heated air is circulated into the baking chamber) or indirect heating where the flame is within a tube which is heated and the air is passed over the heated tube and then circulated in the baking chamber. Direct heating almost always bakes better than indirect heating as it doesn't dry out the product nearly as much AND the moisture content of the heat significantly improves the heat transfer properties (think of 212F dry heat as in an electric oven and steam, both at 212F) so a better and faster bake (about 20% faster) is achieved when that moisture is present. Huge commercial ovens (some over 300-feet long) have addressed this issue where they have indirect heating BUT they have incorporated a means of recirculating a portion of the moisture rich oven air back into the baking chamber to achieve baking properties more like that of direct heating. Ovens and baking are a pretty cool thing to study.....both are in a constant state of flux but the physics don't change.

Tom Lehmann/The Dough Doctor

4803

### **Dough Clinic / Re: Hydration**

I'm with Craig as I can't remember anyone ever saying that 70% absorption was necessary to make pizza. There are times and types of pizza where 70% absorption might be used but I would not call this the "norm". If I personally had to pick a number to represent the typical dough absorption of a pizza dough it would probably be 62% but even that is open to a lot of discussion as the absorption depends upon so many different factors all coming together such as flour, formulation (especially oil content), amount and type of fermentation, type of dough (wheat, whole-wheat, white, etc.) type of pizza being made (New York, deep-dish, thin crispy, thin cracker, and how the dough will be formed into a skin, just to name a few, all enter into the dough absorption equation.

Tom Lehmann/The Dough Doctor

4802

### **Shop Talk / Re: how the crispiness of the pizza last for 15 mins after cooking?**

Pete;

Between you, me and the fence post, none, but when you add food safety guidelines they state unequivocally that hot food (pizza included) be baked and heated to an internal temperature of not less than 160F (that's easy as all of the starch doesn't set until 180F is reached) then it cannot be allowed to drop below 140F at the time of serving or sale (assuming served or sold by the store). If said pizza drops below 140F it must be reheated to an internal temperature above 160F (kill step) to make it safe to sell or serve. If a pizza is delivered by your driver or contracted driver the pizza is considered property of the store and has to follow the above (this is why maximum delivery time depends upon how long you can keep the pizza at or above 140F). Now, if a customer comes into the store and buys a pizza (carry out) he can do whatever he/she wants to do with it just so long as it isn't going to be sold. Here is a take on it, some cities, counties, states go by the 4-hour food safety rule which simply states that a food can be at a temperature which will support microbial growth (under 140F) for a maximum accumulated time of 4-hours. The issue has always been when did/does the clock start ticking? Did you measure the internal temperature of the pizza? It's a bag of enforcement worms so some have simply

gone to internal temperature that way there is no discussion on how long it was at a temperature below 140F. Again, would I join you reheating a nearly cold slice of pizza and enjoying it without any fears of getting ill? ABSOLUTELY! But when you are in the business of selling food you have to play by a different set of rules that are dictated to you by informed and not always so informed people, but whatever the case if you want to remain in business you gotta follow the rules imposed upon you that are made to have a wide spectrum application not just to pizza but other foods as well. Just ask anyone with a buffet what their main food safety challenges are. Most will say keeping the cold stuff cold and keeping the hot stuff hot as defined by someone else.

With all of that said, does it mean that you can't get sick/ill eating pizza that has cooled to under 140F for an undetermined length of time? Absolutely not, but if we get sick eating that pizza, it's only us, not 200 other people.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4801

### **Dough Ingredients / Re: Salt and Yeast**

Thank you Peter.

A small amount of diastatic malt powder is not a problem in frozen dough production as malted flour is almost always used. You just don't want to dose it to the point where you are beginning to see some stickiness in the finished dough. Frozen doughs are already a little sticky after slackening out so it won't help to make the dough even stickier.

As for the salt in a frozen dough, salt will significantly slow the rate of fermentation depending upon the balance between salt and yeast. The temperature of the frozen dough has the greatest depressing effect upon the yeast in the mixing bowl and then the salt also contributes to this depressing effect. The reason for using a very fine particle size salt is to ensure thorough dispersion throughout the dough mass (remember that commercially, the salt is added close to the end of the mixing process so as not to toughen the dough any more than what the depressed temperature already has and it is a well known fact that cold doughs do not develop gluten as quickly as warm doughs do so by leaving the salt out of the dough until about the last 4 to 5-minutes of mixing the dough develops quicker which in turn takes significant stress off of the mixer and agitator bars. Then the shorter mixing time doesn't generate as much heat due to friction during mixing so it is easier to achieve and maintain the target finished dough temperature which is normally between 60 and 65F with 70F generally considered as the very top end for dough temperature when making frozen dough. Add to that the fact that yeast typically exhibits about a 20-minute lag phase before it begins to feed and create fermentation as we know it. Since the objective in a frozen dough plant is to process the dough and get it frozen as quickly as possible (the reason being to limit growth/swelling of the individual yeast cells) since the mere act of freezing the dough (even blast freezing at -35F with 600 to 800-linear feet of air flow over the product per minute) will create some large ice crystals though the majority will be much smaller ice crystals, it is the formation of those large ice crystals that damages the yeast during the freezing process and if the yeast is allowed to begin feeding (plumping up the yeast cells) more of the cells are damaged in the freezing process, so to minimize the damage to the yeast the main focus is to mix and freeze as quickly as possible. Assuming a 10-minute mixing time and a 20-minute yeast lag phase that leaves only about 10-minutes to get the dough processed and into the freezer (actually most lines are designed to process the dough in 15 to 20-minutes so there is a compromise between processing and quality/shelf life of the

dough) additionally remember that the dough doesn't get chilled to a point where the temperature suppresses yeast activity (40F) until the dough has been in the freezer for about 15-minutes (depending upon the size and shape of the dough). This is why there is inevitable damage to the yeast even with commercial freezing processes. It has been determined that about 10% of the yeast is damaged during the freezing process which is responsible for the release of glutathione from the yeast cells, which in turn weakens the dough and explains why we occasionally see some inherent stickiness in frozen dough which now leads us to the addition of oxidation to the dough. Ascorbic acid, azodicarbonamide and some of the newer oxidative enzymes are used in conjunction with strengtheners such as SSL (sodium stearoyl lactylate) and DATEM. This is just the tip of frozen dough iceberg, there is a lot more to it but this should give you an idea of how the ingredients interact and why certain ones are used.

Tom Lehmann/The Dough Doctor  
4800

### **Dough Clinic / Re: Foldable, chewy crust**

By chance, did you happen to take any photographs of the pizza? If not, please tell me as much about it as you can.

Tom Lehmann/The Dough Doctor  
4799

### **Dough Ingredients / Re: Salt and Yeast**

Peter;

Going back a short time ago, I had mentioned in another thread about static freezing of dough, which is nothing more than freezing the dough in a "freezer" (0 to 05F and little to no airflow). As we know, this is quite deleterious to the yeast but all of the results that I got when doing the research on freezing dough indicated that the dough can be frozen in this manner and still perform reasonably well BUT the shelf life is reduced from 21-weeks for blast frozen dough to 10 to 15-days when it is static frozen. I seriously doubt that there is anything that Norma could do short of blast freezing or cryogenic freezing (-65F) to achieve any significant improvement in the quality of her frozen dough. I'm in total agreement with you, if it ain't broke, don't fix it.

The rules for formulating a fresh dough into a frozen dough is to increase the yeast by 50%. This is done for two reasons, 1) it compensates for the damaged yeast cells and 2) it helps to reduce the overall proofing time and improve the oven spring properties of the dough which are lost through weakening of the dough. Increase (maximize) the salt and sugar levels to reduce water activity (Aw) in the dough as a means of further protecting the yeast. Change from oil to shortening and have the shortening at 4% or slightly more to help seal the gas cells in the dough for improved gas retention resulting in better finished volumes (not so important with pizza dough but critical for dough that will be used to make bread and rolls).

Minimize the amount of water added to the dough (% absorption) so as to help in retaining a firmer dough after slackening out, remember that freezing the dough results in it getting softer, some times to the point of being sticky so more water will just compound the issue. Use "additives" as needed to achieve the desired shelf life characteristics. Mix the dough to full gluten development and then just enough more to achieve the necessary dough properties that will allow for uninterrupted high speed processing of the dough. After the forming of the dough into balls, pucks, or moulded loaves get the dough into the freezer as quickly as possible with two objectives 1) reduce the internal dough temperature to 38 to 40F (this will control the yeast activity) and 2) bring the internal dough temperature down to 0

to +10F (this is the lowest temperature that we take the dough down to (economics) and then package and place into a holding freezer at -10 to -5F for a minimum of 24-hours before loading on a freezer transport for distribution. If the dough is cryogenically frozen the process is a little different in that the dough is frozen at -65F (what we call shell freezing) and the internal temperature is between +15 and +20F, the dough is then packaged and placed into a holding freezer (-10 to -5F) for 2-hours after which the internal temperature of the dough is again measured, we're looking for 0 to +5F. If the dough balls have equilibrated to that temperature they will remain in the storage freezer for the mandatory 24-hour period, if the dough balls have a higher core temperature they are given a longer residence time in the cryogenic freezer, if they are below the target temperature the residence time is reduced accordingly (again economics). I might add that the term "anal attentive" is properly and politely used to describe anyone responsible for commercial frozen dough production. Why is this? Because in a frozen dough operation you may have up to 21-weeks of production out there on a limb.....now is not the time to find out that all of the dough is failing after three weeks of storage. In a frozen dough plant it is a life of measuring the quality of each ingredient that goes into making the dough and then religiously maintaining the processing parameters and enforcing those parameters so if a dough falls outside of the parameters it is scrapped or diverted into a different processing area for use in making something else or for use in a special application where shelf life is not the order of the day such as sale or donation to a food bank where the dough will be used rather soon. It's even more fun when you get into studying the distribution of frozen dough, and to put a twist into the cat's tail there is another type of frozen dough which is called "pre-proofed frozen dough". I know, it sounds contrary to everything we've discussed but it can and is being done very successfully, where you ask? Look no further than your local supermarket, frozen pizza section, Schwan's Foods Freschetta Pizza, yep, pre-proofed frozen, but that's another story.

Tom Lehmann/The Dough Doctor

4798

### **Dough Clinic / Re: Foldable, chewy crust**

Lacking any other information a soft, chewy and fold able crust will result when the pizzas are baked right on the deck of a very hot (700 to 850F) oven. This is especially common when higher dough weights are used in making the skins, such as 12 to 13-ounces of dough for a 12-inch crust for a dough loading of 0.106 to 0.115 ounces of dough per square inch of surface area. This translates to 16 to 17.75-ounces of dough for a 14-inch diameter crust. The use of a rolling pin or sheeter will ensure a suitably chewy crust. For a really chewy crust be sure to delete any oil/fat from the dough formulation. Most of the pizzas that I see made this way are sauced edge to edge leaving not much more than a 1/4-inch of exposed edge.

That's about the best I can offer for now.

Tom Lehmann/The Dough Doctor

4797

### **Commercial Ovens / Re: Deck oven advice**

Nat;

Because pizzas are baked using mostly bottom heat the top heat is used mostly to control the bake to the top of the pizza and maybe help a little with moisture control. I would start with bottom heat only and adjust the baking time to achieve a nicely browned bottom crust color, then, if necessary, add top heat to get the top bake you are looking for as well as to adjust the cheese browning if you want to go

in that direction.

As for the deck material, we don't know what your choices are but steel is not usually a good one. Instead opt for a thicker, (composite?) material that has the ability to store lots of latent heat. This will help with both your regular pizzas as well as reheating the slices. As for a hood, here we do not have that as an option, instead it is usually dictated by the codes department of the city. In any case I would highly recommend a hood if for no other reason to limit the amount of heat spilling out into the store.

Tom Lehmann/The Dough Doctor  
4796

### **Shop Talk / Re: Use of screens for larger sized pizzas - pros and cons**

Yang;

I think you will be ahead of the game using screens due to the ease of use and overall convenience offered by the screens, plus since you will be making slices from the whole pizzas it will be much easier for you to get uniformly round shapes using screens as opposed to baking on the oven deck without a screen. The one thing that I must caution you on though is to MAKE SURE YOU SEASON THE SCREENS WELL BEFORE USE, failure to do so will result in a perpetual problem of the dough sticking to the screens during baking. Screens are the cheapest baking platform that I know of so you should be able to get plenty to use in your store. NOTE: The one problem experienced with screens is that they are easily damaged, for this reason be sure to buy a good number of extras, then after you know how many you will need in your operation season at least 10 more screens and set aside as replacements, always make sure you have your replacement screens seasoned before hand, the time to be seasoning screens is not at the last minute when you need them. Like was mentioned in an earlier post, the aluminum blade peels aka oven peels are just the ticket for putting the screened pizzas in the oven and taking them out. As for peel size, I like to use a peel that is about 2-inches narrower than the screen size that I will be working with, it's a lot easier than using a full width peel. As for peel length, I like to size the length of the peel so it is about 2-feet longer than the oven is deep. Remember, it's easy to work with a peel that is too long but dangerous to work with a peel that is too short, and if it is too long and the extra length bothers you it's easy to cut the length of the handle back.

Tom Lehmann/The Dough Doctor  
4795

### **Pizza Toppings / Re: Cooking bulk ground meats**

18 X 26 sheet pan and into the oven to brown, stir/turn once during the cooking process to prevent sticking.

Tom Lehmann/The Dough Doctor  
4794

### **Dough Clinic / Re: Foldable, chewy crust**

If you want to see first hand the impact that oil has on the chewiness of a crust pick up two packages of wheat flour tortillas, one regular and the other fat-free.

Tom Lehmann/The Dough Doctor  
4793

### **Sicilian Style / Re: Thick crust and even cooking at home**

Muttdog;  
What you are proposing (putting sauce on the dough prior to par-baking) I think is

the key to successful par-baking of pizza crusts. The approach that I normally recommend, and take myself, is to apply not more than 1/2 of the sauce prior to par-baking, this helps to keep the top from bubbling if the dough is so minded, and it also goes a long ways to conserving the moisture content of the finished crust, then after baking apply the remainder of the sauce and dress as desired before placing back into the oven for the final bake. If you are so inclined, you can also set the par-baked crusts aside (wrapped in stretch wrap) and stored at room temperature for up to four days and then make a pizza on the spot if friends stop by or if you get a pizza urge.

Tom Lehmann/The Dough Doctor  
4792

### **Dough Ingredients / Re: Caputo Flour 00 question**

Jim;

If I'm wrong on this somebody please jump in and correct me but I think your problem might be in the fact that the flour you like working with has a higher protein content and is made from a variety/varieties of hard wheat where as the flour that you don't like working with has a lower protein content and forms a different (weaker) gluten structure as it is made from a soft wheat (typically better suited to pastry production). Note the soft wheat reference on the bag.

Tom Lehmann/The Dough Doctor  
4791

### **New York Style / Re: Oregano Pre/Post bake**

I think this is a matter of preference. I like to add oregano or basil (I only use the fresh form and seldom, if ever, the dried form) immediately after baking so the latent heat of the pizza releases the bouquet of aroma. On some occasions I will also add a drizzle of EVOO at the same time for the same reason. I never add salt after baking as I feel it interferes with the flavors I'm looking for.

Just my way of doing it I guess.  
Tom Lehmann/The Dough Doctor  
4790

### **Dough Ingredients / Re: Caputo Flour 00 question**

Jim;

Remember too that the age and conditions under which the flour has been stored can impact the taste. I think everyone here will agree that freshly milled flour produces a better flavored crust than flour that has been stored out in the "garage" for 6-months or more.

Tom Lehmann/The Dough Doctor  
4789

### **Dough Ingredients / Re: Caputo Flour 00 question**

Jim;

I can't speak to Caputo flours but U.S. milled flours are known to have a shelf life (that's how long they keep them) of up to a full year after milling. Under what conditions the flour is stored in during that time is anybody's guess. When I used to do routine flour testing we would occasionally find bags of flour submitted by a distributor that were returned to them because of erratic or poor performance. The performance oddity was usually confirmed and more often than not it was traced back to poor storage conditions. I remember in one case, during an unusually hot summer on the east cost, we were able to trace the problem back to storage of the flour in a facility where the temperatures were peaking out at nearly 140F. Even

the boxed cubes of shortening that they had stored in there were melted and the boxes bulged out as a result.

Tom Lehmann/The Dough Doctor  
4788

**[Pizzeria & Restaurant Reviews / Re: This is why I avoid buying LARGE pies.](#)**

Pete;

Careless, slip-shod dressing of the skins and as you can see in the photograph, as the pizza bakes the cheese and toppings move/gravitate towards the center of the pie. In our pizza class we always taught our students to dress the skin so the center was almost devoid of toppings and more toppings were applied out closer to the edge which resulted in a more even/uniform distribution of toppings after the pizza was baked. Now, try to explain that to your local pizzeria.

Tom Lehmann/The Dough Doctor  
4787

**[Dough Ingredients / Re: Caputo Flour 00 question](#)**

Jim;

I'd suggest getting a good, but low cost (\$35.00) electronic scale. Volumetrically portion out each ingredient as you normally would and run the portion over the scale to get a weight in grams. Once you know what all of your specific ingredient weights are you can convert your "recipe" to a "formula" in bakers percent by dividing the weight of each ingredient by the weight of the flour and multiplying by 100. Now you can manipulate the size of your dough, and because you will be WEIGHING each ingredient you will have much enhanced scaling accuracy repeatability when making your dough. Normal errors in volumetric portioning can have a dramatic effect upon how the dough performs when made at different times.

Tom Lehmann/The Dough Doctor  
4786

**[Sauce Ingredients / Re: How I am storing the big 6 lb cans of sauce :\)](#)**

Iceman;

Great idea! I might offer one suggestion though, instead of placing the frozen sauce cupcakes directly into a Zip-Lock bag I would suggest wrapping each one individually in either stretch wrap or use individual food bags. If using stretch wrap pull the wrap tight to the cup cake, and if using food bags be sure to pull the bag snugly to the cup cake to create as little head space in the bag as possible. Within two weeks you will begin to see the effects of freezer burn as moisture is removed from the sauce and deposited on the inside of the Zip-Lock bag. By minimizing any head space around each cup cake you will minimize or nearly eliminate any damage due to freezer burn.

Tom Lehmann/The Dough Doctor  
4785

**[Pizzeria & Restaurant Reviews / Re: This is why I avoid buying LARGE pies.](#)**

More surface area for the topping ingredients to migrate from.

Tom Lehmann/The Dough Doctor  
4784

**[Shop Talk / Re: Use of screens for larger sized pizzas - pros and cons](#)**

Harry;

It sounds like your dough is firm enough to get away with it. It is still a good idea to season new screens "just in case".

Tom Lehmann/The Dough Doctor  
4783

**[General Pizza Making / Re: Chile Verde Pizza - Does this sound good or gross?](#)**

Duke;

I did something similar last year to what you did. Due to an early frost we have an abundance of green tomatoes, more than we could fry and eat, so I made them into almost a gallon of green picante sauce. I used the picante sauce as a substitute for sauce on some of my pizzas, used a blend of mozzarella and white cheddar cheese, then used either chicken or pork for the meat topping, added some black beans, onion and slices of fresh tomato. After the pizza was sliced we added dollops of sour cream to each slice. It made for a nice change from my regular pizzas and I didn't hear any complaints either :).

Tom Lehmann/The Dough Doctor  
4782

**[Chicago Style / Re: Deep dish in WFO?](#)**

Jiraya;

Rather than cooking the sauce to condense it (which will result in a loss of flavor in the finished sauce on the pizza) you have two better options. 1) Blend in some tomato paste, this will increase the solids content of your sauce making it thicker. 2) Add a little fresh crushed or diced garlic and/or onion to the sauce and refrigerate it overnight before using it. The enzymes present in the onion and garlic will catalyze the pectin in the tomato causing it to gel, making for a thicker sauce without any other changes.

Tom Lehmann/The Dough Doctor  
4781

**[Shop Talk / Re: Reversible Sheeter / Doughball Divider/Rounder](#)**

JT;

You're correct about the divider. You might be able to get a dough rounder that will work for you though. Have you contacted AM Manufacturing <[www.ammfg.com](http://www.ammfg.com)> yet about their dough rounder to see if it will work with a low absorption dough such as yours? As for the reversible sheeter, with the right one I think it will work but it will take up a lot more room (bigger foot print), about 2.5 feet X 6-feet, and it will probably be slower too as the dough will still need to be formed in two passes through the sheeting rolls with a 90-degree turn between each pass. I'm guessing that you will find bench top sheeters faster and they don't require as much space either. If your dough wasn't for a thin crispy pizza and up around 60% absorption it would be a whole different story, but depending upon the actual temperature of the dough at the time of sheeting, those 40% absorption doughs can be pretty tough to sheet on equipment made for higher absorption dough.

If you are planning to attend Pizza Expo this winter this would be a good challenge to bring with you (shoot some video of your dough being rounded and sheeted to bring with you) to see if you can find an equipment supplier that might be able to help you within your space limitations.

Tom Lehmann/The Dough Doctor  
4780

**[Pizza Toppings / Re: How to PREVENT pepperoni from "cupping"?](#)**

Typically the thicker the slice, the less cupping you will get.  
Tom Lehmann/The Dough Doctor

4779

**[Newbie Topics / Re: PIZZA OVEN PELLET AND THERMOMETER](#)**

Get yourself an infrared thermometer with a sufficiently high temperature range to measure the deck temperature and identify any hot spots on the deck.

Tom Lehmann/The Dough Doctor

4778

**[New York Style / Re: Oregano Pre/Post bake](#)**

Even more than tomato? :)

Tom Lehmann/The Dough Doctor

4777

**[Shop Talk / Re: Reversible Sheeter / Doughball Divider/Rounder](#)**

Fazzari;

How do you manage the scrap dough when you die cut the skins?

We found the best way for us to do it is to collect it in a bucket in the cooler under the prep table (idea was to keep the dough cold to control fermentation) and then we added 10-pounds back to each batch of fresh dough that we made (50# flour weight doughs). Just curious how you are managing it?

Tom Lehmann/The Dough Doctor

4776

**[Newbie Topics / Re: Pizza Oven: Pellets and thermometer?](#)**

Darticus;

Yes, just play it over the hearth. You will be able to see any hot spots too.

Tom Lehmann/The Dough Doctor

4775

**[Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust](#)**

A couple of things to look at here, the IDY level at 0.5% is on the high side for the type of pizza that you are making, I would suggest reducing it to around 0.25% or a little lower. Then use a thermometer to check the dough temperature after mixing (it should be around 80F) and again before you begin opening the dough balls into skins (it should be 50 to 55F). Lastly, there is the dough docker, there are dough dockers and there are dough dockers. In my opinion there is only one type that works as a docker should, and that is the one with plastic docking wheels and flat tipped docking pins (not metal pins). A picture of the docker would help as would a picture of the pizza.

Tom Lehmann/The Dough Doctor

4774

**[Shop Talk / Re: Cooked pizza display cabinet \(pizza sold by slice\) - heated or not?](#)**

Nat;

They're electric resistance heaters (is there any other kind?) Those that add moisture in the cabinet also have a water reservoir with a "cal rod" situated in the water to heat in causing an increased rate of evaporation thus humidifying the air.

Tom Lehmann/The Dough Doctor

4773

**[Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust](#)**

Thanks for the pics. Those bubbles are not as bad as I thought you were describing

and should be controlled with a decent dough docker. As to the cause of those bubbles, that's the type of bubbles that we normally see when the dough is too cold going into the oven. Try letting the dough balls sit out for an additional 30-minutes before opening into skins and let us know what you find.

Great pics by the way! :)

Tom Lehmann/The Dough Doctor

4772

### **Dough Clinic / Re: Yeast + Baking powder**

Harry;

Regular baking powder as we know it does not work well in this type of application since the acids formed during fermentation will immediately react with the soda portion of the baking powder leaving the acid component without soda to react with resulting in acidification of the dough as well as the development of an after taste resulting from the type of leavening acid used. For example, if the acid is sodium acid pyrophosphate the after taste will be something like that of a cake donut (yes, the leavening system is responsible for the characteristic flavor of a cake donut) but if sodium aluminum phosphate is used the resulting flavor is much like that which we normally associate with a baking powder biscuit (the reason being that commercially made baking powder biscuits are almost always made using a SALP based leavening system).

To get around most, but not all of this problem, we used a fat encapsulated chemical leavening system when combining it with any kind of a yeast leavened dough. The preferred chemical leavening system is comprised of SALP and soda with 100% fat encapsulation. This means that 1-pound of the chemical leavening is encapsulated with 1-pound of fat. The fat protects the chemical leavening from any kind of pre-reaction due to exposure to moisture or acid but it melts off during baking to allow the chemical leavening to fully react during the baking process (hence the term bake to rise or oven rising). Pizza is not the first place that this was used, it has been used in making yeast raised donuts for over 50-years, significantly predating its use in pizza as we know it.

Tom Lehmann/The Dough Doctor

4771

### **Dough Ingredients / Re: General Mills Gold Medal Flour Recall**

Peter;

It has been said that if it wasn't for the invention of the oven and fire, bakers would have poisoned the worlds population hundreds of years ago.

If you research the grain supply line from the field to the flour mill you will be absolutely amazed that the problem isn't bigger than it is. Add to that the fact that wheat is tempered prior to milling and you will be doubly amazed. Yes, wheat goes through a cleaning process (to remove rocks, wood, chaff, nails, pieces of wire, etc.) but that's the end of it.

The fact that we don't have more problems than we do is testimony to the care taken by the flour millers.

Tom Lehmann/The Dough Doctor

4770

### **Dough Clinic / Re: Yeast + Baking powder**

Harry;

Baking SODA and Baking Powder are two very different things. Baking soda is just bicarbonate of soda/sodium bicarbonate, an alkali, it must have an acid to react with in order to produce carbon dioxide. Baking powder, on the other hand is a

balanced blend of a food grade acid aka leavening acid and sufficient soda to fully neutralize the acid being used. If you want to see a good example of just soda look no further than soda crackers. The flavor is different from that of fermentation in that a portion of the acids formed during fermentation have been neutralized by the soda, but since the reaction is very fast what you end up with is a bubbly/blistered appearing surface.

Depending upon a number of things, such as the type of leavening acid used, the particle size of both the acid and the soda and if it is encapsulated or not are all tools used by formulators to regulate the speed of the leavening reaction from very fast to very slow and also when the release of leavening gas will occur during the baking process, and like I said previously, the specific leavening acid used can also impact the finished flavor of the product in which it's used, for example, sodium aluminum phosphate = biscuit like; sodium acid pyrophosphate = cake donut like; glutano delta lactone (GDL) = a sweet taste. It is easy to see why someone might say that the pizza crusts made by Norma containing both yeast and chemical leavening had a "pancake" like taste. Pancakes are chemically leavened and if Norma was using a baking powder containing the same leavening acid as the pancakes that the person was used to eating they would immediately pick up on the similarity in flavor. I might also add that baking powders are classified into two types, single action containing soda and a single leavening acid as well as double acting which is made with soda and typically two different leavening acids (mono calcium phosphate (MCP) and sodium acid pyro phosphate (SAPP) are commonly used in double acting baking powders (MCP is very fast acting where as SAPP, depending upon its number can be anything from pretty fast to quite slow. The most common form of SAPP used in making baking powder is SAPP #36 aka donut or BP pyro.

Tom Lehmann/The Dough Doctor  
4769

### [\*\*Shop Talk / Re: Reversible Sheeter / Doughball Divider/Rounder\*\*](#)

Jt77;

Have you looked at the Dutches Bakery Equipment Company or Dough X Press dough divider and rounder? Wonderfully simple to operate, accurate and works well with most doughs.

Tom Lehmann/The Dough Doctor  
4768

### [\*\*Dough Clinic / Re: Newbie needs all the good ingredient\*\*](#)

Ron;

What kind/type of pizza do you want to make?

How do you plan to mix the dough?

A popular type of yeast is instant dry yeast (IDY). It is added dry to the flour, no need to activate it.

A good flour to get started with is Pillsbury Bread Flour, available at just about any supermarket.

For oil just use olive oil, forget the high priced stuff, the cheap stuff works fine in the dough.

Store bought frozen dough will work OK for you to practice with but eventually you will want to make your own dough.

Forget the spaghetti sauce, save it for the pasta, a simple pizza sauce can be made by simply draining a can of plum tomatoes and tearing them apart by hand and applying to the skin. If you want to have a smooth sauce get a can of good quality tomato sauce or crushed tomato and add some chopped fresh basil leaves, that's

it....do not cook it as it will be cooked on the pizza. As you progress you can experiment with building a sauce specific to your tastes.

If you are looking to make a basic thin crust pizza here is a typical dough formula:

Flour 100%

Salt 1.75%

Sugar 1%

Olive oil 2%

IDY 0.375%

Water 62% (variable)

I believe Peter has the conversion table for changing from percent to actual weights (buy an electronic scale, about \$35.00 off of Amazon), Peter may also have my dough management procedure that covers everything you need to do with the dough between mixing and baking.

Be patient, experiment, ask questions, and enjoy your own hand crafted pizzas.

Tom Lehmann/The Dough Doctor

4767

### **Dough Clinic / Re: Yeast + Baking powder**

Yes, MCP is also a leavening acid, it is pretty fast acting too. As for self rising flours all of those that I've seen are chemically leavened. But it would be possible to make a "self rising" flour I suppose using P-ADY (protected active dry yeast) which would be incorporated directly into the flour, or you could also use a fat encapsulated IDY for the same effect BUT in that case I might have reservations as to how well it would perform if not mixed by machine.

Encapsulation is the act of coating the particles of leavening material both acid and soda with a type of fat that will remain a solid at room and somewhat elevated temperature but have a very sharp "slip point" meaning that it will melt off very fast when the temperature is high enough to melt the fat (normally around 120F).

You are correct in that the soda can be balanced against both the added acid (leavening acid) and the acids formed during fermentation to have a fully or nearly fully neutralized system by the time the internal temperature reaches 140 to 145F. This is a bit of a challenge though as anything which will impact the rate of fermentation can/will impact the amount of acid produced by the yeast (dough temperature, fermentation time, fermentation temperature) would be the main ones to be controlled.

Regarding chemically leavened pizza crusts when I was a kid we had Chef Boyardee home made pizzas. The CL flour was supplied so all you had to do was to add water, the sauce and cheese were also supplied. At the time I guess it was pretty good. The DiGiorno pizzas are all what we refer to as combination leavened (both yeast and chemical leavening), and if you have ever had any of those refrigerated "tube" dough products, such as biscuits, rolled up pizza dough, croissants, etc. they are all 100% chemically leavened and that leavening system is highly tuned to give enough initial dough expansion for the dough to completely fill the tube but not blow out of the tube and then have sufficient slow acting (pyro) type leavening to give the desired product leavening in the oven.

Tom Lehmann/The Dough Doctor

4766

### **Sauce Ingredients / Re: Simple Pizza Sauce**

My approach has always been to use garden fresh tomatoes or canned stewed whole tomatoes. Thin slice the fresh tomatoes and place on a clean towel to absorb

any moisture. If using the canned variety drain well and tear apart into chunks. Lightly oil the surface of the skin with EVOO, add crushed or sliced garlic, fresh (green leaf) basil and or oregano if you are so inclined, but I just use basil, and then add the tomato. Don't try to get full coverage, just something that looks good, then add the cheese and dress as desired. It don't get no simpler than that :)

Tom Lehmann/ The Dough Doctor

4765

### **Dough Clinic / Re: Newbie needs all the good ingredient**

Peter/Ron;

For starters I would suggest using 12-ounces for a 12" diameter pizza crust. This should make opening the dough into a skin easier and then as you gain expertise in opening the dough into a skin you can begin reducing the dough weight as an experiment to see if you like the crusts made from the lighter dough balls more. When you're doing this reduce the dough ball weight in 1-ounce increments.

Tom Lehmann/The Dough Doctor

4764

### **Dough Clinic / Re: Newbie needs all the good ingredient**

Darticus;

The "plum" tomato description is just a generic type of whole plum type tomato, if you are looking at using San Marzano tomatoes by all means use them, or at least try them as they are typically more flavorful and consistent than the generic "plum" tomatoes.

Tom Lehmann/The Dough Doctor

4763

### **Dough Clinic / Re: Newbie needs all the good ingredient**

Darticus;

When it comes to cheese, Mozzarella is the "gold standard" but keep in mind that Mozzarella cheese is pretty bland in flavor so if you want a flavorful cheese look at using a cheese blend such as 75% Mozzarella and 25% Parmesan cheese. There are any number of different cheese types that you can blend with the Mozzarella to develop a unique or more flavorful cheese topping. There has recently been some discussion here on cheese blends that you might want to go back and review as there were some very good ideas offered.

As for my own personal favorite Mozzarella cheese: Grande Whole Milk Mozzarella Cheese is my favorite for both texture and flavor BUT you may find it difficult to obtain so in that case just look around and try some of the cheese that is available to you locally to see what you like the most.

The main ways to get cheese are diced, shredded, and block. Fresh Mozzarella is available in a brine pack in round balls, usually either 1-ounce or 4-ounces in weight. I have a disdain for diced cheese as it has what I think is a poor appearance on the finished pizza so I prefer not to use it. Shredded cheese is the standard go to form of cheese and is very popular, plus it has a good appearance on the baked pizza. If you add Parmesan cheese as a blending cheese my suggestion is to buy it already shredded or shred it yourself. If you buy the cheese in block form you can shred it yourself or simply do it New York style and cut it into slices, tear the slices into pieces and place over the top of the pizza (gives a great appearance). If you use the fresh Mozzarella in brine pack be sure to drain the cheese balls and dry with a clean towel then peel them like an orange placing the pieces over the pie in a random fashion. Lots of things to experiment with to see what YOU like the best.

Tom Lehmann/The Dough Doctor  
4762

## [\*\*Dough Clinic / Re: Converting a dough recipe to bakers percentages\*\*](#)

Brewer;

Because there are differences in the way different people portion the ingredients here is how I like to do it.

Into individual containers portion out each ingredient 3 times. When you have done this for all of the ingredients begin weighing the ingredients on a grams scale (0.1-gram accuracy recommended), then subtract the tare weight of the container from each ingredient, now divide that weight by 3. This will give you the average weight of a single portion for each ingredient. Still with me? Now to convert into bakers percent divide the weight of each ingredient by the weight of the flour and multiply by 100. Flour will ALWAYS be 100%. Congratulations, you now have your dough in a formulation form based on bakers percent. Peter has a program in which you can just add any new flour weight and the rest of the ingredients will be shown at the correct weight for that new flour weight. Or you can do it manually using your calculator: Enter the new flour weight X ingredient percent (press the "%" key) and read the ingredient weight in the display window. NOTE: The ingredient weights will be in the same weight measures that the flour weight was shown in (grams, kilograms, ounces, pounds, tons, etc.).

Tom Lehmann/The Dough Doctor  
4761

## [\*\*Newbie Topics / Re: NEED SAUCE FLOUR AND YEAST HELP!\*\*](#)

Plum tomatoes are a type of tomato that is firm and meaty and usually has a pretty good flavor if vine ripened so they are one of my favorites when going after fresh tomatoes to slice and use as a "sauce". This year we had an excellent tomato crop in our home garden and we discovered a variety "Amelia" that grows to baseball size and is as meaty as any plum tomato and best of all it has a superb flavor when fully vine ripened. Needless to say that a good number of these found their way onto my pizzas during the summer. Everyone has different tastes, try different type of tomato to see what you like. I once had a fellow working for me as a technician who thought ketchup, of all things, was a pretty decent pizza sauce.....go figure!! :(

Tom Lehmann/The Dough Doctor  
4760

## [\*\*Chitchat / Re: Garden 2016.\*\*](#)

We are just now cleaning up the last remnants of our summer garden. Last Monday we harvested the last of our basil and made it into pesto, there are still some cherry and chocolate tomatoes hanging on due to our continued warm weather (they make a nice snack) and there are still a couple of small bell peppers which we will allow to remain on the plants until threat of frost (whenever that might be???). I've got a watermelon that is ready to harvest (the last one). Butternut squash is in the basement, carrots and beets are all in, with the beets all making their way into the pickling jars (we love pickled beets). This was a fantastic year for cucumbers, everybody had a bumper crop and we couldn't give them away so we made a BUNCH of bread & butter pickles...really love those things! We're still waiting for some cooler temps before harvesting the late potato crop as well as the sweet potatoes, and as soon as we get a good killing frost we will begin making our annual supply of horse radish. Freezers are almost full, just enough room to fit in a few deer and we're good to go through the winter.

Tom Lehmann/The Dough Doctor  
4759

**Dough Clinic / Re: Yeast + Baking powder**

Norma;

What you're looking at there is a S.O.P. bake to rise/oven rising type of pizza.

Tom Lehmann/The Dough Doctor  
4758

**Newbie Topics / Re: NEED SAUCE FLOUR AND YEAST HELP!**

Ron;

Use a wood peel. Use peel dust. I make mine from equal parts of regular flour, semolina flour and fine corn meal, but if you ask what 20 different people use for peel dust you will get 20 different answers so this is something again that you might want to experiment with. Lastly don't leave the skin on the peel any longer than absolutely necessary and be sure to shake the peel occasionally to make sure the skin isn't adhering to the peel, shaking also helps to keep the skin from adhering too.

Tom Lehmann/The Dough Doctor  
4757

**Dough Clinic / Re: New guy looking for recipe correction for different pan size**

You missed providing the most important/critical, piece of information: How much dough are you presently using in your 8X 10" pan?

Tom Lehmann/The Dough Doctor  
4756

**Chicago Style / Re: Deep dish in WFO?**

Jiraya;

You sure can use fresh garlic or onion instead of the powdered form. My recommendation for the fresh is to chop it very fine for addition to the sauce, this will allow for maximum surface area exposure of the onion/garlic to the tomato portion of your sauce.

Tom Lehmann/The Dough Doctor  
4755

**Sauce Ingredients / Re: Simple Pizza Sauce**

If your sauce is too thin you might be using the wrong tomato products in your sauce, maybe try incorporating a higher solids content tomato produce like a small amount of paste or better yet, I am assuming that you are using canned tomato products so you might try using whole tomatoes (drained well) and then tear them apart and lay on an adsorbent towel to remove additional juice, then puree this and use it in your sauce. Or, put some finely chopped onion and/or garlic in the sauce and refrigerate overnight before use. The enzymes in the onion/garlic will catalyze the pectins in the tomato causing the sauce to thicken.

Tom Lehmann/The Dough Doctor  
4754

**Shop Talk / Re: Reversible Sheeter / Doughball Divider/Rounder**

John;

I'm in total agreement with the approach you have proposed, it is the exact same method used by most of the wholesale pizza manufacturers using a sheet and die

cut line. The only issue I have with this process is that you have the scrap (web) to contend with. While it can be re-incorporated back into the dough it does represent self imposed variability into the dough. The way I like to explain it is as follows: Dough #1 is a virgin dough (no scrap); Dough #2 contains let's say 25% of dough #1; Dough #3 contains 25% of dough #2 (which is comprised of dough #1 also). This continues throughout the day. In a wholesale situation the variability introduced by this method is difficult to deal with it a retail pizzeria setting it might be annoying. This is the reason why so many high volume production lines have gone to working with individual dough balls as opposed to dealing with the inconsistencies introduced by using a sheet and die cut method of forming.

Tom Lehmann/The Dough Doctor  
4753

### [\*\*Detroit Style / Re: Detroit Style pizza problems...\*\*](#)

Sounds like too much bottom heat too soon in the baking cycle.  
Tom Lehmann/The Dough Doctor  
4752

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Baking powder will contribute to oven spring and thickness of the dough but it does not contribute to the development of bubbles/holes in the crust or crumb structure. That part is a function the yeast. We have made crusts with increasing amounts of B.P. with no impact upon the crumb structure and when you get to 100% chemically leavened the crumb structure is biscuit like at very best but more often it is almost cake like. We have experimented with all different types of chemical leavening as well as types (single acting and double acting) as well as speed of reaction such as using SAPP 16 through a SAPP 42, we even tried straight MCP and soda all to no avail. It works in batter systems but not in dough systems. It might work to improve the crust porosity in some of the very soft doughs, like those made with absorption in the 70% range and above, we did not test it in doughs above 65% when we did the work. Note: We did test different chemical leavening systems in dough that was developed specifically for hot pressing and we found that you had to CAREFULLY balance press temperature, dwell time and type of chemical leavening. The heat of the heated press head will trigger the chemical leavening during the time the dough is under the press head (dwell time) which leads to a LOUD popping and shredding of the dough, Oops!

Tom Lehmann/The Dough Doctor  
4751

### [\*\*Dough Clinic / Re: New guy looking for recipe correction for different pan size\*\*](#)

Your 8 X 10 pan has 80-square inches of surface area. The dough weight is 340.21-grams so, 340.21 divided by 80 = 4.25-grams of dough per square inch. Your new pan size is 12 X 18 or 216-square inches. Now multiply 4.25 X 216 = 918-grams. Yep, that's how it's done. You're on the path to success. All things equal, your baking time should remain essentially unchanged. Calculate your sauce and cheese amounts in the same way too.

Tom Lehmann/The Dough Doctor  
4750

### [\*\*General Pizza Making / Re: How i get always the perfect Temperature for my dough\*\*](#)

Cool! Where there's a will, there's a way! :)

Tom Lehmann/The Dough Doctor  
4749

**Dough Clinic / Re: Yeast + Baking powder**

Ryan;  
Yes, it does increase the propensity for surface bubbles.  
Tom Lehmann/The Dough Doctor  
4748

**Dough Clinic / Re: Yeast + Baking powder**

Norma;  
Try to find out what the brand and type of baking powder used was as there are different types on the market. For example, Calumet brand, if I remember correctly, is a single acting (slow acting) baking powder based on soda and SALP (sodium aluminum phosphate). While others are double acting and usually based on soda plus SAPP (sodium acid pyro-phosphate) and MCP (mono-calcium phosphate). The Calumet type would have some functionality in a pizza type dough while the double acting type would have little to no function as most of the reaction occurs too fast (like in the mixing bowl during the first two minutes).

Tom Lehmann/The Dough Doctor  
4747

**Dough Clinic / Re: Yeast + Baking powder**

Shoot me down for being too technical but regular white flour, bread flour, pizza flour with baking powder added to it is not the same as "self rising flour". Self rising flour is a horse of a different color. It is commercially made using a soft wheat derived pastry type flour as opposed to flours made from hard wheat varieties so there is a significant difference in the amount of gluten forming protein as well as a difference in the way those proteins function. The designed intended purpose of self rising flour is for some types of sweet breads (more like sweet dough than bread), biscuits and pastries to include cake and cookies. I say this so we don't lead anyone astray when we might add baking powder to a different type of flour and call it self rising flour and then someone goes out and buys a bag of the "real McCoy" self rising flour and gets different results.

Tom Lehmann/The Dough Doctor  
4746

**New York Style / Re: Two weeks of progress, but lots of questions...**

Additionally, from the looks of the top of the pizza it doesn't look like it is getting sufficient top heat for a decent bake. The bottom of the pizza looks OK but the top is really light. You are also baking your pizza on a screen which is not highly conducive to getting a firm bottom crust plus the screen is bright colored as opposed to being well seasoned which is another strike against the bottom crust.

Tom Lehmann/The Dough Doctor  
4745

**Commercial Ovens / Re: counter top oven**

U.L. approved?  
Tom Lehmann/The Dough Doctor  
4744

**Dough Ingredients / Re: GM All Trumps - other uses?**

All Trumps is also a very good flour for making different type of breads, French,

Vienna, Rye, and wheat. If you don't already make bread give it a try, it's actually easier to make than pizza. Think of your pizza dough scaled and balled, allow it to rise for about 90-minutes at room temperature, cut a cross-hatch "#" pattern on the top of the ball and bake at 400 to 425F for roughly 20 to 25-minutes.

Flour: 100%

Salt: 2%

Butter/Margarine: 2%

Sugar: 4%

IDY: 0.75%

Water: 60% (variable)

Brush with melted butter as soon as it comes out of the oven, place on a rack to cool and cover with a towel to prevent the crust from cracking.

Enjoy!

Tom Lehmann/The Dough Doctor

4743

### **Commercial Ovens / Re: counter top oven**

220V single phase 60 amp means you will need to have a dedicated line running to the oven like you would have running to an electric stove/range. Just be sure you know if you have the capacity in your circuit breaker box and the cost to run the line to where you want it.

Tom Lehmann/The Dough Doctor

4742

### **Dough Clinic / Re: Beginner Pizza experience - Questions with Pictures**

Your dough appears to be significantly under absorbed (it is in dire need of more water), so the first thing I would do is to increase the dough absorption from 50% to 60%. 250 X 60 (press the "%" key) and read 150-grams of water. The second thing I would suggest is adding 2% oil to the dough. The third thing I would suggest is kneading the dough for not more than maybe 5-minutes. You just want to knead it until the dough begins to look smooth, you DO NOT WANT TO TRY TO DEVELOP THE GLUTEN as biochemical gluten development will take care of that chore for you during the 24 to 48-hour cold fermentation period. You are absolutely correct about the difference in flavor in the crust between a same day dough and a 24-hour cold fermented dough. The 24-hour cold fermented dough will always produce a better flavored crust and as an added bonus the dough should open into a skin more easily. I mentioned 48-hours cold fermentation time above as you should also look at allowing the dough to cold ferment for 48-hours in addition to the 24-hours that you are presently using. I think you might be pleased with what you find after 48-hours of cold fermentation time.

As for opening the dough, you are correct in allowing the dough to warm slightly after the cold fermentation period. You only need to allow the dough to warm to 50F/10C before opening it into a skin. BUT you SHOULD NOT form the dough back into a ball after the cold fermentation period, instead, just turn the dough out of the oiled container allowing it to drop onto a floured surface or a bowl of flour, then begin the opening/forming procedure. If you want to have a flat profile to the finished crust I suggest using a rolling pin or pie/pastry pin to pin the dough out to size. Done correctly you will only partially degas the dough (remember to NEVER allow the pin to roll off of the edge of the dough) once the dough is pinned out to size you can pick it up and transfer it to your baking platform, dress it and transfer it into the oven for baking.

You also asked about adding oil to the dough formula. I think oil has some great advantages, it helps to improve the flavor of the finished crust, it lubricates the

dough for improved expansion properties (oven spring) as well as improving the ability of the dough to retain gas for leavening. Many will also say that it improves the tenderness of the crust as well as the overall acceptance of the crust (people like things that contain fat).

I hope this has answered your questions.

Tom Lehmann/The Dough Doctor

4741

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

Let's start with a total step by step review of your mixing procedure as well as your entire dough management process.

Tom Lehmann/The Dough Doctor

4740

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

Your procedure has a lot of merit to it but I really think it is exceedingly long and complex in view of the mixer that you have. My first suggestion is, can you get a reverse spiral dough arm for it? This will make life a lot easier for you as the dough doesn't climb up on a reverse spiral dough arm.

With #5, you can whisk/whip it for hours and the distribution of the oil in the water will not change....in my opinion this is just a waste of time and an extra procedure. On #6 you mention adding the salt to the mixing bowl but you also show it being added in step #5.

In step #8 you should be able to put the yeast suspension right into the bowl in step #6. While we don't normally recommend allowing the yeast and salt/sugar to come into direct contact with each other with all of the dough water in the bowl to dilute things it will not pose a problem if you don't forget about the dough and let it set for 30-minutes or more. Also, by incorporating the yeast in this manner you will get better/more thorough distribution of the yeast throughout the dough.

Your approach to allowing the dough to rest and hydrate is a sound one for what you are trying to accomplish.

The #3 speed mixing in #13 is actually doing the bulk of the gluten development for you, this is why you see improved dough strength after mixing for the 2-minutes in speed #3. At this point the dough probably has a smoother, more satiny appearance too?

Steps #16 and #17 are really not giving you much gluten development, I think what is happening is that the dough is getting more of a kneading than a mixing. This is a very gentle development of the gluten and because of the stretching action in the bowl the dough is exposed to more air (oxygen) which has a strengthening effect upon the gluten. This is why it is impossible to mix a dough to breakdown stage by kneading or low speed mixing. A lot of pizzerias do all of their mixing at low speed (even with 60 and 80-quart mixers), this is OK but mixers are a lot like light bulbs, they have a projected usable life, and when that life comes to an end the pizzeria is without a mixer and a \$1,000.00 repair bill is considered pretty cheap. For this reason we encourage them to use #2 speed which accomplishes the desired level of gluten development in less than half of the time it would take in #1 speed.

In #19 I would not call that kneading, it is just pulling the dough together into a ball shape (aka balling or rounding the dough). Some pizzerias actually do it that way. It'll kill ya when you need to do 80 or 90 dough balls so we encourage table rounding of the dough balls in the pizzerias.

Steps #23 and #24 are great, if you don't already do it, I'd suggest lightly oiling the containers as well as the dough ball(s).

Overall, what you are doing is just fine (recommendations might make it a bit easier), the process allows for complete hydration of the flour and you are giving your mixer a rest periodically during the mixing process which allows it to cool off a bit BUT on the other hand, all that starting and stopping isn't good for the mixer either so it's probably a toss up on that one, and you are giving the dough just the right amount of gluten development to hold its shape and retain gas while allowing biochemical gluten development to do the rest for you....that's what dough mixing is all about.

I might also add that using an autolyse consisting of around 75% of the flour might accomplish a lot of the same thing. It brings up an interesting question/experiment, what would happen if you made a 75% autolyse (75% of the flour and all of the water, no other ingredients) allow this to hydrate for maybe 30-minutes, then add the salt, sugar, yeast suspension, and remainder of the flour, mix for 2-minutes at low speed or until the flour is well incorporated, then add the oil and mix at low speed for 2-minutes then at 3rd. speed for 5-minutes (adjust accordingly to what you see with the egg test), when the dough doesn't tear it's done mixing. It would be interesting to see how this compares to your regular procedure.

I know, more pizza to eat...what a drag! :)

Tom Lehmann/The Dough Doctor

4739

### [\*\*Sauce Ingredients / Re: Simple Pizza Sauce\*\*](#)

Jsaras;

You're "spot-on"! That's why we have herb infused oils rather than herb infused water. The water just doesn't retain the aromas. When I was a kid we were always admonished to "KEEP THE BUTTER DISH COVERED" Yes, there really were such things. The reason being that back in those days we didn't have all the compartments in the refrigerator (prior to that we had an "ice box") ditto, so if the butter wasn't covered it would pick up any other flavors in the fridge....not what Mom wanted her butter to taste like.

Tom Lehmann/The Dough Doctor

4738

### [\*\*Dough Clinic / Re: Gluten: Strength - Development - Arrangement\*\*](#)

Roy;

Actually "gluten development" has very little, if anything to do with the tenderness or toughness of the way the pizza crust eats. It does affect it but only in an indirect manner. Gluten development helps to retain gas which makes for a lighter crust with greater porosity which in turn bakes out better which in turn makes for a crispier finished crust. The problem is in the way the gluten is developed, when developed through machine mixing the gluten is very tough and elastic making the dough difficult to open into a skin but when the gluten is developed biochemically the same gluten is very soft and extensible allowing for much easier opening of the dough into skins. You can readily see this if you try to open your dough after mixing, or at least take a piece of it and try to open it in your fingers (window test) and then take a piece of the same dough ball after 24-hours cold fermentation and being allowed to temper back to 50F, now you will find that the dough has great gluten development and is very extensible, that's why if you turn your dough balls out of the container onto a floured surface you can immediately begin to open the dough ball into a skin with little resistance due to elasticity. In our pizza class we used to demonstrate this by challenging the students to open a dough ball soon

after mixing....it was impossible. Then on the following day we tempered the same dough balls back to 50F and had them open it into skins....what a difference! To show how strong the gluten was I had three or four volunteers form a circle, then I partially opened a dough ball and gave it to the volunteers to work out between themselves, each pulling and stretching the dough simultaneously to see how big they could get it before it tore. They could usually open a 12-ounce dough ball up to 30 or more inches without any problem....kinda reminded me of the old German strudel makers at work.

Tom Lehmann/The Dough Doctor  
4737

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

Based on my years of research and testing pizza doughs I have long ago come to the conclusion that when machine mixing a dough the best indicator of sufficient mixing is when the dough makes the transformation in the bowl from a rough, ragged, curdled appearance to a smooth, satiny appearance. I always qualify this by stating that you want to mix the dough until the dough just develops these visual characteristics. More mixing generally leads to the development of a more bread like crumb structure in the finished crust. The reason for this is due to an overall weaker gluten structure after the fermentation period.

Tom Lehmann/The Dough Doctor  
4736

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Steve;

Absolutely! What a lot of people don't understand about mixing is why we do it in the first place...allow me to explain.

We mix a dough to develop the desired gluten structure for both support and gas retention. We can develop all of the gluten through mechanical mixing as we do in commercial bread production where short fermentation times are employed so there is not as much of an opportunity for biochemical gluten development....the gluten development has to come from somewhere, so in this case we get it at the mixer. In bread production a fine, close knit crumb structure is desirable so optimum gluten development is important. So why don't we just mix a pizza dough more? For several reasons, 1) It is hard on the mixer. 2) It doesn't allow for the lengthy controlled fermentation employed in pizza production which we use to develop flavor in the finished crust. Artisan breads are also made in a similar manner to pizza. Is dough mixing as critical in making pizza as it is in making breads? No, because the gluten structure doesn't need to support as much mass as a bread dough and it is not expanded as much either, plus if a dough is under mixed we get a more open, porous crumb structure (not desirable in commercial bread but very desirable in pizza crust) so there is more fear of over mixing a pizza dough if these are the desired crumb structure characteristics (note that you can only over mix a dough using a mixer with a sufficiently high mixing speed). Can you over develop the gluten using biochemical gluten development? No, but why? Because when the gluten is developed biochemically it will reach a point of full development but if allowed to ferment longer the effects of fermentation will take their toll on the proteins by degrading them (acids and protease enzymes) so after full gluten development the proteins themselves are destroyed. In mechanical mixing the proteins are not "destroyed" with over mixing, they are disassociated to some extent but the addition of oxidation (remember the fatigue dough mixing method discussed in an earlier post?) or an oxidizing ingredient such as ascorbic

acid, ADA, or bromate will bring the protein chains back together again strengthening the dough. In the research cited you will notice that their doughs contained both ascorbic acid and potassium bromate (both oxidants) so when the dough is over mixed they will contribute greatly to the oxygen from the incorporated air in repairing those broken gluten bonds making the dough look and perform more like an under mixed dough. This cannot happen with an over fermented dough since the gluten forming proteins (gliadin and glutenin) have been denatured (no longer exist as protein) and cannot be recovered or strengthened. This is why I am not an advocate of using proteolytic enzymes to reduce mixing time, they hydrolize/destroy the protein so if dough temps get out of hand, or fermentation time is too long the dough can turn to soup and there is nothing that can be done to salvage it or any part of it.

Now, we have all heard the advice given, if your dough balls are over fermented and collapse you might be able to recover the dough by re-rounding it. This is absolutely true but only if the dough is just a little over fermented. The re-rounding process is something like a kneading process (slow speed mixing), it also incorporates air into the dough all of which will help to strengthen any remaining undamaged protein allowing the dough to be salvaged.

Tom Lehmann/The Dough Doctor  
4735

### [\*\*New Forum Members / Re: Pizza Recipe\*\*](#)

Members here have done a lot of reverse engineering of different types of pizzas, when you say "restaurant quality pizzas" do you have any restaurant. restaurant chain or type of pizza in mind?

Tom Lehmann/The Dough Doctor  
4734

### [\*\*Dough Clinic / Re: Beginner Pizza experience - Questions with Pictures\*\*](#)

GLP;

Yes, DO NOT re-ball the dough after the fermentation process, just turn it out of the bowl onto a floured surface, make sure the dough ball is well floured and begin opening it into a skin. Most people will use olive oil in the dough as well as use it to coat the dough ball and the inside of the bowl (to help prevent the dough ball from sticking in the bowl). Don't worry about its heat resistance it is not a problem. As for the sauce, most prefer no to pre-cook their sauce as it detracts from the final flavor of the sauce on the pizza. You know how good the sauce smells when you're cooking it? Those aromas are lost forever as is a part of the overall flavor profile, keep them in the sauce by not pre-cooking it and allow them to become a part of the aroma and flavor of your pizza.

Tom Lehmann/The Dough Doctor  
4733

### [\*\*Dough Clinic / Re: Gluten: Strength - Development - Arrangement\*\*](#)

Steve;

That's what low speed mixing does. The way we were taught was to think of the proteins as a coil (like a coiled spring), mixing uncoils the proteins into strands/sheets and allows them to be stretched (extensibility) when the dough is mixed to full development or over mixed the coils are relaxed, then when continued to be mixed at low speed (like a kneading action) oxygen is introduced into the dough which causes the coils to strengthen and re-coil once again taking on all of the appearances and properties of an under mixed dough. It should be noted that the mixer used in the study referenced was a GRL Mixer. This type of mixer is also

known as a pin type mixer with two fixed vertical pins in the bottom of the bowl and two forks each with two vertical pins rotating around each of the pins which results in a lot of pulling and stretching of the dough during mixing (designed to emulate what happens in a commercial horizontal bar type mixer).

Tom Lehmann/The Dough Doctor  
4732

### **New York Style / Re: Good browning, limited dough flavour**

Lets look at your dough in bakers percent:

Flour 100%

Water 63%

Salt 0.33% (there's a major problem, it should be closer to 2% or in your case 6-grams)

Sugar 0.33%

Olive oil 1.33%

Maple syrup 0.66%

With exception to the salt level presently being used the formula is OK, but you neglected to include the yeast type and amount which might also have an impact upon the lack of flavor that you are experiencing. Salt is a major contributor to flavor so I would highly recommend increasing it.

Your fermentation time is PK but it could be improved upon if you go to 24 to 48-hours of cold fermentation in the fridge, then allow the dough to warm to 50F after the cold fermentation and turning it out onto a floured surface and immediately opening the fermented dough into a skin for your pizza.

4731

### **Dough Clinic / Re: Yeast + Baking powder**

To elaborate on AP flours, as I've mentioned previously, all AP flours are not the same. Some are made from hard wheat varieties, some from soft wheat varieties and some might be made from a blend of the two, we found it to be all over the board. All purpose flour is actually intended for home use so there is not much, if any, standardization from one manufacturer to another as there is with bread, cake and pastry designated flours. You're right, AP flours can be made to make great thick crust/deep-dish type of pizzas, light, tender, flaky (biscuit like), just be careful about the amount of fermentation you give the dough as this type of flour typically doesn't show really good fermentation tolerance as a higher protein content, bread type, flour would. General Mills is a bit of a maverick when it comes to flour milling, they tend to use hard wheat varieties for a number of different types of flour, for example, while most milling companies use a soft wheat flour to make their high ratio cake flour, GM uses turbo milled hard wheat varieties so it wouldn't surprise me in the least bit if their AP flour was produced in the same manner using a hard wheat variety, it would certainly account for the higher protein content as compared to other AP flours.

As for the CL used in making their self rising flour it also would not surprise me if they were using a coated leavening system much like the WRISE product, but at the very least I'm pretty sure it will be a SALP based system due to the stability offered by the SALP.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4730

### **Dough Clinic / Re: Yeast + Baking powder**

Norma;

Remember those old Chef Boyardee pizza kits with those "marvelous" just add water and stir crusts? Those were the first completely chemically leavened pizza crusts that I can recall.

Tom Lehmann/The Dough Doctor  
4729

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

No offense taken. I just want to make sure I'm answering your questions and all others to the best of my ability. Sometimes we get off track a little but that's only normal. The one thing to remember is that there is no specific right way and no specific wrong way to make pizza, there are only different ways but sometimes we can see potential problems or short cuts, do they always work out as expected, nope, but it does make for food for thought and direction for some in-home research. Learning more about pizza is what it's all about, I just try to shorten the learning curve while stimulating thought.

Tom Lehmann/The Dough Doctor  
4728

### **Dough Clinic / Re: Yeast + Baking powder**

Norma;

I know a quick test that might provide some insight as to whether it is encapsulated or not.

- 1) Get a glass test tube and a balloon.
- 2) Set a timer so you can measure the elapsed time from mixing to covering the balloon.
- 3) Place 50-grams of your version of self rising flour in the test tube and then add 50-grams of a 50/50 vinegar mix.
- 4) Place your thumb over the open end of the test tube and shake vigorously for any measured length of time (15-seconds?)
- 5) Immediately place the balloon over the end of the test tube and note the elapsed time from adding the liquid to covering with the balloon.
- 6) Note the rate of balloon inflation (it will not blow up very much so when necessary remove it and replace immediately and measure the number of times you had to do this over a 10-minute period of time.
- 7) Repeat the above using the GM self rising flour.

If your's inflates the balloon much faster and with fewer inflation's during the 10-minute test period it is an indication that the GM self rising flour is most likely encapsulated. If they are about the same it means the GM self rising flour is probably made with a non-encapsulated leavening system.

What we are doing here is using the vinegar to react the soda portion of the CL. If it has been encapsulated it will be slower to react and produce leavening gas for a longer period of time but if it is not encapsulated the reaction will be very fast and short lived. (you can see just how fast it will be by placing a small amount of soda in a glass and adding a little vinegar.

If you do your flour first you can then place the test tube with the GM flour in a cup of hot water. If you see a surge in leavening gas production again this is pretty good evidence of an encapsulated leavening system because the heat of the hot water will melt the encapsulation from any remaining un reacted soda allowing for

the production of more leavening gas.

By the way, try to add the vinegar, shake and cover the test tube for both test samples in roughly the same time for more accurate results.

Tom Lehmann/The Dough Doctor  
4727

### **Dough Clinic / Re: Spiral mixer and Tom's Dough Management Procedure**

Alvin;

Absolutely! The finished dough temperature is the main factor which controls the rate of fermentation even when using a spiral mixer, or any other type of mixer and room temperature of cold fermentation. The other steps in the dough management procedure such as cross-stacking procedure and time as well as down-stacking are used to prevent moisture build up in the dough boxes and to allow for a much more consistent rate of cooling.

So yep, even though you're using a spiral mixer, those steps are still vitally important to an effective dough management program.

Tom Lehmann/The Dough Doctor  
4726

### **Dough Clinic / Re: Help with dough! Too sticky too elastic**

Actually, you only need to mix the dough to a point of gluten development to where it doesn't tear when you form it into a ball. Any more development than that is unnecessary as biochemical gluten development will fully develop the gluten for you while giving you a dough that is soft, extensible and easy to open into a skin. Full gluten development is only used when making commercially made frozen pizza dough as well as in bread production as the fermentation time will be much shorter even though it will be at or near room temperature +/- 80F.

Tom Lehmann/The Dough Doctor  
4725

### **Newbie Topics / Re: no rise**

Werty20;

Additionally, can you take the temperature of the dough immediately after mixing and tell us what the dough temperature is at that time.

Tom Lehmann/The Dough Doctor  
4724

### **General Pizza Making / Re: dough stretching**

Jeff;

I'm guessing that your problem is due to at least one of the following:

- 1) Dough temperature is too high (75 to 85F is in the ideal range).
- 2) Dough absorption is too high (58 to 62% of the flour weight is pretty common).
- 3) Your dough is being fermented too long (do you use a room temperature or cold fermentation?)
- 4) The yeast level is too high (what type of yeast do you use?)
- 5) You have included onion and or garlic in your dough formula.

The more information that you can share with us regarding your dough formula/recipe and dough management procedure (everything you do to the dough from mixer to forming the pizza skin(s) will help us to better help you.

Tom Lehmann/The Dough Doctor  
4723

## [\*\*Dough Clinic / Re: Test pizzas taste "home made"\*\*](#)

Mike;

Remember too that it is all but impossible to assess the flavor profile of any pizza until you are using the "final" ingredients. To give you an example, we tried moving away from Grande cheese but the flavor changed in a direction we did not like with other brands of Mozzarella cheese. The same can be said for the tomato product you will be using to make the sauce. Lastly, remember, what you personally think doesn't carry water in this case.....it's what your customers think of the crust or more correctly the entire pizza presentation. My advice to you for right now is to get the physical characteristics that YOUR customers want (it varies in different locations) and then work on final flavor profile after you have your kitchen up and running. Most suppliers will gladly provide you with a free case of different tomato and cheese products for testing just to get your business. I might add that the research that we did on pizza a few years ago indicated that it wasn't so much the taste that attracted people to a specific pizza but instead it was the fact that it was DIFFERENT, not in a strange way but like using fresh tomato slices or Stanislaus 74/40 Tomato Filets rather than a smooth sauce, using fresh herbs as opposed to dried herbs, putting a little char on the crust where none existed previously. This shift has lead to the great and growing popularity of the artisan style pizzas that we hear people commenting on so much, even the large wholesale pizza manufacturers have gotten into the act as you can see in your supermarket frozen pizza section. Remember, if it looks like everybody else's pizza, it is, and surprisingly to your customers it will taste like it too. My motto when it comes to making a successful pizza is "dare to be different". You will see in the posts here that we are always trying new and different things, and with good success I might add, so don't get overly critical of your pizzas just yet, let your customers guide you.

Tom Lehmann/The Dough Doctor

4722

## [\*\*Dough Clinic / Re: Gluten: Strength - Development - Arrangement\*\*](#)

Jeff;

You're right about the "C" or "J" hook as it is also referred to as. The only time when they even come close to performing decently is when the mixer is operating at full bowl capacity and even then if you watch carefully you will see that the dough is not getting turned (top to bottom) very efficiently where as newer design agitators handle smaller size doughs much more efficiently and effectively turn the dough top to bottom much better too. When we were testing new agitator designs we used to put blue food dye on the dough after it was fully hydrated and then mixed the dough for specific periods of time and compared the distribution of the dye throughout the dough mass. The better the distribution the better the mixing action. To look at the inside of the dough we used a French knife/chef's knife to cut it. Many times the outside of the dough looked good but the inside told a different story. This might be a good test for anyone to try with their mixer just to see how good the mixing action really is.

Tom Lehmann/The Dough Doctor

4721

## [\*\*New York Style / Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe\*\*](#)

That's some pretty decent looking pizza! A little bit like a Domino's but with a firmer crust.

Tom Lehmann/The Dough Doctor

4720

**Commercial Ovens / Re: Turbochef Fire Pizza Oven**

Just as a cautionary note, being vent less doesn't mean a thing if you are putting a vent less oven into a commercial establishment as many municipalities have codes that require ALL ovens, vent less or not, be located under a hood, some even dictate the type of hood, so be SURE to check with your codes department before jumping on the "vent less" wagon.

But it's vent less! The manufacturer says that it doesn't need a hood! So why do you say that it has to be located under a hood? Because the CODE says all ovens must be located under a hood. Lotsa luck winning that argument. Been there, done that, the only time we ever came close to winning that argument is when the codes were changed and we were able to be grandfathered in as the oven had been in use for some time under a Type-II hood but codes changed to requiring a fire suppressant hood.....Thank God we got out of that one.

Tom Lehmann/The Dough Doctor

4719

**Dough Clinic / Re: New guy looking for recipe correction for different pan size**

Killer pizza!

The extra baking time just made the crust that much crispier, nothing to complain about, I'm guessing that you didn't get any either. :)

Tom Lehmann/The Dough Doctor

4718

**Dough Clinic / Re: Test pizzas taste "home made"**

Mike;

Yes, quite a few of them. What you are looking at is a "hedonic" taste test. Panel participants are presented a sample and asked to rate it as an over all pizza experience from 1 to 10 with ten being the most liked, then allow a space on the bottom for each participant to offer a comment. Then give them a second sheet and ask them to rate the crust from 1 to 10 but this time ask them what they liked or disliked the most about the crust. No need to do the sauce or cheese as very few people use them as a measure of how much they like a specific pizza. It's always the pizza as a whole or they comment on some aspect of the crust either positive or negative.

Tom Lehmann/The Dough Doctor

4717

**Stones/tiles/steel, Pans & Accessories / Re: Help choosing a peel(s)**

For wood peels look at Mr. Peel <[www.mrpeel.com](http://www.mrpeel.com)> or Portion Padl

<[www.portionpadl.com](http://www.portionpadl.com)>

Lately I have been seeing nice aluminum peels with a short handle being sold at ACE HARDWARE, if you have one near you check them out. In with wood, out with metal.

Tom Lehmann/The Dough Doctor

4716

**New York Style / Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe**

Domino's tries to emulate the New York style pizza, but if you really want to get away from the Domino's appearance you will need to use pieces of Mozzarella

cheese placed on top of the pizza rather than going for complete and uniform coverage which is what you presently have.

Tom Lehmann/ The Dough Doctor  
4715

**New York Style / Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe**

Yes, my "dip stick" for N.Y. style has always been Patsy's (now Grimaldi's) at the Brooklyn Bridge. I'm sure you can find plenty of pizzas made using full coverage but to me Patsy's is the "one".

Tom Lehmann/The Dough Doctor  
4714

**Dough Clinic / Re: Kneading dough problem**

Wangji;

You want to mix/knead the dough just until it begins to take on a smooth, satiny appearance. The picture of the dough ball that you attached is not yet sufficiently developed as can be seen by the somewhat rough appearance of the skin. Keep in mind that the main reason for developing gluten during the mixing/kneading stage is to allow for improved handling of the dough (reduced stickiness) and to prevent the dough from tearing as it is formed into a ball. Once you have accomplished that level of development no further mixing/kneading is required.

Tom Lehmann/The Dough Doctor  
4713

**Dough Clinic / Re: Kneading dough problem**

Yes it would, as long as you can handle and work the dough you actually have enough gluten development. The problem that is most often experienced when the dough is not developed sufficiently is that more dusting flour is incorporated into the dough or it is just plain sticky an inconvenience), otherwise you are correct.

When we did the work on biochemical gluten development we were able to achieve a very nicely developed gluten film through biochemical gluten development so long as we had mixed the dough long enough to get through that knotty, lumpy appearance. Even when we had that appearance to begin with we still got the biochemical gluten development but the gluten film was not as uniform and the dough was more prone to tearing when being opened into a skin due to the rough nature of the gluten film.

Tom Lehmann/The Dough Doctor  
4712

**Prep Equipment / Re: Found this Hobart C100 at an estate sale**

Have you located a dough hook for it yet? It looks like they only make a straight "J" hook for it for about \$50.00 <[www.alfaco.com](http://www.alfaco.com)>

Tom Lehmann/The Dough Doctor  
4711

**Newbie Topics / Re: equipment list, getting started recipe?**

An infrared thermometer will be hard to beat for keeping track of the temperature of the oven deck. Check out Harbor Freight and Menard's, I bought one at Harbor Freight and my son liked it so much I gave it to him, then I went to Menard's and picked up another one. In both cases they were on sale for roughly \$12.00. The temperature range is up to 716F.

Tom Lehmann/The Dough Doctor

4710

**Prep Equipment / Re: Found this Hobart C100 at an estate sale**

Norm;

I posted you last night but it didn't seem to go up for whatever reason. I was asking if you had found a hook for your C-100 mixer yet? If not go to <[www.alfaco.com](http://www.alfaco.com)> they have the Hobart hook for your mixer for only \$51.00 that's the good news, the bad news is that it is a common "J" hook and it appears that no other type of hook is available for the C-100 mixer, and it is not interchangeable with any of the other Hobart mixers. But at least you can get a hook. Just plan to keep the bowl at near full capacity to get the best action from the "J" hook, otherwise you will be mixing, stopping, pulling dough down off of the hook, mixing, repeat, repeat, repeat, etc. When you get a hook set the clearance between the bottom of the hook and the bowl following this procedure. Install the new hook, adjust the bowl height until you begin to hear a slight "tink, tink, tink" as the hook contacts the bowl while running at LOW speed, then, using a nickel as a gauge, set the gap between the bottom of the hook and the bowl and you're good to go.

NOTE: When setting the "0" clearance prior to gapping, with the mixer running in LOW speed slowly raise the bowl to its full up position then adjust the bowl height as necessary until you hear the slight tinking sound with the bowl in the full up position, now you're ready to set the operating gap.

Tom Lehmann/The Dough Doctor  
4709

**Newbie Topics / Re: equipment list, getting started recipe?**

Mine is a Sontax brand from Menard's, they look to be almost identical, the price is where it should be at too. It will work for both the oven and measuring finished dough temperature, the only thing it will not work for is measuring the dough temperature at the time of opening the dough balls into skins because in that case we're measuring internal dough temperature, not the surface temperature. If you look on the internet you can find a very inexpensive dial type thermometer aka stem type thermometer with about a 1" diameter dial for around \$7.00. With a stem type thermometer try to get one with a hex nut under the dial head. That hex nut is for adjusting the calibration of the thermometer. Grasp the head and turn the hex nut to calibrate. Calibration procedure: Use a glass or sufficiently deep cup of water (adjust the water temperature to 80 or 85F using your infrared thermometer) insert the stem thermometer into the water and turn the adjusting nut so the pointer indicates the same temperature as indicated by your infrared thermometer. This is much better than using ice water to calibrate as you are calibrating the thermometer closer to the actual temperatures that you will be measuring so accuracy is improved.

Tom Lehmann/The Dough Doctor  
4708

**Prep Equipment / Re: Found this Hobart C100 at an estate sale**

Norm;

I believe that you will find it behind the "apron" shown as #7 on page 6 of the materials that I sent to you. Reference #19 on page 4 too.

Tom Lehmann/The Dough Doctor  
4707

**Dough Clinic / Re: Dough & Food Safety**

Rolls;

I get notifications all the time regarding illness caused by people eating such things as raw cookie dough, in fact it wasn't all too long ago that (I believe it was Ben & Jerry's) that had some issues regarding their cookie dough ice cream made with raw cookie dough. Many packages of refrigerated cookie dough now carry a caution about eating raw cookie dough. Yeast leavened doughs containing raw eggs can also pose a problem but not as frequently as cookie dough does because raw bread dough isn't as tasty as raw cookie dough or raw cake batter. Remember, this is with commercial products which are made under a high level of food safety. When these products are made at home the risk is much higher and the incidence of sickness is much more common but we never hear about it because there wasn't a 5-state or national recall notice issued or 20-people were not sickened by it. There is little doubt in the minds of microbiologists when it comes to food safety that man kind would have not survived to where it is today if it were not for the discovery of fire and the invention of the oven to bake/heat food and create a "kill step" in the food preparation chain. Look at what just recently happened to General Mills.....moral of the story, don't eat raw flour either. I've been admonishing this for years and people just looked at me like I was crazy. When we are making doughs containing milk, eggs and flour as the culprit ingredients a couple of things come into play. 1) It is called the 4-hour food safety rule. In essence a sensitive food may be allowed to remain at a temperature which will support microbial growth for an accumulated period of not more than 4-hours. 2) The yeast, being a micro organism itself, can/will become the dominant micro organism which can suppress the growth of other microbes. 3) Ditto for Lacto-bacillus Bacteria in a sourdough culture. 4) The acids formed during fermentation (acetic, lactic and propionic) can suppress/inhibit the growth of certain microbes. This is why dill pickles seem to last forever (vinegar/dilute acetic acid).

Tom Lehmann/The Dough Doctor  
4706

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Peter;

He is most likely referencing sodium acid pyrophosphate (SAPP). For those who are not familiar with the numbers attached to SAPP (16, 18, 22, 24, 26, 28, 36, 38, 40, 42 are the main ones. Reason for the "two" differences is due to different manufacturers....go figure! The number is used to designate the percent of total potential carbon dioxide release in a fully neutralized system during the first two minutes after contact with water or some will say during the first two minutes of mixing. in this case the remaining 72% will be a late acting (pyro)fire/heat activated leavening. A low number SAPP makes perfect sense as the leavening will be quite stable until the dough or batter is exposed to heat.

Tom Lehmann/The Dough Doctor  
4705

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Peter;

I've not actually tried that but theoretically the cold temperature will certainly suppress the pyro phase and possibly "some" of the faster acting phase too. The thing to remember is that a non encapsulated system has all of the soda freely available to react with any acid, including acids formed during fermentation, then, without any soda to react with there can be no pyro phase to the chemical leavening system and to make matters worse, the residual SAPP will give the resulting crust an interesting flavor reminiscent of that of a cake donut. Most people don't realize that the predominant flavor of a cake donut is that of SAPP, not

cinnamon, nutmeg, vanilla that you might expect.

Tom Lehmann/The Dough Doctor

4704

### **Dough Clinic / Re: Dough & Food Safety**

The "kill step" aka raising the internal temperature to 160F (actually 165F) is used to guarantee that 160F has been reached will make the product(s) safe to consume. I've worked with pasta before but I do not remember any of the processing specs anymore so I have to defer that question to someone more knowledgeable in pasta production than I am.

Tom Lehmann/The Dough Doctor

4703

### **Dough Clinic / Re: starter storage..**

Continue storing it just as you have. If you change the storage conditions you will upset the entire micro-flora balance and lose the characteristics you have come to expect from it.

Tom Lehmann/The Dough Doctor

4702

### **Dough Clinic / Re: Yeast + Baking powder**

Norma;

Do you have any comments on the flavor of the crust? Did you pick up any of the characteristic phosphate coating on the back of your teeth after eating a piece of the crust? (If you run your tongue across the back of your teeth you might feel some roughness, this is very characteristic of SAPP)

Tom Lehmann/The Dough Doctor

4701

### **Dough Clinic / Re: Need help making dough more extensible**

Pfhlad0;

When working in bakers percent, when you remove an ingredient from the formula you only need to adjust for that one ingredient so by eliminating the VWG from the formula the only formula adjustment that you will need to make is to the dough absorption which will be a reduction of about 2X the weight of the VWG that was eliminated from the formula. No other formula changes should be needed.

Tom Lehmann/The Dough Doctor

4700

### **Dough Clinic / Re: dough roller tears up dough**

What it sounds like you have there is a single pass dough sheeter. With a single pass sheeter what you are doing is about par for the course. You might be able to use a rolling pin to flatten and elongate the dough ball prior to sheeting as this will reduce the number of roll adjustments needed and you might be able to experiment using different roll settings (gaps) to reduce the number of passes needed. Using a single pass sheeter I normally pre-flatten the dough ball with a pin to about 1/2-inch in thickness (just roll in one direction, no need to cross roll), then I pass the dough through the rolls on the first pass turned 90-drgrees to the way that I hand rolled it, then close the gap, turn the dough 90-degrees again and pass through twice with a 90-degree turn between each pass. This usually gives me a dough skin that is very close to the size that I want so just a little hand stretching (as you are doing) easily brings it to size. I might also add that I normally dock the skins made in this manner.

Tom Lehmann/The Dough Doctor  
4699

**[Dough Clinic / Re: Yeast + Baking powder](#)**

Peter/Norma;

The flavor of the pizza made using SALP as the leavening acid should be much more neutral as Peter said. If you partake in the occasional consumption of baking powder biscuits you might be able to detect something of what out sensory panel participants identified as a "biscuit like" flavor in the crust. No phosphate coating on the back of your teeth either. SALP + soda is primarily a pyro (heat activated) leavening system with only about 18 to 20% of the carbon dioxide released early.

Tom Lehmann/The Dough Doctor  
4698

**[Dough Clinic / Re: Need help making dough more extensible](#)**

You are correct.

No more confusion :)

Tom Lehmann/The Dough Doctor  
4697

**[New York Style / Re: Two weeks of progress, but lots of questions...](#)**

If my calculations are correct, 875-grams for a 20-inch round skin works out to 0.098-ounces per square inch of surface area or about the same as a 12-inch diameter skin made with 11-ounces of dough weight (0.0.097-ounces per square inch of surface area). While the 20-inch format will be more difficult to open without getting thin spots in the dough I would consider it to be about the minimum reasonable dough weight unless your dough is really extensible and you're proficient at opening large diameter skins. Otherwise, a greater dough weight, possibly as much as 39-ounces/1108-grams might be easier to work with.

Tom Lehmann/The Dough Doctor  
4696

**[Dough Clinic / Re: starter storage..](#)**

They like to be fed on a consistent basis so I would recommend probably recommend once a week or so and you can skip the feeding for the week that you use it if you replenish it at the time of use. I've left mine go as long as two weeks when we were on vacation and never had a problem but when I've forgotten about it and not fed it I have to work harder and it takes longer to get it "cooking" again. I like to have mine ready to go within 24 to 48-hours, but everyone is different.

Tom Lehmann/The Dough Doctor  
4695

**[Stones/tiles/steel, Pans & Accessories / Re: What do you think about this Aluminum Peel?](#)**

We used them for MANY years when I was working for the AIB and I don't remember ever having any complaints about them.

Tom Lehmann/The Dough Doctor  
4694

**[Dough Clinic / Re: dough roller tears up dough](#)**

Don't try to compare apples to oranges, the dough that P.M. uses is waayy different from the dough that you posted the formula for. If you work with your dough formula and dough management procedure enough you should be able to come up

with a dough that will give you a reasonably round skin after just two passes, now, if that dough will produce the type of pizza you are envisioning is a totally different matter.

I wouldn't sweat it too much. How many skins are we talking about opening at any one time?

Tom Lehmann/The Dough Doctor  
4693

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

Your pictures of the crust brought back my memories of the old Chef Boyardee pizza crusts which I haven't seen since we did the chemically leavened and combination leavened crust work back in the early 1980's. Don't get me wrong, I'm not missing it....it just brings up flash backs from my childhood. By the way, we baked those "wonderful" Chef Boyardee pizzas in a wood burning oven, no not a pizza oven, a wood burning oven, like everyone around us had in the kitchen.....a wood burning kitchen stove, now that brings back memories!!!! :)

Tom Lehmann/The Dough Doctor  
4692

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

Our house was 100% heated with wood, coal or corn cob. Due to the cost of the coal it was only used at night, after that, depending upon the time of year, it was either wood or corn cobs. Then came that fateful day when we made the giant leap to natural gas. It was great for heating the house as there were no more cold mornings in the winter, BUT nothing ever came out of the oven the same way after that. :(.

When we did the work we used pretty typical formulas for the different types of pizzas but since the leavening curve is much steeper with chemical leavening than it is with yeast we found that we had to increase the dough absorption to get decent results. In most cases our better doughs were so soft that they could not be machine formed into skins, they could only be formed by hand or careful use of a rolling pin and dusting flour. Our pan pizza doughs looked more like a biscuit dough than what we normally think of a pizza dough as being like. Something else to keep in mind is that different leavening systems will impact the crumb structure in different ways so sometimes it pays to experiment with different leavening systems when you're trying to achieve certain crumb structure characteristics.

Tom Lehmann/The Dough Doctor  
4691

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

I forgot about the outhouse. Ours was a two hole model. After we got indoor plumbing it was used to store the screens for the house in during the winter and the storm windows during the summer. The wood pile and the cob pile and coal bin were located about half way between the house and the outhouse, that way you always followed the code: Go out with a load, come back in with a load.

Oil will help with gas retention and also in achieving a finer, more cake like crumb structure, so at the risk of losing product identity you can go up to around 10% oil. I can't say anything about absorption because I don't know what your flour will carry, but you do want to maximize it. One other thing, we used a flat beater rather than a dough hook to mix the doughs. When you're making the dough, think Irish

soda bread.

Tom Lehmann/The Dough Doctor  
4690

### **Newbie Topics / Re: Practice dough**

Yes there is, you would use your normal dough formulation but you will be able to forego the fermentation step or at least all but about 30-minutes of it. You can accomplish this by incorporating a reducing agent into the dough such as PZ-44 or "dead yeast" aka Relax RS-190, you can Google both of these ingredients to learn more about them as well as sourcing a sample of them. Both of these ingredients will be added to the dough at a level between 1 and 2% depending upon how soft and extensible you want the dough to be so you may need to experiment with the amount used to find the level that works best in your specific application. For additional reading there has been some discussion here on these ingredients pretty recently. You might try using the search words "reducing agents", "dead yeast" or "PZ-44". Most of the members here are familiar with these ingredients so they may be able to provide you with additional information on securing samples to work with.

Tom Lehmann/The Dough Doctor  
4689

### **Newbie Topics / Re: Practice dough**

Essentially what you will be able to do is to add the reducing agent to the dough formula, mix the dough until it becomes smooth, soft and somewhat extensible, immediately scale and ball, place on a floured surface to rest for 15 to 30-minutes and you'll be ready to begin playing. If you need something to sharpen your skills at tossing the dough there is a product called "Through Dough" that is a silicone based pizza skin designed specifically for that application.

Tom Lehmann/The Dough Doctor  
4688

### **Dough Clinic / Re: dough roller tears up dough**

If you go to the RECIPE BANK at the PMQ web site <[www.pmq.com](http://www.pmq.com)> and search "pizza dough" you will find several of my take and bake dough formulations which were formulated to give finished pizzas similar to P.M. In addition to the traditional dough there are also a couple of very popular variations posted too. The "magic ingredient" that you will need to use is called WRISE. This is a fat encapsulated chemical leavening system designed specifically for this application. It's available from The Wright Group at <[www.wenrich.com](http://www.wenrich.com)> or Tel: 337-783-3096.

Tom Lehmann/The Dough Doctor  
4687

### **Newbie Topics / Re: Practice dough**

Sounds like you are not working the edges of the dough at all so only the center section is getting stretched, this usually results in a wrinkled skin too as you place it on a flat surface. I have some videos posted on my web site

<[www.doughdoctor.com](http://www.doughdoctor.com)> that might help you with your technique there is also a plethora of videos at the PMQ web site too. I'm assuming this is for your regular, fully baked pizzas as opposed to your t & b offering. Here is a method that I developed to help our students learn how to open the dough balls into skins. Make sure the dough balls have been allowed to warm to 50 to 55F before opening. Flatten the dough ball by hand slightly to about 3/4 to 1-inch in thickness, adjust the roll gap on your sheeter to about 1/2-inch and pass the dough through the

sheeter once, reduce the gap to whatever is needed to bring the skin out to about 2-inches LESS than your desired finished diameter (be sure to turn the dough 90-degrees), now you can easily hand toss the dough to finished diameter without the problem of those thin spots in the center. We can teach someone who is "toss challenged" to toss the dough quite acceptably well in less than 30-minutes. Once you have mastered this you will soon be opening the dough with minimal or no use of the sheeter. Don't worry about the sheeter degassing the dough, if you follow this procedure it will not degas the dough. If you will send me an e-mail at <thedoughdoctor@hotmail.com> I will be glad to send you a video of this procedure being used in a local Pizzeria (AJ's New York Pizza, Manhattan, Kansas). When viewing this video keep in mind that the person you are watching has only been doing this for about 6-weeks.

Tom Lehmann/The Dough Doctor  
4686

### [\*\*Newbie Topics / Re: Practice dough\*\*](#)

Trying to position the dough in an oily pan, it slides around a lot on a floured wooden peel. I'm not sure what this means. When you put dough into an oiled pan it is about a slick as you can get and darn near impossible to stretch. If you are putting your dough into an oiled pan it needs to be fully opened into a skin a bit larger than the pan and then transferred to the pan where it will pull back to the diameter of the pan. You will need to adjust the size you are opening the skin to so when the dough snaps back on the oiled pan it will be at or close to the diameter of the pan. If you are trying to open the dough in an oiled pan I can feel your frustration. If dough memory/snap-back is a problem you need to reassess your dough formulation or dough management procedure. If you want the dough to stay put in a pan a little better use shortening to grease the pan rather than using oil, you will see a HUGE difference between oil and shortening.

Tom Lehmann/The Dough Doctor  
4685

### [\*\*New Forum Members / Re: Hello from korea\*\*](#)

Tell us something about the type of pizza you want to or are making. How are you baking them? How do you mix the dough? Your dough formula and anything you can share about your ingredients. What are the pizza characteristics that you hunger for?

You came to the right place.

By the way, where at in South Korea? I've worked on and off there for a number of years with the private sector, KBS (Korean Baking School) and the military through AAFES.

Tom Lehmann/The Dough Doctor  
4684

### [\*\*General Pizza Making / Re: Mixing IDY with RTF dough\*\*](#)

I'm in agreement, suspend the IDY in a small amount of water at 95F (add the IDY to the water) and stir until suspended, then allow it to hydrate for an additional 5-minutes, stir once again and pour into the dough water and you should be good to go.

Tom Lehmann/The Dough Doctor  
4683

### [\*\*Dough Clinic / Re: starter storage..\*\*](#)

Brad;

Excellent point to back it up, I've mentioned doing this a number of time in previous posts because, in its own way, each starter is different/special and if you should lose it it's a roll of the dice if you will ever be able to replicate it, but id you have some saved (ideally in a different location) you can always use that the seed/inoculate a new starter and get back to where you were. Great idea about drying it too, sure makes storing a sample a lot easier too.

Tom Lehmann/The Dough Doctor  
4682

### [\*\*Newbie Topics / Re: help modify this recipe\*\*](#)

Werty20;

The type of yeast use would not pose an issue BUT if ADY was originally called for and you substituted IDY at the same level/amount then in essence you would be adding an excessive amount of yeast since the use level for IDY when replacing ADY would be less (about 20% less IDY than ADY).

Tom Lehmann/The Dough Doctor  
4681

### [\*\*Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust\*\*](#)

What are your mixing and dough management procedures?

Tom Lehmann/The Dough Doctor  
4680

### [\*\*Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust\*\*](#)

Matt;

I might suggest a couple of changes.

- 1) No need to stir the salt and sugar unless you have nothing else to do.
- 2) Add the IDY in the dry form right on top of the flour, no need to stir into the flour either since as you begin mixing it will be incorporated into the flour.
- 3) You say to "pour" the dough out. That word scares me when referencing pizza dough, would the word "turn" or scrape the dough out be better suited? :)
- 4) Lightly oil the dough ball before dropping it into the bag to make removal easier later on.
- 5) 12-hours is not sufficient cold fermentation time, 24-hours is about the minimum, 48-hours seems to be the "sweet spot" but you could go longer.
- 6) I'd like to ask you to re-check your dough temperature the next time you make dough (be sure the thermometer is accurate) as the large bubbles you are seeing might be caused by a dough that is too hot. You are looking for a finished dough temperature of 80F but never more than 85F. This is why I normally recommend 75 to 80F as it leaves some room for error.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
4679

### [\*\*Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust\*\*](#)

The temperature is OK but close to the top end of where you want to be so I'd suggest using water that is 5F colder than what you have been using. Your dough balls appear to be somewhat under mixed too, but since you are already mixing 10 to 15-minutes? (the time shouldn't change more than a minute or two from dough to dough). Tell me about your mixer, capacity, number of speeds and what kind of dough agitator you have. If there is a lot of variation in the mixing time I always suspect one of two things, 1) the dough is too small for the bowl capacity so the mixing action is poor (dough clings to the agitator) or 2) you are mixing the dough

using a conventional "J" hook as opposed to a reverse spiral dough arm which drives the dough back down into the bowl for superior mixing action with both full size and smaller size doughs. In any case you might want to increase the dough mixing time by 3 to 5-minutes to achieve a smooth, satiny appearance. The photographs show a rough, dough with an almost web like appearance which is an indicator of an under mixed dough.

Tom Lehmann/The Dough Doctor  
4678

**[Dough Clinic / Re: Natural yeast WITH or WITHOUT commercial yeast](#)**

Cassio;

Jsaras is spot-on. If you are looking for the unique flavor afforded by your starter why not just use your natural starter to provide all of the fermentation and flavor? The only reason why commercial yeast is ever used in conjunction with a natural starter is to achieve a faster rate of fermentation specifically when making breads and rolls where the dough goes through a final proofing stage just prior to baking. Depending upon the strength and composition of the natural starter this can take upwards of 6 to 12-hours in some cases so commercial yeast is added to provide for a faster final proof (shorter proofing time). That's the good news, the bad news is that for this to happen the commercial yeast must be added at such a level so as to make it the dominant yeast in the dough. This is why for many years it was always said that San Francisco sourdough bread could only be made in San Francisco (must be something in the air or water?) but this has been shown not to be true, instead, bakeries producing the unique flavored San Francisco sourdough flavor bread and rolls were built to accommodate the long final proofing times while other bakeries just tried to fit it into their regular processes using the addition of commercial yeast to speed things up, which as I said, it did but the unique flavor of the bread was pretty well lost. Today we have bakeries that are specifically built for the production of sourdough breads and rolls so we now have the unique flavored sourdough breads and rolls available throughout the U.S. When it comes to pizza dough production, unless we're making a thick crust or deep-dish pizza the dough is seldom ever given a final proofing, instead it is allowed to ferment for a day or days, then opened into a pizza skin, dressed and baked which pretty well eliminates any need to use a commercial yeast.

Tom Lehmann/The Dough Doctor  
4677

**[Dough Clinic / Re: Reducing Large Bubbles in NY-Style Crust](#)**

Matt;

As I've said so many times before, don't worry about the mixing time in YOUR specific mixer, just work to get that smooth skin in the mixer. I believe a lot of the posters here have gone over to the reverse spiral dough arm for their mixer to address the problem of the dough climbing up the hook, and I think all of the new mixers come with it as a standard feature. This is probably why you are seeing shorter mixing times being posted. That said, try to keep your dough sized sufficiently large to keep the dough in constant contact with both the hook and the sides of the bowl and be sure to pull the dough off of the hook occasionally turning it over as you place it back into the bowl. This will help improve the mixing action of your mixer.

Tom Lehmann/The Dough Doctor  
4676

**[Dough Clinic / Re: Unique crumb](#)**

Harry;

Adjust the dough absorption to about 55% and add 12% oil (delayed oil addition mixing method for sure). Mix the dough to develop a smooth, and slightly extensible dough (this is a little more mixing than what we normally give a pizza dough), target for a finished dough temperature of not more than 75F (70 to 75F range), immediately scale and ball, cold ferment for 24-hours, allow to temper AT room temperature until dough temperature reaches 50F, using a rolling or pastry/pie pin open to a diameter slightly larger than the pan, place into the pan and allow the dough to final proof for about 70-minutes, dress and bake.

Suggested scaling weight range: 14 to 16-ounces for a 12" pan style pizza.

Baking temperature: +/- 450F

Bench mark from this and let us know what you get.

Tom Lehmann/The Dough Doctor

4675

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

Yes, BUT at any given point of gluten development between mechanical mixing and biochemical gluten development there will be a significant difference in the way the gluten reacts. When developed mechanically the gluten is very tough and elastic but when developed biochemically it is much more extensible. You can easily see this if you develop a dough to full gluten development and then try to form it into a skin, now take the same dough and allow the gluten to develop biochemically (about 24-hours cold fermentation) then turn the dough out of its container and begin opening it into a skin.

Aside from a lot more wear and tear on your mixer you will find it easier to open the dough that was biochemically developed.

Tom Lehmann/The Dough Doctor

4674

### **Dough Clinic / Re: Unique crumb**

Harry;

In almost every case you will find that things begin to start going down hill after about 20% oil addition, a lot will depend upon the strength of the flour that you are using so you might be able to push it closer to 25% on a good day. As you know, the oil will interfere with the gluten development so it becomes especially important to make sure the flour is hydrated before all of that oil is added. I've found that I can sometimes get better results by adding half of the oil in the normal delayed oil addition method and then gradually adding the rest of the oil over the next few minutes of mixing.

Tom Lehmann/The Dough Doctor

4673

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

You don't really get the same level of gluten development when mixing at low speed as you do when mixing at "high" speed, many in the baking industry will say that it is essentially impossible to over mix a dough at low speed. The reason for this is due to the fact that you are allowing the gluten to oxidize as it is being mixed at low speed which strengthens the gluten (reference "fatigue dough" mixing process) but when mixed at high speed the gluten develops faster than it can be oxidized so development can easily progress to a point of break-down. In making pizza dough there is a point in gluten development which can be reached by either

high speed or low speed mixing BUT this point of gluten development is a point where the gluten is just beginning to form sheets which is why we see this as the point where the dough in the mixer begins to look smooth. So, can you mix a pizza dough at high speed? Sure you can, we do it all the time using a VCM (vertical cutter mixer) where the mixing speed is 1,750 r.p.m. and the mixing time is about 65 to 70-seconds. Can you do it in a planetary mixer? Yes you can, just mix the dough at low speed for the first couple of minutes so you won't need to scrape the contents of the bowl off of the walls and then go straight to high or a higher speed, but don't forget to stop as soon as the dough begins to take on a smooth appearance. So why don't we do this all the time? It is too hard on the equipment in most cases, but in a lot of pizzerias where we have a sufficiently sized/strong mixer it is common to mix at low speed until the oil is added and then go to a higher speed to bring the dough to the level of gluten development that we are looking for. Total dough mixing time in this case is about 8 to 10-minutes maximum. If mixed only at low speed the mixing time is closer to a total of 20-minutes or more.

Tom Lehmann/The Dough Doctor  
4672

### **Dough Clinic / Re: Unique crumb**

Harry;

Agreed, sometimes I find it beneficial to put the mixer into a higher speed just to help get the oil incorporated, and then drop back down to my normal mixing speed to finish mixing.

Tom Lehmann/The Dough Doctor  
4671

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Actually, at higher mixing speeds you are developing and breaking down the gluten faster than you are oxidizing it. The stiffer/firmer dough does indeed get more mixing action at low speed than a softer dough but it is still all but impossible to mix a dough, even with low absorption to a point where you actually begin to break down the gluten matrix.

Tom Lehmann/The Dough Doctor  
4670

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Roy;

You might try looking at the book Baking Science and Technology by E.J. Pyler, it might have a chapter on it in the book.

Tom Lehmann/The Dough Doctor  
4669

### **General Pizza Making / Re: Incorporating oil into dough**

The problem stems from adding the oil too late in the mixing process. You should add the oil as soon as the dry flour on the bottom of the mixing bowl disappears. When the oil lubricates the dough ball causing it to just slide around in the bowl you are adding the oil too late. Try adding the oil a little sooner and the problem will disappear. By the way, the best way to address the problem is to just put the mixer in the next higher speed for a few seconds until the oil is worked into the dough and then return to your normal mixing speed. This does not affect the total dough/gluten development at all.

Tom Lehmann/The Dough Doctor

4668

### [\*\*General Pizza Making / Re: Incorporating oil into dough\*\*](#)

Jeff;

Yes, there is a difference if you add the oil to the water. Do you autolyse all of the flour? If so, just add the oil at the time you put the autolyse in the mixing bowl before even starting the mixer because all of the flour is already hydrated you don't need to mix to get flour hydration, after that just use the high speed technique to get the oil started into the dough.

Tom Lehmann/The Dough Doctor

4667

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

Please tell me that 30 - 35% is a typo. Most cake systems only contain 5 to 7% baking powder with the exception of traditional angel food cake which is normally in the 1.5 to 3% range due to the aeration of the egg albumen providing most of the leavening.

Tom Lehmann/The Dough Doctor

4666

### [\*\*General Pizza Making / Re: Incorporating oil into dough\*\*](#)

The only problem when you allow the dough to "swim" in oil as P.H. used to do is that the oil is absorbed only into the outer portion of the dough, not much more than possibly 3/16-inch, then after baking the pizza has a very oily feel to the bottom of the crust. The old P.H. pans were steel with a horizontal line stamped into the side of the pan indicating the correct height to which the dough was to be allowed to proof/rise to.

Tom Lehmann/The Dough Doctor

4665

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: New pizza screen has bulge\*\*](#)

Wolf;

Don't forget to season your screen(s) well before their first use.

Tom Lehmann/The Dough Doctor

4664

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

Got it. :)

The actual amount of soda used in a baking powder will depend upon the neutralizing value of the food/leavening acid used

Tom Lehmann/The Dough Doctor

4663

### [\*\*Dough Ingredients / Re: Mixing Yeasts\*\*](#)

Yep, not a problem. They are all of the same strain, *Saccharomyces Cerevisiae*, with the only real difference being the way they are processed to adjust the moisture content for the form that it is sold in, cream yeast, compressed yeast, active dry yeast and instant dry yeast. Just remember the conversions for each type: To replace compressed yeast/cake yeast, fresh yeast with IDY use only 40% as much IDY. To replace using ADY use 50% as much. Feel free to blend them if you wish, just remember if machine mixing the IDY should be added to the flour in its dry

form, or it can be hydrated in a small amount of 95F water before addition. The ADY must be hydrated in a small amount of water at 100 to 105F prior to addition. Compressed yeast can be added just as it is to the dough or it can be suspended in the dough water (no special attention to the temperature of the water is needed). If you are mixing your dough by hand it is best to pre-hydrate both dry yeasts and suspend the compressed yeast as per directions above.

Tom Lehmann/The Dough Doctor  
4662

### [\*\*New York Style / Re: Help with using KA Bread flour instead of Sir Lancelot in dough recipe\*\*](#)

Husker;

Actually, that formula was developed to use a 12.5 to 12.8% protein flour much like the KA Bread Flour #110 @12.7% protein content. While the dough was completely satisfactory after 24-hours cold fermentation time we always felt that it was in its prime at 48-hours. When we used General Mills All Trumps at 14.2% average protein content we felt that the dough was not fully matured until after 48-hours of cold fermentation with its prime at around 72-hours. So, if you are going from a 14% flour to a more typical 12.7% flour my advice is to plan to use the dough after between 24 and 48-hours of cold fermentation time. Much beyond that the dough seems to be beyond its prime. Of course this all depends greatly upon how the dough is being managed.

Tom Lehmann/The Dough Doctor  
4661

### [\*\*Dough Ingredients / Re: Mixing Yeasts\*\*](#)

JVP;

Sure. IDY has many cracks and fissures over its entire surface to allow for instant/rapid hydration (that's where the "instant" part comes from) and when you put IDY into cold water the water enters into the individual cells but doesn't cause the cell to swell, which would effectively trap the water in the cell, so what you get is something of a flushing action where the water enters the cell and then leaks out again BUT in doing so it also takes with it some of the plasma material from within the cell (think of it as eviscerating the cell). This may or may not kill the cell(s) but in any case it does reduce the ability of the yeast to participate in the fermentation process. Keep in mind too that contained in that plasma material is the amino acid glutathione which can also result in softening or weakening of the dough much like the addition of PZ-44.

the1mu;

Yep, even if it's ice water. The reason for this is because the yeast in this form is already hydrated and there is no damage as described above, and ice water will not temperature shock the yeast at all, in fact it tolerates ice water temperature quite well. Think of it, what temperature do we store compressed yeast at? The only reason why it is not recommended to store it below 36F is to reduce the risk of having it frozen.

Tom Lehmann/The Dough Doctor  
4660

### [\*\*Dough Clinic / Re: Yeast + Baking powder\*\*](#)

Norma;

There is a possibility that the non-encapsulated soda might be neutralizing the acids formed by the yeast. This would greatly suppress yeast activity as yeast is an acid loving organism and does not do well at all in anything that comes close to

being alkaline.

Tom Lehmann/The Dough Doctor  
4659

**Dough Clinic / Re: A Question On Yeast Reduction In a Formula.**

Brewer;

To stay true to the recipe (formulation) do all of your calculations using compressed yeast, then decide which form of yeast you want to use, IDY or ADY, adjust the level for equivalent fermentation performance to the compressed yeast (1/3 as much for IDY or 1/2 as much for ADY) and you are good to go. No other formula changes are needed as you are only changing the "form" in which the yeast is added in. If you want to be absolutely correct in the conversion you will also want to add the difference in weight between the compressed yeast amount and the amount of IDY or ADY as additional water to the dough formula to compensate for the drying effect of the dried yeast product you have elected to use.

I hope this has answered your question.

Tom Lehmann/The Dough Doctor  
4658

**Dough Clinic / Re: A Question On Yeast Reduction In a Formula.**

Peter;

When calculating a formula in this manner you are actually working in "true" percent (true %) which always gives a total of 100% when you add up all of the percentages it also always gives you the same dough weight too. This is why this method is so commonly used by dry mix formulators (I can't think of any using any other method), but the down side is that when you change any one ingredient you automatically change all of the other ingredients at the same time necessitating reformulation. It can also make assessing the impact of an ingredient on the formula more difficult as the amount of the ingredient is based on the total dough weight as opposed to the flour weight upon which the structure of the dough is built. Neither method is right or wrong, it all depends upon what you are trying to accomplish. If keeping the dough weight constant then working in true % is the way to go but if developing a formula or assessing the impact of an ingredient on the dough is the goal bakers % is a better approach.

Tom Lehmann/The Dough Doctor  
4657

**Dough Clinic / Re: Yeast + Baking powder**

Norma;

6.6 is a very high dough pH caused most likely by the soda portion of the CL (chemical leavening). The crumb structure as well as the crust are very typical for what we found too. It is very similar to the old quick breads that you find mentioned in some of the older books on home baking. You can also handle the dough as you would a sweet dough to make pastries. We used to get something like that when we were kids, form into small (golf ball size) balls, then flatten to about 1/4-inch thickness, using a spoon dipped in melted butter form a depression/pocket in the center, egg wash, sprinkle with sugar, apply a dab of jam to the depression and bake. As kids we could eat them as fast as they came out of the oven. :)

Tom Lehmann/The Dough Doctor  
4656

**Dough Clinic / Re: Yeast + Baking powder**

Peter;

That's really strange to hear. The amount of vinegar is very small, only enough to replace 2 or 3% of the dough water and then acetic acid is one of the acids formed during fermentation. Vinegar = dilute acetic acid.

You're probably right, buy our stuff.  
Tom Lehmann/The Dough Doctor  
4655

### [\*\*Dough Ingredients / Re: Mixing Yeasts\*\*](#)

JVP;

Excellent question.put the water in the bowl first then add the salt and sugar (if used) to the water, no need to stir, then add the flour and the IDY right on top of it. Remember, this is for machine mixing only. The other recommended way to add the IDY is to hold it back for about 90-seconds of the low speed mixing cycle and then just pour it over the "dough" and go on with life as normal. I personally don't like this second addition method because even in a commercial setting (pizzeria) the dough will be fully mixed and then the container of IDY is discovered still sitting on the bench...Oops! Or worse yet, it is not discovered until the following day. I just responded to an emergency call on this situation not two weeks ago. The solution: Make an emergency dough for immediate use, allow the dough balls to warm to 65-70F and put them back into the mixer, add the IDY and mix for 5-minutes at low speed, start over again as you would with a new dough. It doesn't do anything for your immediate dough needs (that's what the emergency dough is for) but at least you don't lose the dough that you've already made.

Tom Lehmann/The Dough Doctor  
4654

### [\*\*Dough Clinic / Re: Tried lots of recipes but not getting the flavor. Please help!\*\*](#)

Can you share with us the exact dough "recipe" that you are using?

Tom Lehmann/The Dough Doctor  
4653

### [\*\*Dough Ingredients / Re: Mixing Yeasts\*\*](#)

If a pre-ferment is used you have to take into account the amount of yeast that you added to the pre-ferment just like you do with the water content.

Tom Lehmann/The Dough Doctor  
4652

### [\*\*Dough Clinic / Re: Crispyness of dough after pizza gets cold\*\*](#)

Rolo;

If your dough bakes up crispy but the finished pizza gets soft 10-minutes out of the oven, this is pretty normal for pizza. not knowing how soft your pizza is actually getting I cannot give any specific direction but here are some things to do that might help a bit.

- 1) Brush the pizza skin very lightly with oil prior to application of the sauce.
- 2) minimize the amount of sauce and toppings used on the pizza.
- 3) Bake the pizza as long as possible, sometimes deleting any sugar, eggs or milk from the dough formula will allow you to bake the pizza longer without developing excessive crust color.
- 4) Place the finished pizza on a screen or rack to allow for airflow under the pizza as soon as you remove it from the oven.
- 5) Change the type of pizza that you are making to a thin crispy or cracker type crust. The doughs used to make these types of pizzas will typically be made with

around 45% absorption. They retain their texture quite well which explains why they are commonly served at pizza buffets.

If you would please provide us with your dough formula, mixing technique/procedure, dough management procedure and baking procedure I'm sure we can provide more additional information.

Tom Lehmann/The Dough Doctor  
4651

**Dough Clinic / Re: Crispyness of dough after pizza gets cold**

Rolo;

You might want to consider increasing the salt level to 1.75 to 2% as this will provide for an improved flavor in the finished pizza. To move your pizza closer to a thin crispy type you might also want to reduce the dough absorption in 2% increments. Keep in mind that when doing this the dough will become increasingly tougher but you don't need to mix it as much as you presently mix your dough, all you will need to do is to mix the dough until it is well incorporated, then scale, ball, oil the dough balls, place into plastic dough boxes, cross-stack for 2-hours, then down-stack and allow to cold ferment for at least 24-hours (48-hours is better), then remove dough from the cooler, allow to warm at room temperature until the dough balls reach 50F/10C then begin sheeting the dough out to size, dock, sauce, dress and bake.

Tom Lehmann/The Dough Doctor  
4650

**Dough Clinic / Re: Tried lots of recipes but not getting the flavor. Please help!**

Fermentation is the key to getting a flavorful pizza crust, or bread for that matter, no doubt about it. Your dough formulation looks good and should perform well for you IF the dough is managed correctly. I think most participants will agree that 12-hours cold fermentation time marginal for dough performance and certainly not sufficient to develop the flavors that you are looking for. I would suggest following the suggestions by Got Rocks and JSARAS to get a stronger, better suited flour and ferment it longer (48-hours would be a good starting point). I think you will find that this will give you something more like what you are looking for.

Tom Lehmann/The Dough Doctor  
4649

**Newbie Topics / Re: 13-14 inch ny pizza?**

Tia;

You're making a New York STYLE pizza in your home oven so you can make it any size you want or any size your oven will accommodate, it's the visual, textural and flavor properties that you are after, not the size. Sure, for AUTHENTIC New York pizza (whatever that might be/there are sooooo many pizzerias in New York City) you might want to go to a larger format, (I think that is what Scott might have been referencing) but to enjoy a "taste of New York" make any size you're comfortable making, once you have mastered the formulation and technique it will be just as good. Just for the record, at home I make all of my pizzas on either a 12" or 14" format.

Tom Lehmann/The Dough Doctor  
4648

**General Pizza Making / Re: How do you serve your 14 inch and bigger pizza?**

Ovenray;

Corrugated cardboard is probably one of the best things to serve your pizza on. It allows the pizza to breathe a little from the bottom, it absorbs any oil or moisture released from the pizza, and it's totally disposable. Metal plates cause condensation to form on the bottom of the pizza, and because they don't "breathe" the condensation is forced back into the pizza (anyone care for another soggy slice?). There are two easily addressed issues to using cardboard, 1) It doesn't look very nice. 2) It is not "food safe" and it can transfer unwanted flavors from the cardboard to the pizza. Both of these issues are very easily addressed by placing a piece of heavy weight food contact approved paper over the cardboard. You can buy this in sheets from most restaurant supply stores or you can make your own as I do, just buy a disposable table cloth (they come in different patterns) and cut into squares to fit over your pieces of cardboard. I just lay mine over the cardboard but I suppose if you wanted to get fancy you could cut the pieces a bit larger than your cardboard and fold it over the cardboard and tape it to the bottom. If you don't mind having something to store you could also cut a piece of plywood to desired size and then size the cut pieces to fit and you would have something more durable and permanent. Not satisfied yet?? How about buying or making a simple wood peel of the desired size, placing the cut piece of paper on the peel and serving it that way. If you go this route be sure to pre-treat the peel by wiping it liberally with mineral oil several times to seal the surface. This will make it easier to wipe down. NOTE: NEVER wash a wood peel, just wipe it down with a damp cloth and wipe dry immediately to prevent it from warping.

Tom Lehmann/The Dough Doctor

4647

[\*\*Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice\*\*](#)

It sounds like you are incorporating the oil into the flour which will coat the flour making it all but impossible to form gluten from the oil soaked flour and that portion of the flour will not hydrate well at all. It also sounds like your dough is very under absorbed too. You might want to begin adding more water to the dough. Remember, the amount of water specified for any dough is variable as different flours have different absorption levels. From the sound of what you are experiencing I would suggest increasing the dough absorption by 5% to see if that gives any improvement and then adjust as necessary in 2% increments until you achieve a more cohesive and smooth textured dough.

Tom Lehmann/The Dough Doctor

4646

[\*\*Newbie Topics / Re: 13-14 inch ny pizza?\*\*](#)

And I thought that egg on my face was left over from breakfast. :-D

Tom Lehmann/The Dough Doctor

4645

[\*\*Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice\*\*](#)

Zaroh;

Yes, you are correct. Then once you have the dough at 68% absorption look at it and ask yourself if you think more water will make it better or worse, if the answer is "more water" the next time you make dough increase the absorption to 70% ( $68\% + 2\% = 70\%$ ) or if you think the absorption is a little high reduce it by 2% on the next dough ( $68\% - 2\% = 66\%$ ). Keep making the absorption adjustments that

way until you think you are close to where you need to be, then go in 1% increments if you want to "fine tune", but keep in mind that dough absorption is NEVER a "fixed" entity, it can, does, will change more often than you might think it does, but once you find the "sweet spot" for your specific flour and dough management procedure you should always be close enough to consistently make good pizzas.

Tom Lehmann/The Dough Doctor  
4644

[\*\*Off-Topic Foods / Re: Caramelize Onions in Conveyor Oven?\*\*](#)

The high velocity airflow will scorch the onions if they are not covered, place in a pan with a little oil and cover with a piece of foil. As baking temperature, time and finger profile differs with different air impingement ovens you may need to experiment with the exact baking procedure, full pass, partial pass, etc. One other thing, a bright colored pan might work better than a traditional dark colored pan.

Tom Lehmann/The Dough Doctor  
4643

[\*\*Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice\*\*](#)

Just mix/knead the dough until it looks smooth, (no need to mix/knead any longer) biochemical gluten development will take care of the rest of the gluten development for you.

Tom Lehmann/The Dough Doctor  
4642

[\*\*Dough Clinic / Re: Dough ball not sm0oth or silky\*\*](#)

Alvin;

Your dough is under mixed, it needs to be mixed for a longer time. If your mixer has a reverse spiral type dough arm this should be easy to accomplish, but if it has the older type "J" hook it might be a bit more problematic as the dough will continually just grab onto the hook and spin around in the bowl without getting any significant mixing action. If this is the case you have two options, 1) Make a larger size dough so the dough remains in constant contact with the sides of the bowl and cannot grab onto the hook. 2) Stop the mixer as soon as the dough balls up on the hook, pull the dough off of the hook, turn it upside down and place it back into the bowl and resume mixing.....repeat, repeat, repeat, repeat. A third "possible" solution exists, see if you can get a reverse spiral dough arm for your specific mixer. These dough arms are designed to keep forcing the dough down into the bottom of the bowl, eliminating the problem. Availability of the reverse spiral dough arm will depend upon the age of your mixer.

A couple of questions too:

What is the finished/mixed dough temperature?

What do you put the dough ball(s) in for the cold fermentation period?

Tom Lehmann/The Dough Doctor  
4641

[\*\*Dough Clinic / Re: Dough ball not sm0oth or silky\*\*](#)

Hermit;

Yes, that's the spiral dough arm that I was referencing in my response to Alvin.

Tom Lehmann/The Dough Doctor  
4640

## [Prep Equipment / Re: Anyone using a Ankarsrum mixer?](#)

Which mixing attachment are you using?

Tom Lehmann/The Dough Doctor

4639

## [Dough Clinic / Re: dough roller tears up dough](#)

Thank you for the update, looks like they are going to a new website. Having the company name in the website address makes a lot more sense than what they previously had.

By the way, "[www.wenrich.com](http://www.wenrich.com)" was short for W= Wright / ENRICH = Enrichment (Wright Enrichment). Their main product to the food industry is vitamin and mineral enrichment. When you see the word "enriched" on a package of bread, pasta, cookies, etc. they were the ones almost always providing the enrichment blend for that product, but now that they are expanding out of just enrichment I'm guessing that [www.wenrich.com](http://www.wenrich.com) just didn't cut it anymore.

Tom Lehmann/The Dough Doctor

4638

## [Prep Equipment / Re: Anyone using a Ankarsrum mixer?](#)

I've only been exposed to it one time and I wasn't impressed. The "hook" if you can call it that, in my personal opinion, is useless, and the roller mixing attachment looks like it wants to provide spiral mixer type of mixing action but it just doesn't seem to work the dough very well or uniformly. If that machine had a rotating spiral design hook it would work a whole lot more like a spiral mixer and probably work quite well.

Tom Lehmann/The Dough Doctor

4637

## [General Pizza Making / Re: Costco Ingredients Pizza Making Challenge](#)

And the ADY is not a problem either, just use it correctly and you're good to go. The lack of pepperoni stumps me too???

Do you not like salami on your pizza? ^^^

Next time you're at a store where you can buy it put in a good supply and freeze it for future use, remember you can make some really great pizzas without pepperoni too.

Tom Lehmann/The Dough Doctor

4636

## [Off-Topic Foods / Re: Hamburger, Hotdog Buns](#)

Here is the formula that I use for both hot dog and hamburger buns.

Sponge:

Flour (Pillsbury Bread Flour) 75%

IDY: 1%

Water (80F): 55% of the weight of the sponge flour weight (above).

Mix together just until well mixed, cover and set aside to ferment for 4-hours.

Dough:

Flour (Pillsbury Bread Flour) 25%

Water (cold) 65% of the total flour weight (sponge and dough) minus the WEIGHT of water in the sponge.

Salt 2%

IDY 0.5%

Sugar (table sugar) 13%

Butter (non-salted and softened) 5%

Procedure:

Place fermented sponge in mixing bowl, add water, flour and remainder of ingredients.

Mix at low speed for 2 to 3-minutes then mix at the highest speed possible for 8 to 10-minutes. The dough should have a very smooth, silky appearance.

Immediately take dough to a floured work surface and divide into 75-gram pieces, forming each piece into a ball.

Set dough balls aside, sprinkle lightly with flour and cover with a sheet of plastic to rest for about 15-minutes.

Using a rolling pin or pastry/pie pin flatten each dough ball out to approximately 1/4-inch in thickness.

Place flattened dough pieces onto a lightly oiled baking pan (sheet pan/cookie sheet).

Cover again with a sheet of plastic and allow to proof/rise for about 1-hour.

Lightly spritz with water and bake at 400F until golden brown (about 12-minutes).

Brush with melted butter immediately upon removal from the oven if desired.

Note: If you want to make a seeded bun apply sesame, poppy, or sunflower seeds immediately after spritzing with water.

Remove from baking pan and place on a screen/rack to cool.

I've made them like this for years, and they have a great flavor too.

Tom Lehmann/The Dough Doctor

4635

**[Dough Clinic / Re: Type of Pizza for new Pizza shop questions](#)**

Jerkywad;

I have a whole bunch of pertinent questions to ask regarding your concept and I would like to discuss these with you over the phone. Please give me a call at 785-537-1037 so that we may discuss. We're in the same time zone as I'm located in Manhattan, KS about 85-miles south of Lincoln.

Tom Lehmann/The Dough Doctor

4634

**[Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)**

Zaroh;

You might also consider experimenting with the salt level too. One function of the salt is to control the rate of fermentation, the less salt used the faster the yeast will ferment and the more salt used the slower it will ferment. At the same time the salt provides for a more consistent/predictable rate of fermentation. If you are using only 1.5% salt right now there might be a benefit to increasing it to as much as 2.5%.

Tom Lehmann/The Dough Doctor

4633

**[Starters/Sponges / Re: Starter question](#)**

Mash996;

You really need to know the age of the starter to answer your question. If the starter is only 12-hours old or less you will need to take into account the flour in the starter but if it is more than this, as most are, the flour is pretty well expended as far as gluten development is concerned so it is not taken into account but the water is.

Peter has a chart which I believe gives the conversion from starter to yeast or yeast to starter.

Which gives the best fermentation, starter or cake yeast? Fresh cake yeast will always provide the most uniform and consistent rate of fermentation, but a properly managed starter will provide the best flavor.

Tom Lehmann/The Dough Doctor  
4632

[\*\*Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice\*\*](#)

Zaroh;

As you get better one thing is for sure, those volunteers will not be CANDID! The mere mention of a pizza party will have them anxiously looking for their invitations.  
:-D

Tom Lehmann/The Dough Doctor  
4631

[\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

I make my pepperoni rolls two different ways, one is to roll the pepperoni into the dough like rolling a pepperoni jelly roll and then cutting it to length (they look a lot like what you have pictured. The other method is to chop or grind the pepperoni into small pieces, I use my hamburger bun dough and instead of rolling the dough balls out just before panning, I hold the dough ball in one hand and make a pocket in the dough ball, then I add the pepperoni and close the filled pocket and place the dough ball back down on the counter/bench top to proof/rise for an additional 30-minutes, I then roll the filled dough ball out to fit into the pan cups and set the filled pans aside to final proof/rise for 45 to 60-minutes, then spritz with water and bake at 400F. A variation of this method is to just blend ground pepperoni into the dough (20% based on the total dough weight) and mix it in during the normal mixing process, like a pepperoni infused dough. These are then formed into rolls and baked. I sounds like what you are proposing is very similar to the first method shown.

Tom Lehmann/The Dough Doctor  
4630

[\*\*Shop Talk / Re: Opening a pizzeria in January.\*\*](#)

Josh;

Need to know what kind(s) of pizza you plan to make, how you plan to open the dough and the type of oven you have, add to that the type of refrigeration (walk-in or reach-in). Do you have dough boxes? Room for dough boxes in the cooler?

I'll be glad to help you. If you wish, you may also give me a call at 785-537-1037 to discuss which may save you some time.

Tom Lehmann/The Dough Doctor  
4629

[\*\*Off-Topic Foods / Re: Hamburger, Hotdog Buns\*\*](#)

Fast as possible = the highest speed setting that your mixer will mix the dough without fear of it going into a self destruct mode.

Tom Lehmann/The Dough Doctor  
4628

[\*\*New Forum Members / Re: thin crust pizza\*\*](#)

John;

I'm from Tinley Park, IL. My favorite pizza place was/is Ed and Joe's. I am not familiar with Little Joe's, where is it located in Tinley Park?

Tom Lehmann/The Dough Doctor  
4627

### [\*\*Other Types / Re: Re: Bo Pizza\*\*](#)

Norma;

Yes, we sheet the dough out to about 1/4-inch in thickness and form it into a rectangular shape, then wet one edge (top or bottom) with water, add pepperoni slices, or wet the entire surface and add ground pepperoni, then begin rolling the dough (jelly roll fashion) towards the wet edge (the wet edge will help to seal the seam). After the dough is rolled I like to allow it to rest (with the seam on the bottom) for a couple of minutes, then using a sharp French/chef's knife begin cutting it into desired lengths. I like to finish by placing on a baking pan with a silicone liner, spraying the top of each piece with water and sprinkling with shredded Parmesan cheese. The pepperoni on the cut edge will get lightly toasted for added flavor, if you don't want this you can manually work the dough on the cut edged to cover the pepperoni for a fully enveloped pepperoni roll. When making the pepperoni rolls by making the pocket in the dough ball I have also been known to add a little cheese to the pepperoni too. I learned this procedure when I was teaching a class in Taiwan a number of years ago where I saw them making a roll filled in this manner using steamed vegetables or red bean paste (red bean paste rolls), the rolls were brushed with egg wash and baked, I figured the procedure would work well in making pepperoni rolls too.

Tom Lehmann/The Dough Doctor  
4626

### [\*\*Dough Clinic / Re: Tried lots of recipes but not getting the flavor. Please help!\*\*](#)

Joe;

Your assumption is "spot-on". Many pizzerias have dough management procedures that work, to a greater or lesser degree, for them but the underlying fact is that it does work. When I developed the model dough management procedure we incorporated everything that would allow for the most effective dough management possible. While many pizzerias cannot implement the model system (many have now done so as have a number of pizza commissaries) we still encourage them to try to incorporate as many of the aspects of the model system as possible, keeping in mind the fact that without time and temperature controls you cannot have an effective dough management program.

Tom Lehmann/The Dough Doctor  
4625

### [\*\*Shop Talk / Re: Toppings - pre cooking in house vs. pre cooked\*\*](#)

The biggest challenge to using raw meats and eggs in any food establishment is the potential for cross contamination. Considering the skill level that is present in many pizzerias the use of precooked meat toppings is a very realistic consideration. At home, not a problem, but in a commercial establishment there is an awful lot on the line. The classic example is the case with Jack In The Box many years ago, it still serves as an example of what can go wrong and the ramifications when it does, and there have been some much more current, high profile cases of food caused illness that we have all read about or seen in the news, it's not something you want to be exposed to as a business, I can't say "don't do it" but if you do opt to handle

raw meats and eggs in a pizzeria make doubly sure you and your employees have the proper training, follow that training and know what they are doing.

Tom Lehmann/The Dough Doctor  
4624

[\*\*Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice\*\*](#)

If you are looking to wrap the dough ball in Saran wrap be sure to lightly oil the dough ball first, if you don't, there is a high probability that you will need to scrape the dough off of the Saran wrap. To properly oil a dough ball you should place a little oil on your hands, rub them together and then run your hands over the dough ball. All of the research that we did on oil application to both dough and pans showed that you can apply a thinner application of oil by wiping than be spraying, remember, if you can see an oil sheen on the dough you have enough oil on the dough. If you're oiling a pan and want minimal oil application just apply a little oil to a paper towel and wipe the inside of the pan.

Tom Lehmann/The Dough Doctor  
4623

[\*\*Chitchat / Re: Trying to learn stainless steel cookware\*\*](#)

To properly season a pan just wipe with an oiled paper towel, there should not be any oil "swimming" in the pan to be poured off. Seasoning is really nothing more than an oil finish (think varnish) if you put too much on all at once it will never dry/cure properly and remain soft and sticky. I think your problem was too much oil in the pan.

Tom Lehmann/The Dough Doctor  
4622

[\*\*Dough Clinic / Re: convert recipe using 5 lbs of flour\*\*](#)

First convert the formula to bakers percent with flour as 100% and then divide the weight of each ingredient by the weight of the flour and multiply by 100 to find the % (bakers %) of each ingredient. Then all you need to do is to write down 5-pounds or better yet 80-ounces next to the flour as this will be your new flour weight upon which the formula will be based. Then, using your calculator, enter the flour weight (80) X ingredient percent you want the new weight for, then press the "%" key. The ingredient weight will be in the display. The ingredient weight will always be given in the same weight units that the flour weight is shown in (pounds, ounces, grams, kilograms, etc.).

Here is an example:

50 Lbs. = 100%

3-Gal. water = 24-Lbs. / 24 divided by 50 X 100 = 48%

7-Oz. salt = 7 divided by 800 (ounces in 50#) X 100 = 0.875%

7-Oz. sugar = 7 divided by 800 X 100 = 0.875%

1/2-Oz. ADY = 0.5 divided by 800 X 100 = 0.0625%

7- Oz. oil = 7 divided by 800 X 100 = 0.875%

New formula based on 5# of flour weight.

Flour: 5-pounds/80-ounces

Water: 80 X 48 (press the "%" key and read the answer.....38.4-ounces.

Salt/Sugar/Oil: 80 X 0.875 (press the "%" key).....0.7-ounce.....0.7 X 28.4 = 19.88-grams.

ADY: 80 X 0.0625 (press the "%" key).....0.05-ounce.....0.05 X 28.4 =

1.42-grams

Tom Lehmann/The Dough Doctor  
4621

**Neapolitan Style / Re: Thoughts about fermenting/proofing style**

There are SOOOOO many things that can/will affect the way a ferments/proofs /rises that it is literally impossible to follow any one specific procedure and hope to get the same results. For example, placing the dough on the bench top to proof uncovered for a period of time may work fine in Miami, Florida but it may not work as well in Greeley, Colorado as the dough will exhibit more than a propensity to develop a dry crust. How do the big guys do it? They control as many of the variables in their dough management procedure as possible, keeping in mind that time and temperature control are the key to effective dough management. If you go into the archives at PMQ or Pizza Today and dig up some of my past articles (In Lehmann's Terms/PMQ) and The Dough Doctor/Pizza Today) you will find articles/discussion on dough management as it pertains to pizzerias.

So how do you know the correct way to ferment or manage a dough? I think the easiest way is to look at it this way:

What is the finished/mixed dough temperature?

Is the dough cold fermented or fermented at room temperature?

Is it fermented as a portioned ball or is it bulk fermented?

Does the dough sit out prior to cold fermentation/for how long? Or does it go straight into the fridge?

How long is the dough fermented?

Once you know these details you can try to incorporate them into a dough management procedure that works best for you.

By the way, those wooden dough boxes, over time they become impregnated with bacteria, different strains of lactobacillus (lactic acid forming bacteria which are responsible for certain unique flavors in bread type doughs) in this manner they act something like the addition of a sourdough starter to the dough.....in SOME cases the wooden dough box might have an important part to play in the finished crust flavor BUT, and this is a big BUT, it doesn't just happen overnight, it might take months or years of use to develop the bacteria so just putting the dough into a wooden box to ferment probably won't have the desired effect if it's flavor that you're looking for.

Tom Lehmann/The Dough Doctor  
4620

**General Pizza Making / Re: how to get tangy flavor in dough**

Agreed, try working with a starter or sourdough. You might even try using a sponge-dough procedure to develop the flavor profile you're looking for, any of these will shorten your process significantly....not taking into account the time needed to mature a sour or starter. You could use a sponge-dough procedure using 75% sponge that is fermented overnight to develop the flavor, this would cut your procedure down to 24-hours or so.

Tom Lehmann/The Dough Doctor  
4619

**Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice**

Zaroh;

Regarding that "other" IDY that you referenced (the brick), all IDY is dry yeast and in larger quantities usually 450-grams, it is sold in a vacuum pack. It looks like a somewhat rectangular shaped brick and is just about as hard. Once the packaging is compromised it becomes soft and the IDY can be easily poured out of the bag. This is how all of the pizzerias buy their IDY. Be aware though that much to my dismay, most of the yeast manufacturers are now putting their ADY up into the exact same packaging. A few years ago only IDY came in this type of packaging but now that both yeast types are packaged exactly the same there have been numerous cases where they have been confused/mixed up.....the problem is that they cannot be used interchangeably in the same manner.....moral of the story: Always read the label.

Tom Lehmann/The Dough Doctor  
4618

### [\*\*Dough Clinic / Re: convert recipe using 5 lbs of flour\*\*](#)

bmac;

"The ingredient weight will always be given in the same weight unit as the flour is shown in", since we are showing the flour weight in ounces the ingredient weight (water in this case) will also be shown in ounces. Since we weighed the flour to 80-ounces it would be correct to weigh the water to 38/38.4-ounces rather than using a volumetric measure for liquid/fluid measures which would not be as precise.

However it is good to note though that when making dough in a pizzeria where the flour weight is typically between 40 and 50-pounds it is a common practice to volumetrically portion the water (fill a 5-gallon bucket with the exact amount of water needed, determined by weighing, and then mark a line on the bucket to which it will be filled when making doughs on a regular basis. While this method again is not as accurate as actually weighing the water each time the percent of inaccuracy is lessened with the greater flour amount so it is usually considered as an acceptable practice. My advice is to always weigh the water for any doughs made with less than 25-pounds of flour.

Tom Lehmann/The Dough Doctor  
4617

### [\*\*Neapolitan Style / Re: Thoughts about fermenting/proofing style\*\*](#)

Just be sure to seal the surface of the wood box that will come into contact with the dough by saturating it several times with mineral oil prior to the first use, otherwise the dough and the box will become as one. Also be sure to use a flexible hand held scraper to free the dough from the sides of the box. You don't want to use a metal one as it will result in wood splinters in your dough.

Tom Lehmann/The Dough Doctor  
4616

### [\*\*Dough Clinic / Re: convert recipe using 5 lbs of flour\*\*](#)

Mitch;

You are absolutely correct. I was thinking about that as I was typing my response but I never thought to go back and correct it. Because water is never a constant in any dough formula we typically just use 8# for a gallon of water but when down sizing a dough formula as I was it would have been more correct to use the accepted weight of 8.34-pounds per gallon.

Good catch!

Tom Lehmann/The Dough Doctor  
4615

## [New Forum Members / Re: Dough with butter?](#)

Ernie;

You reference apple pie and mixing the butter into the flour. This is roughly how pie crusts are made but the approach is a little different. You will need to use at least 15% butter but you can double that amount too but better have a good baking platform under the dough. Chill the butter and the flour, cut the butter into chunks and add to the flour, using a pastry cutter chop/work the butter into small, pea size, pieces. Suspend all of the other ingredients in not more than 50% cold water (make sure you are handling the yeast correctly for the type you are using) and add to the flour-butter mixture, mix just until the dough comes together, turn out onto a floured surface and scale to desired weight, form into pucks (like hockey pucks), lightly oil and place onto a floured sheet pan or cookie sheet, cover with a piece of plastic to prevent drying, cold ferment for 48-hours, and open using a rolling pin or pie/pastry pin. Something to experiment with if you want to go in that direction.

Tom Lehmann/The Dough Doctor  
4614

## [Stones/tiles/steel, Pans & Accessories / Re: Perf disk](#)

Peter is correct, the type of disks shown do not provide as much heat to the bottom of the pizza as a pizza screen does which can/will make a difference especially when baking at marginal temperatures to begin with. If one was trying to bake the top of the pizza more while not over baking the bottom this might be an option. There are many different hole patterns incorporating different size holes and patterns to achieve specific baking characteristics. For example, Lloyd Pans <[www.lloydspans.com](http://www.lloydspans.com)> makes what they call a "Hearth Bake Disk" it works great for imparting a true hearth baked crust characteristic using dough without any added sugar, eggs or milk, BUT the disk is designed to work ONLY in air impingement ovens operating at 500F and above.

Tom Lehmann/The Dough Doctor  
4613

## [Dough Clinic / Re: Here's my recipe. Why is it not crispy?](#)

Billy;

The dough likes to be warm for pressing. While we normally advocate allowing the dough to warm to 50F before opening, when using a hot press it is better to allow it to warm to a minimum of 60F before pressing. The use of a lower protein flour will make the crust less chewy as will the addition of fat/oil up to about 5%. If you are looking for crispy/firm, the only option you have with your press is to par-bake the crusts, then store at room temperature for use. Upon an order just pull a crust from the stack, dress and bake to the order. This will also make a much crispier DELCO crust/pizza too. As for your regular crust in a DELCO situation it WILL soften and get more chewy.....that's the nature of the beast.

My advice is to take the par-baked crust concept for a test drive and do a little consumer testing with it to see how it is received. If it works for you it will be very easy to work the concept into your work flow.

Tom Lehmann/The Dough Doctor  
4612

## [Dough Clinic / Re: Yeast %](#)

If the dough handles OK for you and it gives you the desired finished pizza characteristics the yeast level is OK as is your dough management procedure.

Tom Lehmann/The Dough Doctor

4611

### [\*\*Newbie Topics / Re: Help with KitchenAid\*\*](#)

Is you mixer one of the older ones with a plain "J" hook that is bare aluminum? If it is that answers both of your questions, the "J" hook is really quite poor as a dough mixing attachment since the dough ingredients do not incorporate very well, and when they do the dough grabs onto the hook resulting in very poor mixing action and the necessity to frequently stop the mixer to pull the dough off of the hook. If the hook is plain aluminum it is most likely scrubbing against the bowl at some point resulting in abrading of the aluminum off of the hook which is responsible for the gray color of the dough. If your mixer is one of the newer ones with a spiral type dough arm that is coated with a tough polymer (white in color) it might just be that you are not mixing the dough long enough. TIP: for better incorporation of ingredients when making a dough be sure to add the water to the bowl first, then add the salt and sugar (if used) into the water (no need to stir) add the flour and the yeast and mix just until you don't see any dry flour in the bowl then slowly pour in the oil and mix for 1-minute after the last of the oil is added, after that you can increase the speed to mix/develop the dough.

Tom Lehmann/The Dough Doctor  
4610

### [\*\*Newbie Topics / Re: Help with KitchenAid\*\*](#)

The flat beater aka paddle is used primarily for blending things like cake batter, cookie dough, etc.

Tom Lehmann/The Dough Doctor  
4609

### [\*\*Shop Talk / Re: The small things...\*\*](#)

You might also want to think about establishing an LLC to protect yourself. Also, if you have not already done so go back a bit and look at the previous discussions here on the trailer itself.

Tom Lehmann/The Dough Doctor  
4608

### [\*\*Neapolitan Style / Re: First time dough maker!\*\*](#)

Simon;

Your dough formula contains 16.6% oil which is a lot of oil, it's about the maximum amount of oil used in pizza doughs. The "normal" amount of oil is usually around the 2% mark.

Oil/fat/shortening provides a tenderizing effect on the finished crust, some might say that it makes the crust eat more like a biscuit, especially at the higher levels. It also provides a flavor to the crust, for example, lard, butter, olive oil all have their distinct flavor, oil also traps/holds aromas and flavors released during baking to provide for a more flavorful finished crust. The oil will help to seal the cell walls in the dough making them better able to retain gas which is formed and expanded during the baking process and in the same vein it also lubricates the dough for improved expansion/oven spring properties. It helps to create a moisture resistant barrier between the sauce and the dough/crust thus limiting moisture migration from the sauce and toppings into the dough where it can be responsible for the formation of a gum line or into the crust where it can be responsible for making a soggy crust. The oil, especially at higher levels can/will impact the crust color allowing for darker crust color development than dough without oil or oil at a low level. Lastly, everybody has what we refer to as a "fat loving gene" in their DNA,

this means that people are attracted to things that are high in fat.

Tom Lehmann/The Dough Doctor

4607

### **Newbie Topics / Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice**

The recommended water temperature for pre-hydrating dry yeast are as follows:

ADY: 100 to 110F

IDY: 95F (IDY exhibits a relatively poor tolerance to activation in water on either side of 95F)

The biggest problem resulting from hydrating IDY in cold water stems from the "I" in its name (instant) which means that the yeast is much faster "instant" to hydrate than ADY. This is the feature in IDY that allows it to be added directly to the dough without pre-activation/hydration. However, if the IDY is exposed to water under 95F it will hydrate but the water will both enter and exit the yeast cells without getting the desired swelling of the cells which seals the water in the cells thus preventing the amino acid glutathione from being released into the dough where it results in dough softening and the yeast cells which were affected in this manner exhibit significantly poorer fermentation properties. This is the reason why the recommended method for adding IDY is to first develop the dough to a point of full flour hydration and then add the IDY on top of the dough, this controls the rate at which the yeast can hydrate so there is essentially no damage to the yeast. The only problem with this method of addition is that more often than not the dough is mixed and 24-hours later it is discovered that the dough isn't rising/fermenting.....Oops, for got to add the yeast! Can't happen? I just happened to a client of mine, he came into his shop in the morning only to find that the dough didn't rise one bit during the night. He had to put the dough back into the mixer (we used 50% more IDY) and mixed the dough just enough to incorporate the IDY (5-minutes) making a form of emergency dough that he was able to limp by on. By adding the IDY to the flour (also a recommended procedure) there is less of a chance to forget adding the IDY. In this case there is sufficient competition for the water from the flour to slow/control the rate of IDY hydration so this procedure for adding IDY has become the most popular and accepted method for adding IDY to the dough. Because of its sensitivity to water temperature (yeast + water mixture only) pre-hydrating IDY is usually not recommended unless absolutely necessary such as when mixing the dough in a VCM or hand mixing procedures.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

4606

### **Dough Clinic / Re: Oil and oven spring**

In one word: Yes. For the very reasons cited, better gas retention and a lubricated dough for improved expansion properties.

Tom Lehmann/The Dough Doctor

4605

### **Shop Talk / Re: pizzeria opportunity**

While electric ovens can and are used for baking pizzas in pizzerias, with one exception it would not be my first choice. What is the equipment package like? Anticipated sales? What does the 3 or 5-year plan look like? What will your responsibilities be, what's in it for you? Benefits?

Tom Lehmann/The Dough Doctor

4604

**Shop Talk / Re: pizzeria opportunity**

You indicated that he said that he has typical stuff like refrigerators, to me this sounds like working with reach in units.....strike one! Tread very carefully.

Tom Lehmann/The Dough Doctor

4603

**Pizza Cheese / Re: Ideal Ratio for 4 cheese blend?**

Billy;

My "safe" approach has always been to use the blending cheese at no more than 25% of the mozzarella or mozzarella - provolone blend with any other cheeses making up the remaining 25%. In your case I think I would favor the Swiss for the majority of the blend (15 to 20%).

Tom Lehmann/The Dough Doctor

4602

**Pizza Cheese / Re: Ideal Ratio for 4 cheese blend?**

I'm in the same boat. My personal favorite is 75% mozzarella and 25% parmesan and if I want to kick it up a little I'll go with 75% mozzarella + 20% Parmesan + 5% romano.

Tom Lehmann/The Dough Doctor

4601

**Dough Clinic / Re: Oil and oven spring**

Oh no! Aside from oils and fats in general, there is dough absorption (probably has the greatest influence on oven spring), flour strength, amount of yeast, amount of dough fermentation (dough management) and baking conditions, and to some extent you might even add the amount of salt used in the dough formulation.

Tom Lehmann/The Dough Doctor

4600

**Dough Clinic / Re: convert recipe using 5 lbs of flour**

bmac;

Or is it 350 ml.? That is the question. :-D

Tom Lehmann/The Dough Doctor

4599

**Shop Talk / Re: pizzeria opportunity**

Got Rocks;

I quote "with one exception" Speaking only for myself, any oven made be Dhalen, which also includes the Pizza Master ovens (made by Dhalen) is the exception. I have personally never seen a better electric oven than the ovens made by Dhalen and this also includes their very large industrial tunnel ovens. When you don't have gas to work with it's amazing what those engineers can do with electricity when they set their minds to it.

Tom Lehmann/The Dough Doctor

4598

**Neapolitan Style / Re: Thoughts about fermenting/proofing style**

Use white mineral oil (available at any pharmacy) to seal the wood. Linseed oil will polymerize (into varnish) over time making a real mess out of the box as the dough will stick to it with a death grip. White mineral oil is also used to treat/seal wood

cutting boards and wood counter tops.

Now, you can't say that you haven't been warned by more than one person here. :)

Tom Lehmann/The Dough Doctor

4597

### **Dough Clinic / Re: convert recipe using 5 lbs of flour**

Pat;

R&P (ratio and proportion) is the other way that we were taught to do it but my experience is that most people anymore don't understand R&P but they do understand a calculator and if one can calculate a meal tip using a calculator they can work a formula in bakers percent. Just substitute flour for "meal cost" and ingredient weight for the amount of tip you want to leave and you're good to go.

Tom Lehmann/The Dough Doctor

4596

### **Neapolitan Style / Re: Thoughts about fermenting/proofing style**

In large commercial bakeries white mineral oil (food grade) is the sole lubricant for dough dividers and rounders, in fact, it the trade it is known as "divider" or "rounder" oil. If you ever had a McDonalds hamburger the bun was made using an AMF screw type divider aka SPD (superior bun divider) which requires the use of mineral as its lubricant and then the rounding bars on the dough rounding table are also lubricated with white mineral oil. This is important to the operation of the equipment as it is producing hamburger buns at the rate of 360 to 800 buns per minute. Even in large pizza commissaries like Domino's mineral oil is the only oil used with their dividers and rounders.

Keep in mind that you won't see anything special coming out of your wood box for quite some time as it will take some time for the bacteria to be able to build up in the wood (especially considering wood is pretty resistant to bacteria). The main places for the bacteria to collect are in the scratches and pores of the wood, but once you have it the flavor profile of the finished crust will change. This is how crackers used to be made, I say used to because when the cracker industry changed to steel dough troughs from their wood troughs the whole flavor profile of the crackers changed, the ultimate solution was to identify the bacteria responsible for the flavor, culture it and add it back to the dough as one would a concentrated sourdough culture. That's how crackers are made today.

Tom Lehmann/The Dough Doctor

4595

### **Commercial Ovens / Re: Deck oven advice**

I'm inclined to go with the oven with six elements per deck and bank on the faster recovery time to maintain the deck temperature. It also sounds like it might offer more uniform heating of the deck too. Is there any way you can get them to allow you to use the six element oven first and then if you are not happy with it exchange it for the other oven with the "S" shaped heating rods? It sounds like you really don't have much option except for one or the other. It would sure be nice if they can direct you to someone who has one of these ovens, even if it is not being used for baking pizzas, possibly you could bring some dough with you to bake pizzas in rapid succession allowing you to see how it works. If you can do this be sure to monitor the baking time as this will be the indicator as to how well the oven is keeping up with the heat/baking demands.

As an aside thought, you might be able to experiment with placing some un-glazed floor tiles in one of the decks, allowing it to heat up for at least two hours and then baking several pizzas to see how well the deck is able to maintain heat.

Lastly, are you sure this is the only oven option available to you? There are a number of posters with pizzerias in China at the PMQ web site <[www.pmq.com](http://www.pmq.com)> go to the think tank to make a post on ovens available to you in China, one of them might be able to provide more insight into what's available to you.

Tom Lehmann/The Dough Doctor

Maybe someone else has an idea that they can share too?

4594

### **General Pizza Making / Re: Salt and yeast mix**

Many years ago we did a lot of research along these lines. If you mix compressed yeast with salt and/or sugar you can literally watch the plasma being drawn out of the CY (not a good thing for the yeast). But if you mix the same salt and/or sugar with ADY or IDY absolutely nothing happens, in fact the salt/sugar actually help to protect the yeast as it is more gyroscopic than the yeast thus serving to keep moisture away from the yeast. The problem though is that ADY doesn't hydrate well by itself without warm (100F) water so if it is used in a dry mix inconsistent results are the order of the day, however when IDY is used in the dry mix and the dry mix is then added directly to the flour this actually becomes an acceptable way of adding IDY (mixed into the flour) so all is good for the yeast and excellent dough performance and consistency are achieved. The dry mix manufacturer Richardson & Holland used SAF Red Label IDY in their dry mixes for years, in fact at one time they were the largest consumers of IDY in the U.S. There are some types of IDY that are more sugar tolerant than others but it is interesting to note that those that are more sugar tolerant (Gold Label) are at the same time more sensitive and less salt tolerant, there are actually strains which were developed for use in Europe where when high sugar levels are used (10% and above) the salt levels are reduced to 1% or less. When we did our testing with both the RED LABEL and GOLD LABEL products in bread and pizza doughs we didn't see any significant difference in performance at 1% salt level (remember the sugar level was varied from 2 to 6%) but when we increased the salt to more common (U.S.) levels of 2.0 and 2.5% the GOLD LABEL product showed significant loss in fermentation performance as compared to the RED LABEL product.

I might also add that for many years (prior to the introduction of IDY into the U.S. in the late 1960's) a type of ADY was manufactured for use in dry mixes, this was called protected active dry yeast (PADY). You could always identify this form of ADY by its round "BB" like shape. This yeast had a special coating on it which protected it from moisture present in the flour which allowed it to be used in SOME dry mixes with some success. Without the PADY the regular ADY would absorb moisture from the flour resulting in a shorter than desired mix shelf life or less than ideal performance from the dry mix. In any case, it wasn't ideal, but it was the best we had at the time, and as soon as IDY found its way to the U.S. it didn't take us long to discover its virtues in a dry mix. I did all of the early and original application research on IDY in dry mixes back in the early 70's and it didn't take long for the dry mix industry to embrace it. I was so enamored with the consistency of IDY that I directed all of our baking research at AIB to be done using only IDY unless stated otherwise in the research protocol. When we made the switch our standard deviation in proof times went from +/- 3-minutes to +/- 1-minute, and the standard deviation for our control loaves went from +/- 100-ml to +/- 50-ml. (I actually think it was closer to 35-ml). We ran our labs using IDY (Red Label) as our regular yeast for many years and the performance of the IDY never varied, that's a lot more than we could say for CY.

Tom Lehmann/The Dough Doctor

4593

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: my pans aren't flat\*\*](#)

Get the heaviest weight pan (14-ga. for aluminum or 22-ga. for tin plate steel) you can find from a commercial source. All pans will tend to warp a bit but light weight pans warp a lot more than the heavier weight pans. Warped pans are not a problem in IR or air impingement ovens but when used in deck ovens the air gap under the raised portion of the pan (where it is not contacting the deck) can create problems with the bake, and the higher the baking temperature the worse the problems are.

Tom Lehmann/The Dough Doctor  
4592

## [\*\*Chicago Style / Re: What's makes Jakes Pizzas around Chicago so special.....I miss it!\*\*](#)

Have you tried experimenting with anise? That is a very predominant flavor in all of the Chicago pizzas. It was used as part of the flavoring blend in their sausage but really carried through all of the pizza.

Tom Lehmann/The Dough Doctor  
4591

## [\*\*General Pizza Making / Re: how to get tangy flavor in dough\*\*](#)

I wrote and made a presentation on sodium reduced pizza a few years ago. A couple of things that we found when doing the research for the presentation:

- 1) Dough/crust is not the main contributor of sodium to a pizza, it's the cheese.
- 2) You can reduce the salt to 1.5% in the dough and still achieve decent flavor and dough performance.
- 3) Use your own precooked meat toppings since the commercial meat toppings are usually loaded with sodium.
- 4) Do not add any salt to the sauce, it isn't needed.

How to make a decent sodium reduced pizza:

Delete the salt from the dough and replace it with 2% Salt for Life (available at Walmart) this will provide full flavor but it gives you a 70% reduction in sodium content so actual sodium contribution is about the same as a little over 0.5% salt. Do not use any salt in the sauce since it really isn't necessary.

Reduce the cheese to 3.5 to not more than 4-ounces for a 12" pizza. This can still provide a great flavor IF you use a flavorful cheese blend (Grande whole milk Mozzarella at 3-ounces and shredded Parmesan at 1-ounce is what we used and people loved it).

Change over from dried herbs to fresh herbs as it will contribute to a better overall flavor and it will also allow the cheese flavor to come through (dried herbs mask the cheese flavor).

Favor vegetable toppings but when meat toppings are called for use those that you have precooked yourself without any added salt/sodium.

Look closely at the label when using any prepared tomato product as many contain added salt/sodium, sometimes in different forms. If in doubt use fresh tomato slices in place of a traditional sauce.

Note:

Try not to use any canned ingredients of any kind, if it came out of a can it most likely contains some form of sodium.

Tom Lehmann/The Dough Doctor  
4590

## [\*\*Chicago Style / Re: What's makes Jakes Pizzas around Chicago so\*\*](#)

### **special.....I miss it!**

It's used in all of the Chicago pizzas (thick crust, stuffed pizza and thin crust). As for use in "other" styles, outside of Chicago area it doesn't seem to be too common.  
Tom Lehmann/The Dough Doctor  
4589

### **General Pizza Making / Re: Salt and yeast mix**

Those are the results we would expect from those doughs. The looser dough "B" was most likely looser due to leaching of glutathione out of the yeast and that yeast from which the glutathione is leached out does not exhibit very good fermentation properties which would explain the lower height.

I'd say that was a good test. :)

Tom Lehmann/The Dough Doctor  
4588

### **General Pizza Making / Re: Salt and yeast mix**

Gotcha. :)

That being the case you probably had sufficient water to prevent leaching but still got the sodium suppression on the yeast activity. This is the same effect as you would see if you used too much salt in a dough formulation.

Tom Lehmann/The Dough Doctor  
4587

### **General Pizza Making / Re: Using Milk in Dough**

Just remember to scald the milk prior to use as this will denature specific whey proteins which can result in inconsistency in your dough in the form of softer and stickier dough than expected. There is a lot to be said about the directions that we see to scald the milk prior to using it in making yeast leavened dough. Also remember that the milk will contribute to crust color development due to both the lactose and the protein content, so you may not be able to bake the pizzas at high temperatures.

Tom Lehmann/The Dough Doctor  
4586

### **General Pizza Making / Re: Salt and yeast mix**

Parallei;

Your first step needs to be to define "stringiness" and then what you hope to show in your experiment, followed by an experimental plan/design.

We could have used you when we were doing our research! :)

Tom Lehmann/The Dough Doctor  
4585

### **General Pizza Making / Re: Using Milk in Dough**

Werty20;

If the crust color is too dark for you I'd suggest eliminating the added sugar.

Tom Lehmann/The Dough Doctor  
4584

### **Dough Clinic / Re: Recipe question**

It should be OK if you are not planning to cold ferment the dough for more than 48-hours and your finished dough temperature is in the 70 to 75F range. With that said though a lot will still depend upon how you plan to manage the dough. I think it might be a bit more tolerant to variations in dough management if the IDY were

reduced to 0.4%.

Tom Lehmann/The Dough Doctor  
4583

**Newbie Topics / Re: Very hard crust, moist cheeze**

We really can't tell much about the bake since as you said, the oven wasn't ready yet when the pizza went in, but from the looks of your dough I agree with you that it looks significantly under absorbed. I would go up a full 5% for starters.

Tom Lehmann/The Dough Doctor  
4582

**Newbie Topics / Re: Very hard crust, moist cheeze**

When the flour wants/needs water give it water. Look for the soft, pliable dough consistency regardless of how much water it takes. Flour is milled to different specifications in different parts of the world which can have a significant impact upon the dough absorption, and if you want to dive deeper into the pot even the wheat variety that the flour is milled from will impact the dough absorption, and to a lesser degree the type of packaging the flour is put in for sale.

Tom Lehmann/The Dough Doctor  
4581

**Dough Clinic / Re: Tweaking dough formula to last longer**

What is your dough formula?

How are you presently managing the dough?

Please provide times and temperature (especially the finished dough temperature).

Tom Lehmann/The Dough Doctor  
4580

**Dough Clinic / Re: How can one estimate flour protein levels or suitability?**

Hand washing gluten is good for comparing the amount of gluten forming protein in different flours. I do not like to compare the results against any other except for generalization purposes. The reason for this is "operator" inconsistency which is inherent in the testing procedure (this is why the Glutomatic is so popular today, it takes the operator error out of the procedure. For this reason I like to use the hand washing procedure for comparing the gluten derived from different flours only when they are all washed by the same person (this minimizes the error factor), and only then it is acceptable for finding that one flour is capable of producing more or less gluten than another flour. There are some charts that you can compare your wet gluten weight against to get a rough idea of the protein content. The ideal situation is to get your hands on some known good quality flour, wash the gluten from it and use that as your bench mark for comparing other flours. Keep in mind however that all gluten forming proteins are not created equal, depending upon characteristics of the wheat from which the flour is milled some gluten may be soft and extensible, others tight and elastic, some may not carry much water (low dough absorption) and some may not exhibit as much resistance to fermentation. None of these will show up in the gluten washing test, but I think the gluten washing test will help you sort out different flours pretty quickly.

Tom Lehmann/The Dough Doctor  
4579

**Dough Clinic / Re: Crispyness of dough after pizza gets cold**

PizzaGarage;  
Amen to that brother! :)

Tom Lehmann/The Dough Doctor  
4578

**[Dough Clinic / Re: Crispyness of dough after pizza gets cold](#)**

Dave;  
Sure, not a problem. My number is 785-537-1037.  
Tom Lehmann/The Dough Doctor  
4577

**[Dough Clinic / Re: How can one estimate flour protein levels or suitability?](#)**

When I was a student at AIB (J-63) one of our lab tests was washing gluten. I stand to be corrected on this but I think the flour weight was 200-grams. The weight really doesn't matter since if you want to get an idea of protein (gluten forming only) content of the flour you will be dividing gluten weight by flour weight. The greater flour weight decreases the significance of error, remember that this is a hand washing procedure. Be prepared for COLD HANDS as the entire procedure is done with very cold water (ice water).

Tom Lehmann/The Dough Doctor  
4576

**[General Pizza Making / Re: Using Milk in Dough](#)**

Yes, you can use dry milk powder, just make the conversion from liquid whole milk to dry milk powder, but since we have no way of knowing if the powdered milk is bakery grade/high heat treatment I would advise that you still scald the milk before adding it to the dough. On the off chance that it is heat treated for bakery use, in that case you can just add the dry milk powder directly to the flour.

Tom Lehmann/The Dough Doctor  
Note: Many dairies convert all of their liquid fresh milk into dry milk powder as it is easier to store. They then sell it as dry milk powder or they will also use it for making cheese, this is why so often the dry milk powder isn't high heat treated as the heat treatment destroys the ability of the dry milk to be used in cheese manufacturing.

Tom Lehmann/TDD  
4575

**[Dough Clinic / Re: Tweaking dough formula to last longer](#)**

Thank you for providing the additional information. From your comments I'm thinking that your finished dough temperature might be the culprit. You mentioned that you thought higher oil made the dough ferment too fast in the summer. Oil does not affect the rate of fermentation so it was the effect of something else that you were seeing and I'm guessing it was the temperature of the dough which is the main driver for the rate of fermentation. The warmer the dough, the faster it will ferment. To compound matters you are using a reach in cooler. Your technique is good but when using a reach in cooler the finished dough temperature should be in the 65 to 70F range to compensate for the less than ideal cooling rate achieved in a reach in cooler. Some of the newer, high efficiency reach-ins employ some air movement to enhance cooling and with these coolers you can go with a finished dough temperature of 70 to 75F, but not more than that. I also see that you are offsetting the dough trays for only 1-hour, I doubt that this is sufficiently long for your reach-in so I would suggest increasing the time to at least 2-hours, or possibly 2.5-hours. If you are not already doing so, it is advised that you lightly oil the tops of the dough balls in the boxes to prevent any drying of the dough during the initial cross-stack/off-set cooling time. This should bring your fermentation back under

control and it may also improve the bottom bake of your pizzas, if it doesn't we will need to discuss how you are baking your pizzas.

Please keep us posted on your results.

Tom Lehmann/The Dough Doctor  
4574

### **[Dough Clinic / Re: Cold Ferment and More Flavor in Dough](#)**

In order to achieve a level of residual sugar in the dough which will provide a sweet taste to the finished crust you will need to get the residual sugar level up to around 4%. Flour contains about 73% starch with the rest being protein, water, fat and minerals. Of that 73% starch only the damaged starch can be hydrolyzed into sugar by the amylase enzyme found in diastatic malt and yeast. In the U.S. flour is typically milled to have about 6 to 8% of the starch as damaged starch. This is not nearly enough damaged starch to accomplish what you are looking for. It is all but impossible to further damage the starch in your flour and if you were able to do so the damaged starch would exhibit a high affinity for water meaning that your dough absorption would rise significantly, that's the good news, the bad news is that when the damaged starch is hydrolyzed into sugar it is no longer capable of holding all that water so your dough turns to soup very quickly. We have discussed damaged starch here in other posts. So, what to do? You can take a couple slices of bread and put them into a blender with your dough water and a source of amylase enzyme such as diastatic malt, make a "milk shake" out of it, and set it aside for the amylase to do its thing. In about 3-hours you will have hydrolyzed enough damaged starch (baked bread is mostly gelatinized/damaged starch), now you can add this as your dough water to achieve a sweeter tasting crust. We do this commercially with great success, I even wrote an AIB Technical Bulletin on the process a number of years ago. But keep in mind, now that you have all that sugar in the dough it is not going to tolerate being baked at high temperatures. Or you can just skip all of the starch conversion/hydrolysis and add sugar to the dough, that's what it all boils down to.

If you want to see what a sweet tasting crust tastes like for comparison, buy a Papa Murphy's take and bake pizza, you're looking at 5% added sugar to the dough. It is seldom that I encounter sweet tasting crusts but more frequently it is the sauce that is decidedly sweet, are you sure you're not picking up the sweetness from the sauce?

Tom Lehmann/The Dough Doctor  
4573

### **[Newbie Topics / Re: Very hard crust, moist cheeze](#)**

The most common forms of yeast encountered in Scandinavia and a good deal of Europe is going to be either compressed yeast (CY) or instant dry yeast (IDY), so I'm betting that the yeast you're using is IDY.

Tom Lehmann/The Dough Doctor  
4572

### **[Dough Clinic / Re: Dough and Drains](#)**

Dough isn't much of a problem in the home drain but in a pizzeria like Walter has it will clog the grease trap in short time resulting in an unscheduled cleaning which ain't fun! Hot soapy water is the best thing for cleaning any residual dough from home drains but if you have a pizzeria dropping a couple dissolved protease enzyme tablets down the drain every few days will work wonders to keep the grease trap flowing.

Tom Lehmann/The Dough Doctor

4571

**[Dough Clinic / Re: Dough Becoming Very Brown](#)**

In the Lincoln air impingement ovens such as you have deep-dish pizzas are typically baked at around 7-minutes at 240C/460F. I would suggest getting a scale to weigh your ingredients so you can begin making formula changes while knowing to what extent you are making a change. If you change over to granulated sugar it will also cost you less than icing/powdered sugar. I think a reduction in sugar along with a slight reduction in baking temperature will give you the results you're looking for.

Tom Lehmann/The Dough Doctor  
4570

**[Dough Clinic / Re: A question about the color of under fermented pizza.](#)**

Blistering and bubbling are common issues with under fermented dough. These blisters and bubbles brown faster and more than the rest of the crust, this is probably what you are seeing.

Tom Lehmann/The Dough Doctor  
4569

**[Dough Clinic / Re: A question about the color of under fermented pizza.](#)**

Blisters, ranging from about 1/4 to 3/4-inch in diameter are also common to under fermented dough. We did a study on this a number of years ago where we made one large dough and subdivided it into 250-gram dough pieces which were balled and lightly oiled, they were placed on sheet pans and allowed to ferment at 70F, room temperature (finished dough temperature was 80F) for up to 5-hours. Dough balls were removed from the pan(s) at 15-minute intervals, opened into skins, dressed as a cheese pizza and baked in both a deck oven and an air impingement oven. As would be expected the bubbling and blistering were worse with less fermentation time and as the fermentation time increased it diminished significantly. At 2.5-hours there was very little bubbling or blistering.

Tom Lehmann/The Dough Doctor  
4568

**[General Pizza Making / Re: Opening dough right out of the fridge](#)**

It can be done with some types of dough, specifically soft, high absorption dough. When the dough absorption is under 65% the dough rapidly becomes firmer/harder and more difficult to open. Additionally if you dress a cold dough and go straight to the oven bubbling of the crust during baking will be more problematic.

Tom Lehmann/The Dough Doctor  
4567

**[Dough Clinic / Re: how are small weight/hydration differences manifested in dough?](#)**

When it comes to dough absorption don't fret changes that are less than 2% of the flour weight as the normal variations in flour itself will give 2% variations. If you want to adjust dough absorption sufficiently to see a change in the dough I always suggest moving the dough absorption in 5% increments.

Tom Lehmann/The Dough Doctor  
4566

**[General Pizza Making / Re: Opening dough right out of the fridge](#)**

Have you been able to open a super low absorption (38 to 45%) cracker crust

dough right out of the fridge???? My experience is that it is like trying to roll out a tennis ball, and if you feed the dough to a dough sheeter it just chews it up into ragged pieces.

Tom Lehmann/The Dough Doctor  
4565

**New Forum Members / Re: Old Pizza Recipes**

Joe;

I've not heard of Cal's either, but when you say "Good Old Days" for me that means in the 1950's, what time period does it mean for you? I ask this because like other things pizza has changed in the way it is made and if we know your time reference we might be able to provide you with a typical pizzeria dough management procedure common to the time period.

Tom Lehmann/The Dough Doctor  
4564

**Dough Clinic / Re: Deep Dish - Why can't I get it right?**

I didn't see anything where you said that you proofed the dough in the pan for 45 to 70-minutes prior to dressing and baking.

Please give us the weight of dough as well as your specific dough recipe/formula and dough management procedure.

Tom Lehmann/The Dough Doctor  
4563

**Neapolitan Style / Re: Dough fermentation and tender crust**

In addition to the deck temperature being different and giving a different bake, I'm guessing that "B" was over fermented to the point where the dough might have collapsed to some extent making for a very tough eating finished crust due to significantly less bake-out during the short bake time. As for "C" , remember that the dough will not really begin to rise appreciable after slacking out until the dough once again reaches an INTERNAL temperature in the 70 to 80F range, additionally, the spread as well as soft, easy opening characteristics of the dough has all of the earmarks of the presence of glutathione which has been released from the yeast due to freezing in a static freezer (freezing at above -20F).

Glutathione has an effect on dough much like that of L-cysteine/PZ-44 which has been discussed in other recent postings.

Tom Lehmann/The Dough Doctor  
4562

**Dough Clinic / Re: Dough Becoming Very Brown**

If you want to confirm the actual temperature of your air impingement oven the best way to do it is to run an empty pan (NOT A SCREEN) through the oven and use an I.R. thermometer to measure the temperature just before the leading edge of the pan reaches the end of the oven cavity.

Tom Lehmann/The Dough Doctor  
4561

**General Pizza Making / Re: Opening dough right out of the fridge**

There you go!

I can take my head out of the oven now! :)

When made in that manner the very stiff dough still wants to overly expand and develop bubbles but the very stiff dough effectively resists expansion at least long enough for the starch to begin to set-up at which point the dough is "set". The

docking helps to control any bubbling too.

Tom Lehmann/The Dough Doctor

4560

### **Sicilian Style / Re: Thick crust and even cooking at home**

Try reducing your oven temperature to 450F. This is the temperature that many deep-dish pizzas are baked at, especially those made using a par-baked crust. Any pizza made using a par-baked crust will exhibit more sensitivity to baking temperature than those made using raw dough. Even the amount of par-bake needs to be controlled pretty carefully if consistent results are to be achieved.

Tom Lehmann/The Dough Doctor

4559

### **General Pizza Making / Re: Opening dough right out of the fridge**

The only thing you really need to watch for if you decide to force warm the dough is to try to get the internal temperature up into the 50's without over heating the outer portion of the dough. We have been able to accomplish this commercially by using a stainless steel shelf that is heated to 160F, the shelf is lightly oiled and the dough balls are flattened to about 1" in thickness by pressing down on them by hand, they are then placed onto the shelf for about 45-seconds and turned as you would if making pancakes. This is repeated one or two times and the dough is usually ready to go. You might be able to improvise something like this to accomplish the same outcome.

Tom Lehmann/The Dough Doctor

4558

### **Dough Clinic / Re: Using both poolish and biga in dough**

John;

It allows for complete hydration of the semolina flour (so would a soaker or autolyse), it may also contribute a little to the flavor profile of the crust due to the 2-hours of fermentation time. That's about all I can see it doing.

Tom Lehmann/The Dough Doctor

4557

### **Dough Clinic / Re: Deep Dish - Why can't I get it right?**

Actually, ADY will ferment at the same rate as IDY when used at the correct substitution levels. If IDY is used at the same level as ADY the dough will ferment faster because there is more active yeast. The correct substitution of IDY for ADY is to use 20% less IDY than ADY.

If you are making a deep-dish pizza you still need to allow the dough to proof/rise in the pan for 45 to 70-minutes. This is especially true when you are using a dough with 61% absorption AND nearly 20% corn meal. If the corn meal wasn't present a pretty typical deep-dish dough absorption would be around 58% but with the corn meal present it is probably giving you an effective absorption of only around 50%.

Tom Lehmann/The Dough Doctor

4556

### **Dough Clinic / Re: physics and chemistry of frozen doughs**

LMJ;

I can certainly help you, I've done all of the research on frozen dough that the commercial plants use to develop their dough formulas, design their facilities and guide their production. Additionally I taught the frozen dough classes while I was

employed by AIB.

Please give me a call at 785-537-1037 and I'll be glad to discuss this with you.

Tom Lehmann/The Dough Doctor

4555

### **Dough Clinic / Re: Dough Becoming Very Brown**

Nish87;

Let us know how the pizzas come out at the new time and temperature. If you find that you need more color or bake just increase the bake time and not the temperature.

Tom Lehmann/The Dough Doctor

4554

### **Dough Clinic / Re: Deep Dish - Why can't I get it right?**

Peter;

If you see this can you work some of your magic in directing Renchero to the posts he has requested?

Tom Lehmann/The Dough Doctor

4553

### **Dough Ingredients / Re: Arm & Hammer Article on Chemical Leavening Systems**

Peter;

The pizza formula is right out of my "play book" word for word. It was developed during our earlier research on chemical leavening in pizza crust formulations. :)

Tom Lehmann/The Dough Doctor

4552

### **Newbie Topics / Re: tips for more uniformly round pizza?**

If you go to <[www.portionpeels.com](http://www.portionpeels.com)> you will find exactly what you have proposed. The circles etched into the peels provides a ready reference for making a round skin, BUT do keep in mind that some distortion will take place as you peel the dressed skin into the oven. If you want to have a "truly" round finished pizza you will need to use a screen, pan or disk. Myself, I've never found a slightly distorted shape to be objectionable, in fact there is a type of pizza that is becoming more popular called a "free form" pizza which is any shape but round, and then there are the rectangular shaped pizzas which even the big box chains and commercial frozen pizza manufacturers are emulating.

Tom Lehmann/The Dough Doctor

4551

### **Newbie Topics / Re: tips for more uniformly round pizza?**

To comment based on the pictures of the dough and pizza I'd venture to say that your dough is dry (needs more water/higher absorption). Try increasing the dough absorption in 5% increments and I bet you will find the dough much easier to open and it will retain its round shape better too.

Tom Lehmann/The Dough Doctor

4550

### **General Pizza Making / Re: Old dough - why not make it ahead and freeze**

Two things I might add to the discussion;

1) Freezing fermented dough can be highly deleterious to the yeast contained in that dough which will allow glutathione to leach out from the yeast cells producing

a softening/weakening effect upon the dough into which it is incorporated, think of it something like adding an unknown quantity of PZ-44 to the dough.

2) It is not a good idea to work the old dough in the dough water as this will effectively separate the starch from the gluten in the old dough which will make it hard to thoroughly incorporate the old dough. Instead, as indicated by noriscia it is much better to just cut the dough up into small pieces and add it to the dough as soon as possible in the mixing process (just make sure the dough is completely thawed if you are using it from the freezer).

Tom Lehmann/The Dough Doctor  
4549

### [\*\*Newbie Topics / Re: tips for more uniformly round pizza?\*\*](#)

The way pizza used to be made back in the 50's by a lot of pizzerias called for bulk fermenting the dough for the better part of the day and then tearing off a piece and running it through a dough sheeter a couple of times, then draping the dough over a screen of the desired size and trimming off any dough hanging off of the screen, it was then transferred to a wood prep peel for dressing.

Tom Lehmann/The Dough Doctor  
4548

### [\*\*General Pizza Making / Re: Old dough - why not make it ahead and freeze\*\*](#)

Norm;

Yeast cells do don't multiply in a dough, the buds on the cells grow/develop into daughter cells and that's as far as it goes. Because the buds are already present (not developed during dough fermentation as we know it) there is actually no further increase in the number of yeast cells present.

What you have alluded to is indeed potentially "doable". Look at it this way, you have 10-pounds of flour in the dough, you add 2-million yeast cells and half of them are damaged during the freezing process so glutathione is released from 1-million yeast cells. This amount of glutathione will have an affect upon the flour proteins/gluten forming proteins in the dough, now if we were to add only 1-million yeast cells and half of them were similarly lost due to the freezing process we would only be releasing glutathione from 500-thousand yeast cells so the impact of the glutathione would theoretically be reduced by 50%. That is all based on the premise that the impact of the glutathione at both levels does not render a dough that is too soft to work with. In that case the old question of "Is a mouse any more dead if you hit it with a 12-pound sledge hammer than if you were to hit it with an 8-pound sledge hammer?" comes up as both levels have significant deleterious effects making any distinction difficult.

Tom Lehmann/The Dough Doctor  
4547

### [\*\*General Pizza Making / Re: Old dough - why not make it ahead and freeze\*\*](#)

Noroscia;

Unless WA is short for Wasilla, Alaska I doubt that anything in your garage will be cold enough to not damage the yeast during the freezing process. To freeze dough and achieve a sufficiently small ice crystal size so as not to damage the yeast cells the absolute highest temperature that the dough can be frozen at is -20F with -25 to -35F the ideal range. This is actual temperature, not wind chill. To this temperature it is also necessary to add 600 to 800 linear feet per minute of airflow. Above this temperature it really doesn't make any difference if you freeze the dough at +10F or -15F, the damage to the yeast cell is the same. The damage to the yeast cells is inconsistent and it doesn't always show up right away, we do know

though that dough which is frozen in a static freezer (like a chest freezer or reach-in freezer) generally demonstrates acceptable performance for the first 10 to 15-days after freezing, after that, due to freezer temperature fluctuations quality/performance can drop off dramatically.

TIP: If you can live with a 15-day frozen shelf life and you want to get the most consistent performance from your dough use an older style freezer without the energy saving automatic defrost feature. The freezing process damages the yeast but the constant use of a defrost cycle is what really does the number on it.

Tom Lehmann/The Dough Doctor  
4546

### [\*\*Dough Clinic / Re: Gas vs Electric Oven for NY style pizza\*\*](#)

Your baking times will most likely be a little shorter too using gas as opposed to electric.

Tom Lehmann/The Dough Doctor  
4545

### [\*\*General Pizza Making / Re: Old dough - why not make it ahead and freeze\*\*](#)

Just to clarify once again, when we are talking about damage to the yeast due to freezing we are talking about its use in a dough, not in the dry form. CY as it contains water cannot be frozen without significant damage. We have successfully kept IDY, in the original, unopened package, for as long as two years in the freezer without more than a 25% loss of fermenting power/activity. While this would certainly be important in a commercial setting, in a home use application you might say that there is no significant impact upon the quality of the IDY.

Tom Lehmann/The Dough Doctor  
4544

### [\*\*New Forum Members / Re: NY Pizza inquire\*\*](#)

Dev;

Welcome. I'm sure you will find all the help you need here.

What can you tell us about your flour? Your dough mixer, or will you be hand kneading the dough? What type of yeast will you be using (active dry yeast, instant dry yeast or compressed yeast)? Tell us about your oven and its maximum baking temperature. Do you have any kind of pizza stone available to bake the pizzas on? Do you have a fridge to store the dough in for a cold fermentation period?

The more you can tell us the faster and more efficiently we can get you on the track to success.

Tom Lehmann/The Dough Doctor  
4543

### [\*\*Dough Clinic / Re: Makin my first pie and yeast amount question\*\*](#)

Fishyguy;

No, things don't quite work that way. First, yeast really doesn't multiply during dough fermentation, it just feeds and produces carbon dioxide, alcohol and acids, this means that the amount (weight) of yeast needs to be adjusted for the size of the dough, this is where bakers percent comes into play as it allows you to effectively change the size of your dough while keeping all of the ingredients in correct balance. Since you are just starting out, I'd suggest getting a good electronic scale that will weight in units of grams (ideally less). These are not expensive and are available on the internet for \$30.00 U.S. or less. In another post we just recently covered how to convert from a "recipe" to a "formula" based on bakers percent and we covered how to determine the weight of the ingredients as

you have portioned them so the portions can be converted to weights and changed into bakers percent.

What is freezer level #4? I assume it is related to a temperature but you really need to determine what that temperature is, remember that you don't want to expose the dough to freezing conditions, you just want to chill it rapidly. You didn't mention much about how you plan to manage your dough but if you will send me an e-mail at <thedoughdoctor@hotmail.com> and request a copy of my dough management procedure I will be glad to send it to you.

Tom Lehmann/The Dough Doctor  
4542

### [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Hey Norma;

When you read this you will see the name Chris Zelch mentioned. Chris is the son of my good friend Ron Zelch, we worked together at AIB for a good many years until he left AIB and took a position with what was at that time Caravan Ingredients (now Corbion) in Kansas City. The last time I saw Chris was a few years ago when the three of us were having dinner at the Marriott Hotel while attending the ASB (American Society of Baking) annual convention. It is indeed a very small world.

Tom Lehmann/The Dough Doctor  
4541

### [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Norma;

PJs gives tours of their commissary facilities.

Tom Lehmann/The Dough Doctor  
4540

### [\*\*General Pizza Making / Re: GOOP - No more dough sticking to pan!\*\*](#)

In the retail baking industry it is common to make a pan release using 4-parts shortening and 1 to 1.5-parts flour mixed together and brushed into the pan. You can also do the same thing using equal parts of shortening and oil to replace the shortening but when this is done it is customary to add 3% lecithin (based on the total weight) to allow the release agent to better cling to the sides of the pan as opposed to running off and collecting in the bottom of the pan. While more flour can be used in the blend it is not recommended as the flour (especially when used with bread type doughs) will fry in the pan creating a bitter aftertaste. This is not a problem when it is used in conjunction with cake batters.

Tom Lehmann/The Dough Doctor  
4539

### [\*\*Dough Clinic / Re: Deep Dish - Why can't I get it right?\*\*](#)

If the crust is too big use less dough weight.

How does it look on the inside? How did it eat?

Tom Lehmann/The Dough Doctor  
4538

### [\*\*Dough Clinic / Re: Makin my first pie and yeast amount question\*\*](#)

Rather than just randomly using ice cold water, adjust the water temperature to give you a finished (mixed) dough between 70 and 75F. This means your water temperature will probably be between 70 and 75F too. The amount of ADY should be about 0.3% of the total flour weight if you get your temperatures right. While you're at it, check the temperature of your "fridge" to see exactly where you're at

regarding temperature. You can do this using an IR thermometer or if you don't have one just put a glass of water in the fridge overnight and put a thermometer in it in the morning to see what the temperature is.

Tom Lehmann/The Dough Doctor  
4537

### [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Their corporate headquarters are in Lexington, KY (quite a campus I might add) and they have a fully functioning commissary there too where they give tours. I don't know all of what the tour entails but I do know that the tours are given the chance to see the commissary production lines and the robotic dough pickers that are used to automatically place the dough balls into the plastic dough storage boxes....now that's a sight worth seeing!

Tom Lehmann/The Dough Doctor  
4536

### [\*\*General Pizza Making / Re: GOOP - No more dough sticking to pan!\*\*](#)

Mitch;

The function of the flour is to provide a thin layer/coating of flour between the dough or batter and the pan which improves the release properties. If you get too much flour in the blend you will end up frying some of that flour which results in an unwanted bitter taste. The lecithin is there to provide "cling", especially to the vertical sides of the pan. It prevents the release agent from flowing/sliding off to the bottom of the pan. The lecithin really isn't necessary unless the release blend is "flowable" (high in oil or total oil). There is one exception though where lecithin is used even when all shortening is used for the fat and that is when the release agent will be applied to the pan after heating to a semi liquid consistency, this is done to facilitate a more rapid application of the release agent or to allow it to be applied by mechanical means on a high speed production line.

Tom Lehmann/The Dough Doctor  
4535

### [\*\*Dough Clinic / Re: Deep Dish - Why can't I get it right?\*\*](#)

Yep, picture shows what we call a dense crumb structure resulting from too much dough weight. Look at it this way: You had "X" amount of dough and you proofed it for say 60-minutes to a specific height and got a dense crumb structure, now if you use less dough and proof it the same way to the same height the crumb structure will be more open (larger holes) and more of what you are looking for.

Tom Lehmann/The Dough Doctor  
4534

### [\*\*Neapolitan Style / Re: sprinkle flour vs. oiling the bowl/proofer box?\*\*](#)

Are you sure they were proofers (operating at 90 to 95F with 75 to 80% relative humidity) or were they reach-in coolers? A lot will depend upon the dough management procedure being used too, if the dough is to be cold fermented for 24-hours or more and dough boxes are used to store the dough balls in the dough balls should be lightly oiled on top to prevent excessive drying and possible crusting during the cross-stack period (usually 2 or more hours) prior to sealing the dough balls in the boxes for the cold fermentation period. At one time some pizzerias would simply mix the dough and give it a bulk fermentation period at room temperature then scale and ball the dough and place them onto sheet pans or into dough boxes (fiberglass boxes were the first ones used after the wood boxes were eliminated) the dough balls were then lightly dusted with flour and used within a

short period of time.

How you plan on managing your dough will determine whether you use oil or flour.

Tom Lehmann/The Dough Doctor

4533

## [\*\*General Pizza Making / Re: GOOP - No more dough sticking to pan!\*\*](#)

Norma;

It looks to be just vegetable oil and lecithin to keep it in place on vertical surfaces.

Tom Lehmann/The Dough Doctor

4532

## [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Norma;

On the tour you can see a lot more of the production facility from the glassed in cat walk from where the photographs were taken. I don't want to go into detail due to non-disclosure which is still in place but the photo of the production area, shows the large horizontal bar type mixer with the flour weigh and feed hopper above it (cone shaped), then there is the dough divider which mechanically divides the dough into specific weight pieces on a continual basis and the last piece shown is the external cone type dough rounder which forms the irregular shaped divided dough pieces into uniform round balls.

Tom Lehmann/The Dough Doctor

4531

## [\*\*Dough Clinic / Re: Using both poolish and biga in dough\*\*](#)

It's easier than you might think, just replace up to 25% of the flour with semolina flour. Make a soaker out of the semolina flour and then add it to the mixing bowl as you would any other ingredient.

To make a soaker: First you need to know how much water YOUR semolina flour will carry. Do this by placing several ounces of semolina flour in a bowl, add 70% absorption, stir and allow to hydrate for 60-minutes, check the consistency (you want to see something that looks like very thick oatmeal) add more water if necessary and stir in then wait another 60-minutes, repeat as necessary. Once you achieve the finished texture divide the weight of water added by the weight of the flour and multiply by 100 then subtract 5 from this number and that is the absorption of the semolina flour.

To find the absorption of your dough:

Calculate the absorption of the regular flour in the dough as you normally would BUT DO NOT include the semolina flour in the total flour weight, then calculate the amount of water needed for the semolina flour using bakers percent and the absorption number you arrived at in the above test. You now have the correct dough absorption and you're ready to make the dough.

Begin by mixing the semolina flour with the correct amount of water and allowing it to hydrate for 60-minutes, add the dough water to the mixing bowl (calculated only on the regular flour, add the flour, soaker, and remainder of ingredients except for the oil, mix for about 2-minutes or until you don't see any dry flour in the mixing bowl, add the oil and mix 2-more minutes at low speed then finish mixing the dough at medium speed. Can you add more than 25% semolina flour? Yes you can BUT semolina flour will also contribute to toughness in the finished crust so proceed cautiously.

Tom Lehmann/The Dough Doctor

4530

## [\*\*Dough Clinic / Re: Makin my first pie and yeast amount question\*\*](#)

Zip-Lock bags are not recommended for two reasons, 1) They create a head space condition in the bag which contributes to dehydration (freezer burn) of the dough during frozen storage. 2) The gas pressure created by the fermenting yeast can/will burst the seal open on the bag allowing the dough to dry out. This is why it is better to use "food bags", oil the dough ball, drop into a food bag, twist the open end into a pony tail and tuck it under the dough ball as you place it into the cooler or freezer. This eliminates any head space in the bag and it also allows for some dough ball expansion without fear of bursting the bag open.

Tom Lehmann/The Dough Doctor  
4529

## [\*\*Shop Talk / Re: need help .... ordinary pizza to elitte pizza\*\*](#)

Don't overlook the dough. The dough is one of the most critical aspects of a pizza. Just think, how many people say you just gotta go there because the sauce is soooo good? Few. How many say you just gotta go there because the cheese is soooo good? Maybe a few? Now, how many people say you just gotta go there because the crust is so (pick an adjective)? We have found over the years that more people comment on the crust characteristic than on any other part of the pizza. Can you share your dough formula as well as the dough management procedure that you are using?

Tom Lehmann/The Dough Doctor  
4528

## [\*\*Dough Clinic / Re: Dough Becoming Very Brown\*\*](#)

The lighter crust color that you are seeing after 24-hours is due to the yeast consuming more of the sugar as well as producing acids which inhibit the crust color development. Since you are getting crust color that is too dark prior to this I would say that you have too much sugar in your dough formula, maybe consider deleting the sugar entirely to see what response you get in the crust color. Can you provide us with any better idea of how much flour you're using besides scoops?

Even cup measures would be better as we can convert them to rough weight measures and look at your dough formula in bakers percent.

For a mixing procedure, put the water in the bowl first, then add the salt, then the flour and lastly the IDY (are you using IDY or another form of yeast?)

Then mix just until the flour is hydrated and add the oil and mix for 1-minute in low speed then 8-minutes in medium/high speed. You are looking for a finished dough temperature of 70 to 75F/21 to 24C.

You might also try using a lighter dough weight. Try using a dough weight of 500-grams as opposed to your present dough weight of 615-grams.

Tom Lehmann/The Dough Doctor  
4527

## [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Norma;

That's because the dough is being pumped as a continuous ribbon directly from the mixer. Remember, pizza dough is under mixed so it really isn't very hard to pump the dough.

Tom Lehmann/The Dough Doctor  
4526

## [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Pretty normal under mixed dough, from the mixer the dough is discharged into a

dough pump located in front of the mixer to facilitate conveying it to the divider. If a dough pump isn't used the dough must be discharged (kicked out) into a dough trough, wheeled to a trough hoist where it is raised to allow the dough to be fed into the divider. As you can see, a lot more equipment, space, investment plus an element of danger so the dough pump is almost universally used as it even allows for precise control of the amount of dough going to the divider. While one dough is being pumped to the divider another dough is being mixed resulting in a continuous flow of dough.

Tom Lehmann/The Dough Doctor  
4525

### [\*\*Off-Topic Foods / Re: High \\$\\$\\$ vs. Lower \\$\\$, Organic vs. Non-Organic Poultry\*\*](#)

I think you see pretty much the same with most types of meat. Range fed beef is significantly more lean with a lot less marbling in the meat so it is not as flavorful or as tender. We also see a lot of this same thing in wild hogs as compared to pen raised hogs, and when we were raising chickens your observations are in line with what we we also observed (our chickens were what we would today refer to as "free range", and I do mean "free range" not ranging in a confined area as today's "free range" birds are. Our freezers are once again filled with venison which is the epitome of "free range" and the buck was as lean as he could be (due to rutting activity) while the does were nice and fat due to being corn and bean fed from local agricultural fields but the meat is still very lean with little marbling so you have to take care in cooking it or you will end up with something more like shoe leather rather than a delicious steak.

My take on it: free range has less fat so it is a healthier meat but you give up some tenderness and flavor which you get from the cage/feed lot critters.

Tom Lehmann/The Dough Doctor  
4524

### [\*\*Dough Clinic / Re: Deep Dish - Why can't I get it right?\*\*](#)

Renchero;  
Add up the total bakers percent of your dough formula and move the decimal point 1-place to the left. Then divide your new desired dough weight by that number and this will give you the flour weight needed for a dough of that size. From there just use your regular bakers percent calculations to get the individual ingredient weights.

Tom Lehmann/The Dough Doctor  
4523

### [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Norma;

Yes, that is one type of dough pump, there are other type too but that is a good representation. When watching the video the next thing you see is a rotary extrusion divider (think of it as dough going through a meat grinder and being cut to length as it comes out), then there is a rounding table, these are more commonly used for rounding hamburger and hot dog bun dough but they are also used to round pizza dough in some applications (external cone rounders are much more commonly used for pizza dough that rounding tables, next is the indexer for the overhead proofer (allows time for the dough ball to relax prior to forming, or in some cases the dough is divided, rounded, relaxed it the overhead proofer and then re-rounded in preparation for refrigerated storage/cold fermentation. In the other video you see the dough that has been die cut and the resulting scrap web of dough

left after die cutting. The web scrap is automatically collected and fed back into the mixer for incorporation into the next dough.

It's hard to fully appreciate a full size production commissary until you have actually been in one. If you get a chance to visit one ask yourself this question: "What if the dough didn't perform to standard or what would happen if it started to stick to everything?" Then envision the chaos and you will fully understand why we never take anything for granted in a production situation. Failure is not an option.  
Tom Lehmann/The Dough Doctor  
4522

### [\*\*Chitchat / Re: diary of a pizza fanboy: DiGiorno's HQ\*\*](#)

Craig;

It takes them just a little under 20-minutes to completely process a dough (from mixer to die cutting) in the case of a sheet and die cut process. The scrap wed is processed in either of two ways, it can be fed back to the sheeting rolls where it is incorporated back into the dough as it is being sheeted to thickness prior to die cutting. The scrap is added in such a manner as to orient the scrap dough at the bottom (underside) of the dough sheet. This is done to reduce the magnitude of snap back caused by the scrap dough. The other way the scrap dough is managed is to convey it directly back to the mixing station(s) where it is incorporated directly into the next dough. This is actually a better method of handling the scrap dough as it has less impact upon the dough as it is being sheeted or upon snap back after die cutting. In both cases the dough is being incorporated back into fresh dough, in one way or another, within 20-minutes, or soon after, coming out of the mixer. When the dough is just being processed into dough balls for refrigerated storage and distributed to stores it is common to add any unusable dough balls directly back to the divider hopper (these might be dough balls that are too heavy or too light or that have not rounded up properly for whatever reason. In a case where there are a lot of rejected dough balls the rejects are added back to the next dough being mixed.

Tom Lehmann/The Dough Doctor  
4521

### [\*\*Off-Topic Foods / Re: High \\$\\$\\$ vs. Lower \\$\\$, Organic vs. Non-Organic Poultry\*\*](#)

We raised a number of different breeds of chickens over the years and none were actually afraid of dogs, cats, coyotes, foxes, or even raccoons unless they were being physically chased by them, BUT if you made out between them and the sun and made a shadow that would cast over them there would be a mad rush to get into the coop, no questions asked! I think most birds are wired to be alert to predators from above rather than on the ground.

Tom Lehmann/The Dough Doctor  
4520

### [\*\*Dough Clinic / Re: Dough Becoming Very Brown\*\*](#)

Nish;

No, the reason why the skin snaps back is because the dough has not been sufficiently fermented.

Tom Lehmann/The Dough Doctor  
4519

### [\*\*Resources / Re: High Gluten Flour\*\*](#)

I stand shoulder to shoulder with Craig. My "go to" flour for making pizza comes in

to around 12.2% protein content. Unless there is a specific reason for using flour in the 14% protein content range I always use something in the 12 to 12.8% range and on occasion I'll go up to 13.2% protein. These protein contents should be easily covered by most Canadian HRS bread type flours.

Tom Lehmann/The Dough Doctor  
4518

**Neapolitan Style / Re: Can I make breadsticks in my WFO with my Neapolitan dough?**

Are you wanting to make a soft bread stick?  
Tom Lehmann/The Dough Doctor  
4517

**Dough Clinic / Re: Dough Becoming Very Brown**

Nish;  
Normally about 48-hours cold fermentation is sufficient for making a pretty decent pizza crust.  
Tom Lehmann/The Dough Doctor  
4516

**Resources / Re: High Gluten Flour**

Keltobgy;  
When it comes to fermentation and its impact upon the nutritional properties of the finished crust the impact of fermentation by itself is minimal (some reduction in sugar level) and between cold fermenting and warm/room temperature fermenting there is no difference.  
Tom Lehmann/The Dough Doctor  
4515

**Resources / Re: High Gluten Flour**

Keltobgy;  
For whatever it's worth, as anyone who has ever attended any of our pizza seminars will attest to, as part of our instruction in demonstrating biochemical gluten development we would take a 12-ounce dough ball with 24-hours cold fermentation time and open it up to approximately 36 inches in diameter. The dough was thin enough to plainly see skin details on your hands through. In fact one year we even had Tony G. do some of his magic on the same dough. One student asked Tony how high he could toss the dough.....he hung a dough skin over one of the ceiling trusses 20-feet above us! This was all done with a dough made with a 12.2% protein content flour using our standard dough formula and dough management procedure.

Tom Lehmann/The Dough Doctor  
4514

**Resources / Re: High Gluten Flour**

I'm guessing that Domino's, PH and PJs are probably bringing in a dough mix with a 12% protein flour, but the locally available flour in Egypt comes in at around 11% protein content and it should work well for you in pizza production if you keep the CF time down in the 24 to 36-hour bracket, you might be able to eek out 48-hours with close attention to the finished dough temperature. We have made some very good pizzas using flour with protein content in the 10% range. Another option that you would have is to add vital wheat gluten to the dough as an added ingredient, using VWG you can increase the protein content of just about any flour to where

ever you want it.

Are you planning to attend Pizza Expo 2017? It is a great opportunity to see all the latest and greatest and develop a contact list for things you might need, and you can also stop by at one of my presentations and ask questions too, or attend one of the many other seminars.

Tom Lehmann/The Dough Doctor  
4513

### **Chicago Style / Re: Stuffed Giordanos style**

We have found that if you par-bake the pizza after adding the THIN mid-layer crust you don't end up with the dough turning to steamed dough (aka pasta). Which isn't necessarily bad as some tend to associate it with the cheese, but if you par-bake in this manner you get a more distinct separation. After par-baking remove from the oven and immediately finish dressing and place back into the oven to finish baking. Just thought I'd pass that on to you.

Tom Lehmann/The Dough Doctor  
4512

### **Dough Ingredients / Re: All Trumps High Gluten Flour-Why I won't Buy It Again**

Agreed, your results were more than likely due to your specific dough formulation or dough management procedure that is probably not optimized for AT flour.

Remember, if you just substituted AT for another flour your formula was probably low in absorption as with its higher protein content AT flour will require a higher dough absorption, then too your yeast level might not be where it needs to be with AT and your specific dough management procedure, this could result in a stiffer dough or one that does not expand as readily, hence the more dense crumb structure that would be characterized with a tougher/more chewy eating characteristic.

Tom Lehmann/The Dough Doctor  
4511

### **Dough Clinic / Re: dough management**

Please e-mail me at <thedoughdoctor@hotmail.com> and request a copy of my Dough Management Procedure and I'll be glad to send you a copy. This dough management procedure that is designed specifically for what you are wanting to do on a commercial (pizzeria) basis. It will provide you with the dough consistency needed at both 24 and 48-hours with a maximum of 72-hours. What you are proposing will work fine on a small scale or in a home baking situation but in a commercial setting it will not provide the consistency in dough quality that is needed to operate a business on, especially out at 48-hours, remember, when you have a pizzeria dough failure is not an option, and it's not good for business either.

Tom Lehmann/The Dough Doctor  
4510

### **Dough Clinic / Re: Shaping CF Dough vs. RF Dough**

Your room temperature fermented dough balls are receiving significantly more fermentation than the cold fermented dough balls. This means that there is more dough softening/weakening (due to fermentation) with the room temperature fermented dough. The increase in amount of total dough fermentation also explains why you note a difference in crust flavor between the CF and RT fermented dough as the RT dough will have a more pronounced fermentation flavor. With a RT dough the finished dough temperature will have a very significant role in determining the

amount of fermentation the dough balls receive as the yeast will ferment faster with higher finished dough temperatures. Also keep in mind that a RT dough will increase in temperature at the rate of approximately 1F per hour (up to about 10F) due to heat of metabolism so the dough keeps fermenting faster and faster while the CF dough will gain some temperature but it will eventually stabilize in temperature as the dough reaches 45 to 50F in the cooler, at this temperature the dough will continue to ferment but at a much slower and more controlled rate.

Tom Lehmann/The Dough Doctor

4509

### **Dough Clinic / Re: dough management**

In mixing a bread dough where we are trying to develop the gluten there is a decided advantage to adding the salt later in the mixing stage, but we are mixing pizza dough where we do not want to develop the gluten to the same extent so it is easier and more convenient to add it right up front (also less chance to forget adding it). When you add the salt to the dough water there is no need to mix it into the water...no benefit to be gained except for just another mixing step. Remember in a pizzeria U want things as SIMPLE as possible.

If ya feel that ya just gotta double ferment the dough just pull the dough balls out of the fridge (cooler) 4 to 8-hours before u anticipate using them (u will need to experiment to find the exact time that works best in ur shop conditions BUT since the dough balls will be fully fermented they will need to be used within a fairly short period of time once they are ready to go, so be prepared to use them for pizzas or something else as you will not be able to save them. The procedure I provided eliminates this problem and essentially eliminates the need to discard any dough which can be an important aspect in a pizzeria which is dealing with large quantities of dough on a daily basis.

A fork type mixer is fine for pizza dough as it is designed to impart minimal gluten development, but because of this u might need to cope with a slightly stickier dough on the bench than u would if using a planetary or spiral type of mixer. As for a wine cooler, the temperature in most wine coolers (5C/41F) is the absolute minimum temperature that u would need to effectively manage the dough at, additionally when fully loaded with dough it is questionable if a wine cooler would have the capacity to consistently cool and maintain the dough for extended storage. I think u would be much better served with a commercial reach-in cooler at the very least. With whatever mixer type u decide to go with u will still need to adjust the dough water temperature to give you the desired/targeted finished dough temperature on a consistent basis.

Tom Lehmann/The Dough Doctor

4508

### **Shop Talk / Re: To buy or Lease Pizza truck?**

There has been a bit of discussion here on pizza trailers here too which may provide some additional insight. If you will be crossing state lines your vehicle will need to be licensed and DOT approved as a commercial vehicle, and don't forget about all of the licensing and insurance that will be required (city, county, state) and if you will be doing business across state lines know what will be required of you in the other state too.

Tom Lehmann/The Dough Doctor

4507

### **Stones/tiles/steel, Pans & Accessories / Re: Pizza screens - seasoning**

I have a hard time believing that the faster application time from using PAM would

off set the increased cost over just a common vegetable oil that is easily and quickly wiped on using a clean towel soaked/dipped in vegetable oil. Something else to keep in mind is that commercial spray products are typically made using types of oil which have a lower polymerizing value than say, soybean oil. This is to prevent the oil from polymerizing on that which it is applied to, which is contrary to what we want it to do. We want the oil to polymerize on the screens to give us the seasoned finish that we are seeking.

Tom Lehmann/The Dough Doctor

4506

### **Prep Equipment / Re: Varimixer Teddy W5A**

I believe that these are a belt drive system as are the larger commercial versions, replacement parts are readily available and the company has been around for a long time. I don't have any experience with this specific mixer but their large mixers are pretty decent. These do have a reverse spiral dough arm for mixing dough and the dough capacity is around 2-Kg. so it might be a good investment (you won't go broke buying it for \$200.00) for someone who needs a mechanical mixer. Just make sure it comes with the dough arm as opposed to a flat beater or wire whip attachment or you will need to add the cost of the dough arm to the cost of the mixer.

Tom Lehmann/The Dough Doctor

4505

### **Shop Talk / Re: Dough Rounder decision help**

If we are talking about a low absorption dough 52% or lower, the Dutchess divider rounder will probably be your best bet since it is designed specifically to handle a wider range of dough absorption but where it really excels is with the lower absorption doughs.

Tom Lehmann/The Dough Doctor

4504

### **Shop Talk / Re: Dough Rounder decision help**

It is about as close to hand balled as you can get with a stiff dough.

Tom Lehmann/The Dough Doctor

4503

### **Dough Clinic / Re: Gas vs Electric Oven for NY style pizza**

Due to the increased moisture in the air with a gas oven as opposed to an electric oven the gas oven is preferred as it will provide for a better bake.

Tom Lehmann/The Dough Doctor

4502

### **Neapolitan Style / Re: yeast weight when using percentages**

Not quite.

0.013 X 1000 (press the "%" key) and read 0.13-gram yeast required.

May I ask why such a small amount?

A normal level of IDY is 0.375% or 0.375 X 1000 (press the "%" key) 3.75-grams. For a room temperature fermented dough a third of this amount should work OK, or 0.375 divided by 3 = 0.125% so 0.125 X 1000 (press the "%" key) and read 1.25-grams in the display window.

Tom Lehmann/The Dough Doctor

4501

## [\*\*Dough Clinic / Re: Gas vs Electric Oven for NY style pizza\*\*](#)

I've said it before and I'll say it again.... the Dahlen ovens are among the best electric ovens I've ever seen. You certainly don't run across them very often, maybe \$\$\$\$\$? But they are good. Even their large (and I do mean LARGE) industrial ovens are highly thought of in the industry.

Tom Lehmann/The Dough Doctor

4500

## [\*\*New Forum Members / Re: Hello from New Zealand\*\*](#)

Andrew;

Welcome! New Zealand, one of my favorite places. I spent a lot of time working in North's Bakery (Alan and Malcolm North) their bakery was the main supplier of McDonalds hamburger buns in Auckland/North Island.

I think if you change over to a wood peel and use a very fine corn meal as a peel dust you will find that your pizzas will be easier to peel into the oven, save your metal peel for use as an oven peel for removing the baked pizzas from the oven. I can't say anything to your oven specifically but when baking in a wood fired oven all I ever do it to rake the deck to scrape off any debris ensuring a flat deck surface and then broom the deck clean where the pizzas will be placed. I do know that in some cases the oven deck is swabed with a wet mop to put humidity into the oven just before placing bread into the oven for baking but I've not done this for pizza as it was never necessary.

Tom Lehmann/The Dough Doctor

4499

## [\*\*Newbie Topics / Re: Hello need some help with a fresh yeast 24/72 hour rise\*\*](#)

I totally agree with Steve. About 1% compressed yeast (CY) is where you want to be so that works out to 5-grams for 500-grams of flour.

Tom Lehmann/The Dough Doctor

4498

## [\*\*New Forum Members / Re: Hello from New Zealand\*\*](#)

Andrew;

I personally think it is a waste of sourdough culture to mix it with yeast to achieve a faster fermentation rate as the yeast will dominate the flavor. I'd suggest using a biga in that application.

Nice oven!

Tom Lehmann/The Dough Doctor

4497

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Pizza screens - seasoning\*\*](#)

Yep, soybean oil, it polymerizes faster than most other oils.

Tom Lehmann/The Dough Doctor

4496

## [\*\*General Pizza Making / Re: Hand mixing/kneading\*\*](#)

I also use a procedure similar to what Steve uses but I also put the IDY into a separate cup containing a small amount of the dough water warmed to between 95 and 100F, I sprinkle the IDY on top of the water and stir in until all of the yeast is suspended using a table fork, let this hydrate for 10-minutes then pour into the dough water being sure to rinse the cup in the dough water, from that point on my procedure is essentially the same.

When hand mixing and using IDY the IDY really should be pre-hydrated in much

the same manner as ADY and if using compressed yeast (CY) it should be suspended in the dough water (no need to adjust the temperature of the water with CY, just drop it in and stir/whisk until suspended, once suspended the CY is ready for addition as it does not need any hydration time.

I also have a home made pizza dough "recipe" posted on the PMQ web site <[www.pmq.com](http://www.pmq.com)> in the RECIPE BANK, just use "pizza dough" for your search word. The procedure is designed to be as easy as possible as I was using it to teach farm families all over eastern Kansas how to make and enjoy pizza without making a "pilgrimage" to the nearest Pizza Hut.

Tom Lehmann/The Dough Doctor  
4495

### **General Pizza Making / Re: Hand mixing/kneading**

Yes, that should be it in the home style crust.

As for flour protein, that can be a very long and drawn out answer but the short of it is if the dough is formulated and managed correctly for the strength of the flour there isn't a lot of impact upon the crumb structure characteristics, but there is a more direct correlation between the "potential" for crust crispiness and protein level with a higher protein level providing a greater potential for achieving a crispier crust.

Tom Lehmann/The Dough Doctor  
4494

### **Other Types / Re: Preferred dough recipe for Calzones?**

If I remember correctly we had this discussion along with some formulas a short time ago. A search of the archives will probably turn it up.

Tom Lehmann/The Dough Doctor  
4493

### **Shop Talk / Re: Dough Rounder decision help**

I guess I should have opened the link to the Dutches rounder you were referring to. I thought your reference was to the JN model dough divider-rounding. That's the one that really handles the stiffer doughs quite well. Sorry about not being more specific.

Tom Lehmann/The Dough Doctor  
4492

### **General Pizza Making / Re: Hand mixing/kneading**

As each ADY packet contains 1/4-ounce 7-grams or a little more would be the appropriate amount of ADY to use in this recipe.

Tom Lehmann/The Dough Doctor  
4491

### **General Pizza Making / Re: Pizza pan on a stone**

The biggest problem that I've encountered when baking on a stone or on the deck of a deck oven is that the bottom of the pizza gets too dark unless I place a screen under the pan creating an air gap which pretty well eliminates the problem. Baking the pizza in the pan for a few minutes and then removing it from the pan and placing it directly onto the stone/deck to finish baking is a pretty common procedure called "decking" and it works quite well giving a nice, crispy finished crust when done properly. I've found that a good stone/deck temperature to shoot for when using this procedure is 500 to 525F.

Tom Lehmann/The Dough Doctor

4490

**Newbie Topics / Re: Hello need some help with a fresh yeast 24/72 hour rise**

Flour will not contain any yeast, of any kind, and the amount of sugar has me concerned too. Are you sure you're not looking at some kind of a mix or pre-mix?  
Tom Lehmann/The Dough Doctor

4489

**Dough Clinic / Re: new york with power flour**

Patrick;

By reducing the baking temperature and baking for a longer time you can achieve a crispier crust however by reducing the water (dough absorption) you will not achieve a crispier crust unless you drop the absorption down below 50% and then you are not making a N.Y. style of pizza anymore.

Tom Lehmann/The Dough Doctor

4488

**Chicago Style / Re: Chicago style with dual thermostat oven**

Place a screen under the pan, and bake at 500F for about 30-minutes. In Chicago the Middleby-Marshall reel type ovens are the oven of choice for the deep-dish pizzas. This is why the wait is always a minimum of 45-minutes for a deep-dish pizza in Chicago....that is if there are no other orders stacked up in front of yours.

Tom Lehmann/The Dough Doctor

4487

**Dough Clinic / Re: How do I reduce this dough recipe?**

Here's another way. If you know your total dough weight right now, decide how much less dough you want to make (1-oz., 2-oz, 3-oz, etc.) and subtract that amount from the total dough weight. You now have the new dough weight that you want to make. Divide the new dough weight by the total bakers percent divided by 100 and this will give you the correct flour weight needed to make your new dough weight, after that just apply bakers percent to calculate the weight for each of the other ingredients.

Tom Lehmann/The Dough Doctor

4486

**Neapolitan Style / Re: How to achieve the burnt char dough taste?**

Lucas;

From your description the dry yeast that you have access to is active dry yeast. Instant dry yeast is shaped like little rods as opposed to round balls which are indicative of ADY.

Here is a pretty good starting formula:

Flour: "OO" 100%

Salt: 2.5%

Water: 60%

Compressed/fresh yeast: 0.25%

Put water in your mixing bowl and add yeast, stir to suspend the yeast. Add the flour and salt. Mix until the "dough" comes together, set aside and allow to ferment at room temperature for 2-hours, remove dough from bowl and place on floured surface and knead several minutes. Lightly oil the bowl and place dough back into the bowl to ferment for 4-hours, remove from bowl and knead again, place back into the bowl to ferment for 30-minutes, remove from bowl divide into desired

size/weight pieces, form into balls, lightly oil each dough ball and place into individual plastic bags, twist the open end into a pony tail and tuck under the dough ball as you now place it into the fridge to cold ferment for 24 to 48-hours. Remove dough from fridge and allow to temper AT room temperature for about 90-minutes, then open into a pizza skin, dress as desired and bake on the deck of your oven at 700 to 800F/371 to 427C.

How to convert percent into weights:

I like to use 1,000-grams/1-Kg. of flour for a full dough, use half as much for a half size dough.

Using your calculator and 1000-grams as your flour weight,

Enter 1000 X 2.5 (press the "%" key and read 25-grams as the salt weight.

Enter 1000 X 60 (press the "%" key and read 600-grams as the water weight.

Enter 1000 X 0.25 (press the "%" key and read 2.5-grams as the yeast weight.

Between the salt and fermentation this should provide you with a good starting point from which to judge what changes might be necessary to achieve the flavor profile you're looking for.

Keep us posted on your progress.

Tom Lehmann/The Dough Doctor

4485

### **Shop Talk / Re: Double Deck Marsal M60 vs BP vs Blodgett**

DITTO!

The price is right too!

Tom Lehmann/The Dough Doctor

4484

### **Shop Talk / Re: Assembly line concepts, no love for Neapolitan?**

The truth lies somewhere in all of the above. When you're a big chain you try to develop a pizza concept that appeals to the most people, and is somewhat different from the guy down the street, then you see if you can train a bunch of novices in making that pizza (this has been said to be similar to trying to herd long tailed cats in a room full of rocking chairs), and you pretty well hope for the best. DON'T KNOCK IT!!! It's this approach that allows the independents to maintain an identity, have a different product and successfully compete with the big chains.

Tom Lehmann/The Dough Doctor

4483

### **Dough Clinic / Re: Deep Dish - Why can't I get it right?**

Renchero;

I just added them up and came up with 185.3%, dividing this by 100 = 1.853 so if you divide the new, desired dough weight by 1.853 you will know the weight of flour needed to make the new dough weight. From there just use bakers % to calculate the individual ingredient weights for your new dough weight.

By the way, 19.4% corn meal is a lot of corn meal and this might be responsible, at least partially, for the dense crumb structure you're getting. I seldom ever use more than about 10% corn meal. If the corn meal is being used in an attempt to achieve that characteristic yellow color of Chicago style deep-dish pizzas, remember that that characteristic yellow color is the result of adding a yellow coloring called "Egg Shade". There are a number of suppliers of Egg Shade, just Google (Egg Shade food coloring) and you will find different sources.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Deep Dish - Why can't I get it right?**

Renchero;

The amount of corn oil that you have in the dough formula is VERY HIGH too. I might suggest bringing it down to the 8 or 10% level while you're at it. If you feel that ya just gotta have a high fat level in the crust change over to a plastic fat such as butter, margarine, Crisco or better yet, Butter Flavored Crisco. In Chicago it is common to use margarine, Blue Bonnet margarine is what used to be the standard/norm. There is a huge difference in the way oil and plastic fat react in the dough. Oil can/will have a weakening or at least a softening effect upon the dough which is also conducive to a dense crumb structure where as a plastic fat doesn't interact with the flour in the same way so it doesn't have the weakening effect and because it is in a plastic form it doesn't soften the dough very much either as you see when oil is used.

You're right, I missed the oil. I guess I just couldn't imagine a formula adding up to such a high percentage.

Tom Lehmann/The Dough Doctor

4481

**Dough Clinic / Re: What have i done wrong**

When replacing compressed yeast/fresh yeast the conversion is as follows:

ADY/active dry yeast: Use half as much (25-grams to replace 50-grams of CY)

IDY/instant dry yeast: use 40% as much (20-grams to replace 50-grams of CY)

The problem might also stem from using water that is too hot/warm. Typically a good water temperature is about 75 to 80F/ 23.8 to 26.6C. Remember, if you are using ADY and activating it in warm water (100F/37.7C) only a small portion of the water needs to be at that temperature to activate the ADY (typically only about 4 to 5 times the weight of the ADY). If you are mixing by machine and using IDY you can add the IDY directly to the flour without pre-activation but if you are mixing by hand you also need to activate the IDY in the same manner as you would activate ADY.

Tom Lehmann/The Dough Doctor

4480

**Stones/tiles/steel, Pans & Accessories / Re: Would this pan be ok for a Chicago Deep Dish pizza?**

Due to the height of the pan you might have a little problem getting the top to color up as you want it (high sides trap a layer of cool air over the top of the pizza which slows the top color development) but if you set yourself up for a traditional Chicago baking time of upwards of 40-minutes I think you will be just fine.

Tom Lehmann/The Dough Doctor

4479

**Dough Clinic / Re: organic vs. non-organic flour?**

QD;

In one word, no. In some cases it may not produce as good of a pizza as non-organic flour. Organic flour is not malted nor treated in any way at the mill so it has to be handled differently when making pizza. In a general sense, one might say that organic flour needs to be handled in a similar manner to "OO" flour. And for what it's worth, it is not enriched either so there is a significant difference from non-organic flour from a nutritional stand point. Organic is a great consumer buzz word, push the "organic" button and their lights come on.

Tom Lehmann/The Dough Doctor  
4478

**Prep Equipment / Re: Best (or good) mixer for pizza dough**

When I'm making pizzas at home I never use a dough mixer, I've got this thing called "biochemical gluten development" that does all the work for me.

Tom Lehmann/The Dough Doctor  
4477

**Dough Clinic / Re: organic vs. non-organic flour?**

For a number of years now there has been a lot of discussion on treatment of organic flour. Some will accept malted organic flour only if the barley from which the malt is derived is also organically grown, and then there is the enrichment issue where consumers don't want the organic flour to contain synthesized vitamins. Only 100% pure whole-wheat flour milled from an organic wheat is what people were looking for but the germ oil would turn rancid quickly creating marketing and storage issues. Anymore it seems that the use of "organic" flour is a pathway to being able to advertise "made with organic flour". I've used it for making a lot of different food items, including pizza, but unless there are other motives I personally wouldn't spend the extra money on it A few years ago it was so popular in the wholesale baking industry that there was a shortage of it, now that demand seems to have waned which is one reason why we see it so widely available from so many different suppliers.....they're trying to rebuild those markets.

Tom Lehmann/The Dough Doctor  
4476

**Dough Clinic / Re: Dough ball temperature after 24 hrs in fridge**

The warmer the dough is coming off of the mixer the longer it will take to cool it down in the fridge to a temperature where fermentation will progress at a suitably slow rate to allow the dough to be held for several days in the cooler to develop the unique flavors of cold fermentation and develop the desired biochemical gluten development. Typically this temperature is about 40F +/- 2F. If the dough is too warm it will continue to ferment and also the heat of metabolism will enter into the picture to further increase the dough temperature at a rate of about 1F per hour so what you actually end up with is a dough which is essentially warm fermented as opposed to cold fermented. This can/will result in potentially excessive acid production by the yeast which can then degrade the flour proteins (gluten) during the refrigerated holding period resulting in anything from less than stellar dough performance, to collapse or difficulty developing the desired finished crust color due to the acidity of the dough blocking the browning reaction. If the dough is too cold coming off of the mixer the most common result is insufficient fermentation resulting in a tough dough which can exhibit excessive memory characteristics while attempting to open the dough into skins, or a lack of flavor and if your dough has sugar in it it might even develop crust color too fast resulting in a short bake time which ends up leading to a finished crust lacking body or which doesn't retain crispiness. It should be noted that I have said many times "Without temperature control you cannot have effective dough management" What this means is that while different dough management techniques will call for different finished dough temperatures, the goal should be to have consistency in that temperature whatever it might be. The correct finished dough temperature is not specific, but instead it is highly variable greatly dependent upon many different factors not the least of which are dough formulation, type of mixer and mixing time, shop/room

temperature, efficiency of the fridge/cooler, amount of dough going into the fridge/cooler at any one time, type of container used to hold the dough and construction material, dough mass (bulk or individual dough balls), shape/thickness of the dough as it is placed into the cooler/fridge for cold fermentation, the list just goes on and on. Over the years I've been able to draw some rough temperature estimates for finished dough temperature: Commercial pizzeria with large walk-in cooler: 80 to 85F, with a reach-in cooler: 70 to 75F; Home made pizza dough: 70 to 75F for just a couple of dough balls or 65 to 70F if there will be more than three dough balls or the dough balls weigh 16-ounces or more. The idea is to try to get the dough temperature down to 50F in 2.5-hours for up to 3-days refrigerated storage time or 45F for up to 5 to 7-days storage time. Remember, these are just very rough numbers as some individuals are targeting very specific flavor characteristics which might only be achieved with significantly more fermentation so now all cards are off of the table, but again, what ever finished dough temperature you are targeting and whatever temperature you are looking for after 2.5-hours in the cooler/fridge, you will find it hard to replicate the finished crust unless you can replicate the conditions under which you made it and that means consistency in temperature control.

Tom Lehmann/The Dough Doctor  
4475

### **Dough Clinic / Re: par bake trouble shooting**

What does your dough formulation look like?  
What is your dough management procedure?  
How long do you allow the dough to rise in the pan prior to baking?  
Dough weight and pan size?  
And lastly;  
What kind of oven are you baking in and at what temperature?  
Tom Lehmann/The Dough Doctor  
4474

### **Dough Clinic / Re: Help with my dough**

That table merely explains the relationship between yeast activity/fermentation and temperature which is absolutely correct. The thing is that for most yeast leavened baked products there is an optimum level of fermentation which provides things such as ease of forming, flavor, aroma, crumb structure, volume, etc. What we are trying to do is to manage (there's that word again) the fermentation so we can have the desired attributes achieved from fermentation at a time when we want it, such as three or more days from now. Additionally there are flavor differences due to the different balance of acids formed during fermentation at different temperatures which might also provide us reason to want to ferment the dough under specific conditions (think cold fermentation v/s room temperature fermentation). For the most part the temperature range that most bakers target for is probably between 75 and 80F, but higher temperatures might be desired (emergency dough) or colder temperatures for frozen dough.

Tom Lehmann/The Dough Doctor  
4473

### **Dough Clinic / Re: Dough ball temperature after 24 hrs in fridge**

Carl/Peter;  
I went back into the link provided by Peter and offered my comments.  
Tom Lehmann/The Dough Doctor  
4472

## **Dough Clinic / Re: par bake trouble shooting**

Egpl;

In reviewing your formula and dough management procedure I offer the following:

- 1) The ADY at 0.98% is very high. A better level would be 0.5 to not more than 0.6%. / Allow the ADY to activate in just a few ounces of water (100F) for 10-minutes.
- 2) You don't mention the finished/mixed dough temperature but you should know what temperature is being targeted and strive to achieve that temperature on a consistent basis. This is especially critical in view of the fact that you are bulk fermenting prior to balling.
- 3) You don't mention anything about greasing or oiling your pans but for par-baking I've found that greasing them with something like Crisco works better than oil, especially in view of the fact that you are pressing the dough into the pans.
- 4) 650F is way to hot to bake a par-baked crust, try reducing the baking temperature to 400 to 425F and bake the crust JUST until it begins to show a little color development. Invert the crusts immediately upon removing them from the oven and place on pizza screens or wire cooling racks to cool thoroughly before using them. This way the crusts will always be the same or nearly the same temperature when going into the oven and you will get a much more consistent as well as thorough bake of the finished pizza.
- 5) When making your pizzas using the par-baked crusts you can use oil in the pan at that point to achieve a crispier finished crust if you like, then place par-baked crust into the oiled pan, dress to the order and bake at 500 to 525F. 650F is too hot for a deep-dish type of pizza as it will not allow the pizza to be baked long enough to be completely heated. Be sure to place a screen under the pans when baking to help control the bottom crust color, failure to do so may result in the bottom of the pizzas getting over baked, this is especially true when using par-baked crusts. Since all ovens are different you might need to experiment with an even lower baking temperature to get the center of the crust as hot as it needs to be.
- 6) You mention that you allow the dough to rise in the pan for only 30-minutes prior to baking, this might not be sufficiently long for a par-baked crust so I would suggest experimenting with both 45 and 60-minutes final proofing times to see which works best for you in your oven.

On a final note: If you see what appears to be a grease spot in the par-baked crusts, this IS NOT a grease spot, instead, it is an area where the dough has collapsed after coming out of the oven. To correct this condition you will need to bake the crusts a little longer which might require a reduction in baking temperature at the same time (longer bake at a lower temperature).

Tom Lehmann/The Dough Doctor

4471

## **Dough Clinic / Re: smooth vs rough dough, windowpaning**

When mixing pizza dough by machine all you need to do is to mix the dough until it forms a smooth, satiny appearance to it, mixing beyond this point is not necessary and it also contributes to a more bread like crumb structure in the finished crust.

Tony G. is absolutely correct in mixing his dough for a very short time but I have found that when this is done the dough is somewhat more difficult to handle on the bench as it is sticky/tacky, tends to pick-up more dusting flour, and is harder to form a smooth dough ball. The additional mixing that the dough receives when you mix it to a smooth, satiny appearance reduces these annoying characteristic making the dough easier and faster to process. You say that your dough is fragile and has too much memory, I find this confusing as these characteristic are nearly

opposites. Dough with excessive memory tends to be very elastic and strong (too strong). The dough, when mixed to a smooth/satiny appearance will be firm but easy to handle and ball with a smooth skin on the ball. The dough ball will be rather tight and firm in both appearance and feel but don't let that scare you, if the dough is being properly managed fermentation will provide the additional needed gluten development through biochemical gluten development while still providing a desirable soft and extensible dough characteristic necessary for forming the skins and achieving the desired oven spring characteristics.

If excessive dough memory typically results from the use of an excessively strong flour for the dough management procedure being employed or more commonly, an ineffective dough management procedure commonly resulting from insufficient yeast level, incorrect finished dough temperature, or incorrect total fermentation time. At times we also see salt as a culprit as it can have a dramatic effect upon both dough strength and fermentation rate.

Tom Lehmann/The Dough Doctor  
4470

### [\*\*General Pizza Making / Re: Switching Flour - Changes?\*\*](#)

There are great differences, aside from the obvious, between hockey pucks and flour. The main difference is that hockey pucks are always the same while flour is in a continual state of flux (it keeps changing). Flour changes from one milling lot to another within a brand name and flour with the same general properties from one manufacturer to another will also change, add to that differences in protein level, where the flour was stored, how long it was stored and the temperature at which it was stored can add up to some pretty significant differences in performance. This is the reason why I always suggest that when changing to a different flour start out using the same absorption, pay attention to the way the dough mixes, handles, and performs all the way through being made into a finished crust and then ask yourself if the new flour is handling the same as your old flour had, if not, a change in absorption is probably needed to bring the new flour into alignment with your dough management procedure.

Tom Lehmann/The Dough Doctor  
4469

### [\*\*Newbie Topics / Re: Lehmann vs Trader Joes - What's makes dough/crust so flavorful?\*\*](#)

Davefr:  
It all has to do with fermentation. Most if not all commercially marketed pizza crusts are made with little or no fermentation since the acids formed during the fermentation of the dough severely limit the shelf life properties of the dough and add a level of inconsistency to the dough which is unacceptable from a marketing point of view. Try allowing the commercially made dough to come up to about 55F to 60F in temperature and then forming it into a ball and from that point on manage it the same way as you would your regular dough, you will most likely see some improvement. By the way, this also works well for frozen dough too.

Tom Lehmann/The Dough Doctor  
4468

### [\*\*Prep Equipment / Re: Hobart HL600-1STD 60Q Planetary Mixer Feedback\*\*](#)

The Hobart HL-600 (Legacy) is a great mixer, no complaints, but if you are looking for a dedicated dough mixer I think a spiral design mixer might be a better option. As none of the spiral mixers that I'm aware of have attachment hubs you would need to have a planetary mixer with an attachment hub for grinding/shredding and

mixing sauce if these are a part of your daily routine. There have been a number of posts on spiral design mixers and it is hard to find anyone who doesn't like them as a dedicated dough mixer.

Tom Lehmann/The Dough Doctor  
4467

**[Dough Clinic / Re: smooth vs rough dough, windowpaning](#)**

Actually, it looks to be somewhat over mixed.....remember, mix the dough JUST until it takes on that smooth, satiny appearance, no real need to mix it any longer unless you're making a very short time or emergency dough.

Tom Lehmann/The Dough Doctor  
4466

**[Detroit Style / Re: My Detroit style](#)**

Really nice looking crumb structure!  
Tom Lehmann/The Dough Doctor  
4465

**[Prep Equipment / Re: Hobart HL600-1STD 60Q Planetary Mixer Feedback](#)**

One Spiral mixer that seems to have a very good track record is the one by Empire Equipment, but with that said, they're all very good. Hobart used to make a piece of equipment that was used just to drive the attachment (pelican) head.

Tom Lehmann/The Dough Doctor  
4464

**[Dough Clinic / Re: par bake trouble shooting](#)**

Do you know what Lintner value it is?  
Tom Lehmann/The Dough Doctor  
4463

**[Neapolitan Style / Re: How to achieve the burnt char dough taste?](#)**

It sounds like you have a good starting formula to work with, I'm in agreement with jsaras that you might want to be looking at using a sourdough to provide the flavor you're looking for.

Tom Lehmann/The Dough Doctor  
4462

**[Dough Clinic / Re: par bake trouble shooting](#)**

That is a "slug" of malt at (60L). I'm surprised that the dough isn't getting sticky.  
Tom Lehmann/The Dough Doctor  
4461

**[Neapolitan Style / Re: How to achieve the burnt char dough taste?](#)**

It's actually pretty easy to start a culture of your own, the only problem is that you don't know what to expect from your sourdough until you actually have a chance to try it. Make a 100% absorption dough by just stirring or whisking the flour into an equal weight of flour, place into a large diameter bowl and set out some place in your house (kitchen is where most of us do this in) and allow it to act as a piece of fly paper to catch and hold (that's why you want to have a large diameter bowl) any stray yeasts and bacteria in the air, then transfer to a glass jar or other suitable container and allow it to grow/ferment for 2 to 3-days. You should see some bubbling beginning to take place, then divide into two equal portions in different

glass jars/containers, feed by adding a 50/50 flour water mixture to the starter to double the sourdough quantity. Allow to incubate in the fridge or at room temperature until you see bubbles forming again, the sourdough starter is now ready to use. I normally use 15 to 20% based on the flour weight, remember that it will contain 50% water, so reduce the added water by half of the weight of sourdough starter you add to the dough. For the best flavor don't add any yeast, let the sourdough starter provide all of the leavening but this is a longer, slower process. If you want to speed things up a bit you can add a small amount of yeast to your dough formulation. If you like the flavor, congratulations. If you don't you will probably want to try again and hope for a better mix of microflora which will give a different crust flavor. Why two sourdoughs? If you should lose one you will always have the other one to use to inoculate a new starter keeping the same microflora and you're back in business. I normally feed my starter once a week by removing 50% and replacing it with the 50/50 flour water mixture BUT the starter will not be ready to use for a couple of days. I have found that I get a different flavor profile between a cold stored and room temperature stored starters, regardless of how you store it the idea is to try to keep the temperature somewhat constant. This is just the way that I do it, there are probably hundreds of other methods which work just as well or better, perhaps some of the other posters will share their methods with you. It's really pretty easy once you get the hang of it.

Tom Lehmann/The Dough Doctor  
4460

### [\*\*General Pizza Making / Re: Oil For Use in Various Styles Using Pans\*\*](#)

Peanut oil is also quite good, but for Chicago style pizzas where Blue Bonnet margarine used to be the "gold standard" I like to use Butter Flavored Crisco.  
Tom Lehmann/The Dough Doctor

4459

### [\*\*General Pizza Making / Re: Oil For Use in Various Styles Using Pans\*\*](#)

I don't even know if BB margarine is made anymore or not. BFC is awfully hard to beat as a substitute.

Tom Lehmann/The Dough Doctor  
4458

### [\*\*Dough Clinic / Re: par bake trouble shooting\*\*](#)

Egpl;

Just to bring you up to speed, the degree Lintner is a measure of the enzyme (amylase) activity of the malt. The amylase converts starch to sugar which is why you see more browning with a high degree Lintner malt or with high malt levels in general. It is this increase in sugar level which results in the felt stickiness. To help keep things on an even keel I would suggest reducing your present 60-degree Lintner malt to 0.5% and replace the remainder with non-diastatic (non-enzyme active) dry malt powder. This should keep the flavor of the crust pretty well where it is presently at while reducing the stickiness. Because there will not be any topping on the dough it will rise much faster and spring quite a bit more than a fully topped pizza. This brings up a good point though, one that I have not personally tested yet on a par-baked thick crust. When making par-baked thin crusts we can get a much better bake if we apply about half of the sauce to the top of the dough immediately prior to baking (this does wonders at keeping the dough from bubbling during baking if you have done your part time and temperature wise), you might try this when you are par-baking the deep-dish crusts. When we do this we just add the other half of the sauce at the time the pizza is dressed for

an order. There is no food safety issue in doing this as the par-baked crusts can just be stored right at room temperature. When you want to use the par-baked crusts just pop one into an oiled deep-dish pan, apply the other half of the sauce and the toppings called for on the order and bake as previously directed, keeping in mind that you will most likely need to experiment a little to fine tune the exact baking time and temperature....we should be able to guide you through that if you have a problem.

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor

4457

### **Dough Clinic / Re: par bake trouble shooting**

Egpl;

If you are hinting at putting some cheese on the dough at the time of par-baking, don't, you will open a whole bucket of worms, so to speak. Your food safety department will then require that you refrigerate the par-baked crusts where with only the sauce there is no need to refrigerate. Why the hang-up on refrigeration? Because you will then be using a crust that is significantly colder than a room temperature stored crust and considering the insulating properties of a baked deep-dish pizza crust, it will be all but impossible to bring the crust portion up to serving temperature without over baking the top of the pizza, and if you were able to do it the baking time would need to be so long that the crust would be dried out to the point where it would have all the lovely eating characteristics of a thick piece of Styrofoam, especially as it cools. :(

Tom Lehmann/The Dough Doctor

4456

### **Neapolitan Style / Re: How to achieve the burnt char dough taste?**

A commercial or proven culture is almost always better than a home brewed one since all of the fine tuning and culturing for flavor has already been done for you. Just remember to keep two of them going....just in case.

4455

### **Dough Clinic / Re: par bake trouble shooting**

For a long time or until exposed to temperatures of between 160 to 180F. Normally the powder is pretty hygroscopic so it clumps-up pretty bad if you don't keep it tightly sealed and away from humidity.

Tom Lehmann/The Dough Doctor

4454

### **Dough Clinic / Re: Can I make dough by hand in a plastic bowl or does it have to be glass?**

I might also add that when mixing the dough by hand I like to use a wooden spoon or wooden scraper (like a spoon but flat) to mix my dough, it won't bend and when you think you might break the handle you know it's time to stop mixing. I have a home made pizza dough "recipe" posted in the PMQ (Pizza Marketing Quarterly) Recipe Bank at <[www.pmq.com](http://www.pmq.com)> just use "dough" for your search word.

Tom Lehmann/The Dough Doctor

4453

### **Chitchat / Re: Smartphones, Finally Had To Get One!!!! What's everyone else got??**

Just the other day we made that same trip over to our local Verizon store, my wife

and I upgraded our ancient flip phones and got a pair of Samsung Androids, the learning process now begins all over again! Sorry, but I personally am not very fond of a phone that is smarter than I am! :)

Tom Lehmann/The Dough Doctor  
4452

### **Dough Ingredients / Re: Patent Flour**

If the bag said "Fancy Short Patent Flour" it is most likely a pastry type flour but if it just said "Patent Flour" it is probably a bread type flour with a protein content that could range from a low of 11% to a high of around 13.5%.

The term "Patent" is just a name given to the more highly refined types of flour and really doesn't indicate much else. A true, high quality bread flour might be described as a Long Patent Flour from Hard Wheat Varieties.

Tom Lehmann/The Dough Doctor  
4451

### **Dough Ingredients / Re: Patent Flour**

Milled from Canadian hard red spring wheat. That puts the protein content between 12.5 and 13%. It should be just fine for making pizza. A good reference to this type of flour would be something like General Mills Superlative.

Go for it! :)

Tom Lehmann/The Dough Doctor  
4450

### **Dough Clinic / Re: par bake trouble shooting**

It allows time for the heat to penetrate into the center of the dough during baking so you get a complete and thorough bake. Too high of a temperature can/will vaporize water creating a bubble (pocket), now you know why pita is baked at high temperature. It will also flash dry the outer portion of the dough creating an insulating barrier to further heat penetration. It's a no win, no win situation trying to par-bake your crusts, especially a thick crust at high temperature. Remember, you don't want more color on the crust than you ABSOLUTELY need to have to get the crust thoroughly baked. High heat = fast crust color development. If the crust color is too dark on the par-baked crust it will get too dark during the final bake before the toppings are finished baking, or in some cases the crust color might be OK and the top of the pizza is done but the crust is only luke-warm in the center :( Once you have the crust color down pat all you need to do then is to maintain that color as closely as possible, pretty easy to do BUT requires attention on the part of the oven tender at a deck oven.

Tom Lehmann/The Dough Doctor  
4449

### **Newbie Topics / Re: the finger test**

Hey Lucky Duck, you're a pretty smart duck too! What you have described is an age old test and it works pretty well too with most dough formulations, but like everything else there will be exceptions to the rule, sometimes depending upon flour strength, type of pizza being made and how you are opening the dough balls into skins you may need to make adjustments. An old trick that I've used over the years is to do exactly as you have indicated and open a dough ball, if the dough still exhibits too much strength/memory let the next dough ball proof additional time but be sure to note the length of time beyond your "finger test" that you end up proofing the dough ball(s). This way in the future you can express your correct dough ball proofing as passing the finger test plus X number of minutes. You can go

with the total time only if you are controlling the finished dough temperature as differences in finished dough temperature will greatly influence the amount of fermentation the dough receives over time but "finger test" plus time is always pretty accurate. I forgot to add that you also need to know what your finished/mixed dough temperature was when doing this.

Tom Lehmann/The Dough Doctor  
4448

**Dough Clinic / Re: organic vs. non-organic flour?**

I think you have it in reverse. Malted flour will most likely give you more consistent dough performance, then you can add non-diastatic (inactive) malt to the dough for its unique flavor and crust color just like you would add any other sugar.

Tom Lehmann/The Dough Doctor  
4447

**Dough Clinic / Re: idy vs ady vs fresh yeast dough flavor?**

You are indeed correct. There is a huge amount of competition between the yeast companies so they MUST have yeast that is indistinguishable from that of their competition if they are to ever compete in the bakers yeast market, this is why they are essentially the same when it comes to flavor of the finished product...there is no "good" or "bad" but different is 110% unacceptable. We have looked at this many years ago and found that many of the differences in flavor were the result of incorrect substitution levels, incorrect activation (ADY or IDY) and age of the compressed yeast (CY) also played into it. When it comes to finished product flavor in a yeast leavened product yeast level, dough temperature, and fermentation time/conditions are the main driving factors in flavors associated with yeast.

Finished product flavor is VERY COMPLEX and is influenced by MANY different things, it is so complex that the flavor has never been able to be replicated or synthesized even in the best flavoring labs in the world. You can get a cracker like flavor but not a bread like flavor which is close to that of pizza (think French bread) which is made using essentially the same dough formula as pizza.

Tom Lehmann/The Dough Doctor  
4446

**Dough Clinic / Re: Dough balls**

PD1;  
Can you tell us how the dough handled/felt when you were opening the dough ball into a skin? A picture could be worth a thousand words in this case.

Tom Lehmann/The Dough Doctor  
4445

**Prep Equipment / Re: Dough retarding in bags(?)**

I lightly oil the dough ball and drop it into the bag, then force all of the air out so the bag is snug around the dough ball, twist the open end of the bag into a pony tail and tuck it under the dough ball as I place it in the fridge. To get it out of the bag just invert the bag letting the dough ball drop out of the bag onto a floured surface and begin working your magic on it. The bags can be reused if you wish.

Tom Lehmann/The Dough Doctor  
4444

**Dough Clinic / Re: Tough Leathery Crust - Why oh WHy**

The pictures tell the story, I really think that your problem is two fold. 1) I think your dough is somewhat over fermented and 2) from what I see in the pictures the

center section of your crust is flat. devoid of any structure and no crumb structure at all. This can be caused by over fermentation resulting in the dough collapsing under the weight of the topping ingredients, or you are forming your skins with a too thin center section (very common). Some believe that the thinner the dough is the crispier the crust will be, not correct. When the dough is too thin the moisture from the toppings quickly drains down into the crust causing it to get soft and even soggy which in turn results in a tougher than show leather eating characteristic after a few minutes out of the oven. Some things to experiment with are increasing the dough ball weight so you don't have the problems opening it into a skin (the fact that you tore a hole in it tells me you were having a problem) or maybe the dough was just so weak that it tore just trying to shape it? The other thing to try is to reduce the total dough fermentation to see if that helps. Dough temperature is what drives fermentation and from what you have described it sounds like you were having a dough temperature problem....if nothing else, reduce the finished/mixed dough temperature by 10F to see if that helps.

Tom Lehmann/The Dough Doctor  
4443

#### **Dough Clinic / Re: Freezing dough balls:**

We have always had the best results by mixing (65 to 70F target finished dough temperature), straight to scaling, balling, flattening the dough balls a little, oiling the dough balls, and wrapping by placing into a plastic food bag pulled tightly to the dough so there is little headspace/air around the dough puck. Close the bag using a quick-tie and take directly to the freezer. To use, just remove from the freezer keeping the dough ball in the bag and place directly into the fridge for about 12-hours, then turn the dough ball out of the bag and allow to rest at room temperature for 1-hour (be sure dough ball is oiled and covered with a piece of plastic (inverted bowl works well too) as this will prevent the dough from drying. Now re-ball the dough and manage it the same way you would a dough that just came off of the mixer and had been balled.

Tom Lehmann/The Dough Doctor  
4442

#### **Dough Clinic / Re: Best RPM with Spiral Mixer for Neapolitan Pizza**

Stephano;  
With a spiral mixer low speed should be just fast enough to blend the dough ingredients together without splashing anything about in the bowl. Second or medium speed should be just fast enough to begin turning the dough as it interacts with the spiral during the gluten development phase of mixing (after about 5-minutes) Like with any other mixer mixing at too high of a speed will be hard on the mixer and potentially shorten its life expectancy.

Tom Lehmann/The Dough Doctor  
4441

#### **Dough Clinic / Re: par bake trouble shooting**

As most here know, I am fond of cold fermentation for reasons of both finished crust flavor and dough management. For most home bakers a finished dough temperature of 70 to 75F should work quite well, but depending upon how you are managing the dough you might go as high as 80 to 85F. For the most part this means you will need to use water at around 65F.

Tom Lehmann/The Dough Doctor  
4440

## [\*\*Newbie Topics / Re: the finger test\*\*](#)

I've never found it necessary to use any kind of finger test to determine if the dough ball is ready to open when using a sourdough unless the dough is tight/stiff enough to retain its ball shape as it is when making sourdough bread and rolls but when I make my sourdough pizza dough I like to have it more like a soft regular pizza dough, the reason being is because that's just what I'm used to working with. The "finger test" is used to assess a point in dough fermentation where the dough will not exhibit excessive memory while being opened into a skin.

Tom Lehmann/The Dough Doctor  
4439

## [\*\*Dough Clinic / Re: How to achieve "micro-blistering" with cold ferment only PG;\*\*](#)

I'm glad that you went on to describe the blistering that you are looking to achieve, when you mentioned "micro blistering" I thought you were referring to the tiny blisters, looking something like a heat rash, but instead it appears that you are looking for the small bubble formation in the dough that is notorious for contributing to a crispy crust. This is the same structure that makes the cracker type crusts so crispy. Your observations are correct in that fermentation is needed to develop these blisters (actually small bubbles about the size of a cherry pit). You can increase the amount of fermentation the dough receives in any given length of time by increasing the yeast level but there is a point which is different for all doughs where during oven spring when all that yeast begins producing leavening gas and that gas is expanded by oven heat that the bubbles begin to disappear and form into larger, uncontrollable bubbles. I think a better approach would be to just increase your finished dough temperature in 5F increments until you achieve the amount of fermentation necessary to give you the bubbles in your dough.

Temperature is a driver of fermentation so by increasing the temperature and keeping everything else the same you will get more fermentation within that given time without the potential oven spring issues experienced with high yeast levels.

Tom Lehmann/The Dough Doctor  
4438

## [\*\*Dough Clinic / Re: Tough Leathery Crust - Why oh WHy\*\*](#)

Mo;

Pizzas that are baked directly on the oven deck typically do not hold up as well as those baked on a screen or disk, the reason being is because they are just baked so much faster so the crust develops a thin crispy outer layer but the inner crumb portion (crust needs to be thick enough to have an inner crumb structure) never develops the dry firm structure necessary to retain the crispiness. When baking on a screen the baking time is typically somewhat longer due to the dough not being in direct contact with the hot surface of the oven deck which means that the crust will have a better chance to bake thoroughly throughout and have a better chance of retaining its crispy properties. A few years ago I was working in a pizzeria in Philadelphia where they were baking their pizzas at 900F right on the deck. The baking time was right at 90-seconds. The pizzas were nice and crisp when they came right out of the oven but by the time they got to the customer at the table (just a few feet away) they were so soft that customers would roll the slices like a jelly roll and eat them using a knife and fork....it seemed to work well for them as it was different, and their customers wouldn't want it any other way. This restaurant was dine-in only, no DELCO.

Tom Lehmann/The Dough Doctor  
4437

## [\*\*Dough Clinic / Re: How to achieve "micro-blistering" with cold ferment only\*\*](#)

We see that a lot on crusts made using frozen dough too but I've never considered them to be sufficiently significant to contribute to any significant level of crispiness.

Tom Lehmann/The Dough Doctor

4436

## [\*\*Sicilian Style / Re: Dough Proofing\*\*](#)

If you are planning to use an oiled pan my advice is to pin/roll the dough out to a circle an inch or so larger in diameter than the pan and then transfer the formed dough piece into the pan. Hand forming a dough ball in an oiled pan is akin to pushing a rope up-hill. If you use shortening such as Crisco/Butter Flavored Crisco, margarine, butter, lard, etc to grease the pan you can easily press the dough by hand in the pan. Once you have the dough shaped to the pan cover it to prevent drying and allow it to rise at room temperature or in a warm (80 to 90F) location for 45 to 75-minutes which should give you a dough thickness of about 5/8-inch or so, then dress and bake at 450F.

Tom Lehmann/The Dough Doctor

4435

## [\*\*Dough Clinic / Re: Dough recipe calls for 00 flour, does it matter if it is "All Purpose 00 flour?"\*\*](#)

For baking calzones you might want to try baking on a pizza screen (be sure to season before using) as the pizza screen will allow you to give your calzones a much better bake than directly on your stone.

Tom Lehmann/The Dough Doctor

4434

## [\*\*Newbie Topics / Re: Modifying Aluminum Peel\*\*](#)

Why not just use a wood peel? I use one all the time and never have a problem. I just use a little fine grind corn meal mixed with a little semolina flour for my "at home" peel dust. When working in a pizzeria I like to use equal parts of flour, semolina flour and fine corn meal blended together for my peel dust. Everyone has their own favorite peel dust so don't be afraid to experiment to see what works best for you. By the way, use your solid blade peel for removing the pizzas from the oven, never use a wood peel for this.

Tom Lehmann/The Dough Doctor

4433

## [\*\*Newbie Topics / Re: Modifying Aluminum Peel\*\*](#)

The dough exhibits significantly less tendency to stick to the wood peel and there is less chance for moisture condensation to cause stickiness with the wood peel than a metal peel, add to that the wood peel has a rounded over edge/blunt which makes it a lot more difficult to get under the edge of a pizza and for good measure it is heavier than a metal/aluminum blade peel so the metal blade peel is easier to handle with a pizza on it. From strictly an ascetic view the wood peel will soon become dirty looking if you use it to peel pizzas out of the oven while the metal blade peel can just be wiped off. Wood peels should never be washed, instead they should only be wiped down with a damp cloth and dried immediately. I like to wipe mine down with mineral oil occasionally to help keep the wood sealed which makes cleaning a snap and helps to prevent any warping at a later date. If you find that your wood peel just has to be reconditioned that's easy to do too, just lightly block sand using 600-grit sand paper (no water) and then reseal using mineral oil

and you should be good for another five years of service.

Tom Lehmann/The Dough Doctor

4432

### **Sicilian Style / Re: Dough Proofing**

Actually, for deep-dish you can roll it out as soon as the dough can be worked. Roll it out about an inch larger in diameter than the pan then lift the dough piece and transfer to the pan. I like to use a tooth pick inserted into the dough to determine its thickness, remember, you're looking for something right around 5/8-inch thick. If your range top heats up a little with the oven on the top of the range is a good place to proof the dough once you have it in the pan. Just remember to cover it so the dough doesn't dry out during the proofing period.

Tom Lehmann/The Dough Doctor

4431

### **Sicilian Style / Re: Dough Proofing**

When you do that I'd suggest placing the pan in a shallow cookie sheet with a wet towel under the pan to put some moisture into the air. DO NOT PLACE THE PAN IN WATER as it will have less evaporative surface and not work in the same manner.

Tom Lehmann/The Dough Doctor

4430

### **Dough Clinic / Re: Tough Leathery Crust - Why oh WHy**

Any bread will stay soft longer than a pizza crust due to the difference in ratio between the crumb and crust portions of the two products. Bread has a much higher ration of crumb (white portion) to crust (brown portion) than pizza crusts. The crumb portion has approximately 45% moisture content and the outer crust only about 8% on both products immediately after baking so as the product cools the moisture equilibrates and will be lower for the pizza crust than for the white pan bread. Other reasons for the difference are that the pan bread was cooled to approximately 95F and then immediately bagged to prevent any further moisture loss. The baking of the white pan bread is carefully adjusted to give the loaf an internal temperature which ensures that the dough is properly baked but no more than necessary. Pizza crusts are baked to achieve a dry, crispy crust and to a higher internal temperature than white pan bread which further produces a firm feeling crumb structure. White pan bread is designed to have a finished total moisture content of approximately 40% while pizza crusts, typically have a moisture content of around 26% making for a firmer product. Formulas for white pan bread typically contain "emulsifiers" designed to retard the staling process giving a softer crumb structure with extended storage time (an example of this would be sodium stearoyl lactylate (SSL) in conjunction with a hydrated mono-diglyceride). Emulsifiers don't work well in pizza crusts as the crusts are too low in moisture content, are baked at too high of a temperature resulting in too high of an internal temperature, and since these are "emulsifiers" which are hydrophylic/lipophylic bonding agents they grab onto water molecules like crazy, so when the emulsifiers are in the dough they will grab onto water from the sauce and toppings making for a lovely gum line that you cannot get rid of.

As for the ingredient deck shown for the bread, it is a pretty standard bread ingredient statement showing calcium propionate: A mold and rope inhibitor; emulsifier: Most likely SSL and mono-diglycerides (very effective for retention of softness in BREAD); mineral salts: (zinc oxide and electrolytic iron) these are a part of the enrichment fortification of the bread as are the vitamins.

There you have it, nothing special, just plain old white pan bread.

Tom Lehmann/The Dough Doctor

4429

### **Shop Talk / Re: Double Deck Marsal M60 vs BP vs Blodgett**

The only problem that I've encountered a number of times with the Marsal ovens is NOT an oven problem, but instead an installation problem. Marsal ovens already have a gas pressure regulator installed in them (please confirm before installation as this may have been changed) and when an additional (external) gas pressure regulator is installed you will experience all kinds of problems with the oven temperature and recovery time. This is covered in their installation directions which it seems goes unread too many times, or the plumber knows what the codes are and insists the external regulator is needed. Just follow the directions and you won't have any problems.

Tom Lehmann/The Dough Doctor

4428

### **Chitchat / Re: Music Fermentation Method ?**

My only burning question:

Waltz?

Fox Trot?

Tango?

OK, so I'm showing my age.

From a practical stand point I might buy into the concept that under certain circumstances, the vibrations (Good Vibrations) could agitate a liquid and thus affect bacterial activity....boy! I'm out on a limb on that one though!

Tom Lehmann/The Dough Doctor

4427

### **General Pizza Making / Re: Pizza peel has now been revolutionized**

In the baking industry we use a similar principal to transfer formed pita onto the baking deck of a pita oven (700 to 800F). This is accomplished by using a Teflon belt on a retracting conveyor with a nose roller of only about 1-inch in diameter. What is being discussed here is a manually operated retracting conveyor. They work very well. In my travels I will see if I can come across a used replacement belt (no value commercially) to share.

Tom Lehmann/The Dough Doctor

4426

### **General Pizza Making / Re: Pizza peel has now been revolutionized**

You're right, that's exactly what it is in simplified form. I can't see any advantage to using it to remove a baked pizza though, a metal blade peel will just slip right under the crust, then all you need to do is to lift it out.

Tom Lehmann/The Dough Doctor

4425

### **Dough Ingredients / Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment**

What is your flour weight? When I go from cold fermentation to room temperature fermentation I normally use one 1/3 of the CF yeast level and when going from RT fermentation to CF fermentation I will typically use 3X as much yeast.

Tom Lehmann/The Dough Doctor

4424

[\*\*Shop Talk / Re: Deck Oven Disassembly\*\*](#)

We had a very similar oven for baking specialty hearth breads when I worked at the American Institute of Baking but ours came almost fully assembled so I can't be of any direct help but you might want to see if you can identify/locate one of their installers or find a bakery that has one of their ovens. Most manufacturers will share with you who has one of their ovens for you to look at, then you can ask the "40 questions" concerning how the oven was delivered and installed.

Additionally, I Googled MIWE ovens and got a number of hits, one of which provides a link to contact the manufacturer with technical questions. You might contact them saying that you have one of their ovens (be prepared to provide model and serial number) and ask them for instructions for disassembly. It appears that each deck is an independent oven in itself so I'm guessing that once you remove the outer shell you should be able to remove each deck independently for relocation. Just be sure to video the entire process and mark each part for correct reassembly.

Good luck,

Tom Lehmann/The Dough Doctor

4423

[\*\*Sauce Ingredients / Re: Recipe calls for "light" or "extra virgin" olive oil. But oven runs 550, so why\*\*](#)

My personal favorite olive oil to use in the dough (we have for years) is pomace oil. I even use it in the sauce. I save the EVO stuff for salads, post bake drizzle, or use as dipping oil when combined with a little balsamic vinegar.

Tom Lehmann/The Dough Doctor

4422

[\*\*Dough Clinic / Re: Dough recipe calls for 00 flour, does it matter if it is "All Purpose 00 flour?"\*\*](#)

That will help but where the real problem is at is with the inside of the calzone. You need to allow sufficient baking time to allow the top and bottom of the calzone to get fully baked, if not you may find that the calzone is nice on the outside but too soft or sometimes even gummy on the inside. You might try double panning your calzones to reduce the bottom heat/bake, this should allow for a longer baking time, if you find that you are not getting enough bottom color just deck the calzone for a minute or so before removing it from the oven. For the cheese that I use in my calzones (my son's favorite) I use half mozzarella and half ricotta. It makes for a smooth cheese that isn't too runny. Don't forget to cut a couple of steam vents in the top and as soon as it comes out of the oven brush with melted garlic butter and then sprinkle with grated/powdered parmesan cheese. Or you can brush with milk just before baking and then sprinkle with shredded parmesan cheese, the milk provides a nice color and the baked parmesan has a great flavor.

Tom Lehmann/The Dough Doctor

4421

[\*\*New Forum Members / Re: General Dough Making\*\*](#)

I use instant dry yeast (IDY) and Pillsbury Bread Flour.

Tom Lehmann/The Dough Doctor

4420

[\*\*General Pizza Making / Re: do you brush your crust with anything?\*\*](#)

I like to brush the crust with olive oil as soon as it comes out of the oven then drizzle some olive oil over the entire pizza.

Tom Lehmann/The Dough Doctor  
4419

### **Sicilian Style / Re: Dough Proofing**

The next time you make dough try increasing the absorption by a couple percent. The increased dough absorption will allow the dough to rise more easily creating greater oven spring as well as proofed height, this should give you a better bake-out at the same time which will address the gum line.

Tom Lehmann/The Dough Doctor  
4418

### **Sicilian Style / Re: Dough Proofing**

Trossite;

Clarkth is "spot-on". When we talk about dough absorption in percentages we are saying that the amount of water added to make the dough is equal to X-percent of the total flour weight. So, if the flour weight is 500-grams and the dough absorption is 62% the amount of water added would be 62% of 500-grams (500 X 62 (press the "%" key) and read 310-grams in the display window. Now, if we want to increase the absorption to 65% the math would be the same: 500 X 65 (press the "%" key) and read 325-grams in the display window. Remember, the answer will ALWAYS be in the same weight units (pounds, ounces, grams, etc.) that the flour weight was expressed in.

Tom Lehmann/The Dough Doctor  
4417

### **Sicilian Style / Re: Dough Proofing**

In all but the most technical terms the use of "absorption" and "hydration" can be used interchangeably. I just use "absorption" because it is the term most widely used in the baking industry to express the amount of water used to make a specific dough or to express the amount of water absorbed by flour such as in a mill report on a flour sample where the flour is reported to have X% absorption.

Sorry for any confusion.

Tom Lehmann/The Dough Doctor  
4416

### **Dough Ingredients / Re: Best brand of corn oil for deep dish?**

I've never seen any difference except in cost so I always use the "house brand. Olive oil is a WHOLE DIFFERENT STORY though.

Tom Lehmann/The Dough Doctor  
4415

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

The next time you make the pizza, remove a slice and invert it on your counter/table top, then using a box knife/razor knife, razor blade cut the slice in half from rim to point. Be sure to cut lightly, do not press down hard as you are cutting through the crust. This will allow the entire crust portion to be viewed without interference of the toppings. Please photograph this and sent it to me. From the present picture it appears to be oil that's causing the problem but I can't be sure until I see the above.

Tom Lehmann/The Dough Doctor  
4414

## [\*\*Dough Clinic / Re: Air bubbles after bulk ferment\*\*](#)

Depending upon the finished dough temperature (temperature is what controls the rate of fermentation) I don't think 6 to 8-hours at room temperature is going to be enough. What is your finished dough temperature?

Tom Lehmann/The Dough Doctor

4413

## [\*\*General Pizza Making / Re: Deep Dish Pan Question\*\*](#)

Spring form pans usually work well in this application but I have not used one yet with a glass bottom (only a metal bottom). Typically we use a baking temperature of 450 to 500F with a total baking time of 30 to 40-minutes (assuming raw sausage is used). If pre-cooked sausage is used the baking time can usually be adjusted to something in the 20 to 25-minute range depending upon your oven and dough formulation used. I like to bake this type of pizza in the center rack position being sure to spin the pizza about half way through the baking cycle. If you find that you are getting too much top color place a piece of foil over the pizza to reduce top heat.

Tom Lehmann/The Dough Doctor

4412

## [\*\*Dough Clinic / Re: Question about cold packed jarred pizza sauce\*\*](#)

Norma;

The key to preventing clostridium growth is pH (acidity). If you maintain the pH sufficiently low it will inhibit the growth of clostridium. There should be no problem with canning your own sauce BUT remember this, the number one complaint about tomatoes is that many consumers don't like the acidity so the growers are developing strains of tomatoes that are LOWER IN ACID, this means that you will need to be doubly sure that the pH of your sauce is within the correct range to inhibit clostridium growth, DO NOT GO BY THE TYPE OF TOMATO as it may have been changed to produce a lower acidity fruit. Many states have a program in place that is designed to assist small businesses in getting started or in developing new products, they utilize the expertise of retired and active business men and professors to provide the services needed at little or no cost. This might be an option to explore, if this is not available the next step for you to take might be to contact the food science department of a nearby university to see if you can visit with a professor or graduate student to receive some guidance (do's and don'ts) which will go a long ways in keeping you and your customers safe. I'm glad to see that there is a home inspection program in place too, in fact that might be a better place to begin your search for guidance. In the mean time, use Google to learn as much as possible about safe canning practices (paying particular attention to pH recommendations) as this will shorten the learning curve.

Garlic oil is the most potentially dangerous one as it is hard to control clostridium as oils are not typically acidified sufficiently, and when they are it is no longer garlic infused oil, but rather salad dressing (vinegar & oil).

I might also add that the most common way that people get botulism poisoning is when a young house wife cans food in the same manner as her mother or some other family relative of the past did not knowing that the acidity of the product being canned is now less than what it was then. This is where a simple pH meter can literally be a life saving device.

Tom Lehmann/The Dough Doctor

4411

## [\*\*Commercial Ovens / Re: Rotating ovens\*\*](#)

The correct terminology for that type of oven is "reel" oven.

Baxter

Reed

Fish

Cobblestone

Middleby-Marshall

These are the ones that immediately come to mind. By the way, Cobblestone doesn't actually make ovens, they just rebuild/recondition the reel ovens made by Middleby-Marshall for resale. This is the oven of choice in Chicago for making their deep-dish pizzas.

Tom Lehmann/The Dough Doctor

4410

## [\*\*Commercial Ovens / Re: Rotating ovens\*\*](#)

Peter;

As the big, original pizzerias branched out into franchised stores they did change over to conveyor ovens, not because they wanted to but because of the added expense of needing to purchase so many reel ovens, not to even mention the installation costs and space needed in the store for one of these ovens (about the size of a small office). Of those that I've talked to, if they had their druthers, they'd druther have the reel type ovens but it's just not possible, plus the conveyor ovens are so much easier to operate (not that a reel oven is difficult to operate) but if you can figure out which end to put the pizza in and which end it comes out from the rest is intrinsic. One word about installation costs, an air impingement oven is about as simple and easy to install as it gets while the reel ovens may need to be disassembled and reassembled on site plus they need to be hard plumbed once installed (ain't gonna be moved either) while the air impingement ovens can usually be hooked up via a flexible gas line if the oven is planted on the floor as opposed to being on wheels. Indeed, there are a lot of advantages to air impingement ovens, their only detraction is that they have all the ambiance of a shoe box.

Tom Lehmann/The Dough Doctor

4409

## [\*\*Neapolitan Style / Re: Freezing Dough\*\*](#)

Dough that is frozen in a static freezer like a home freezer as opposed to a commercial blast freezer can be frozen for up to about 2-weeks +/- a few days and still expect to get decent dough performance. When you freeze, DO NOT freeze as a dough ball, I like to freeze the dough in a 6" diameter cake pan. Oil the pan, fit dough into the pan, freeze thoroughly, remove from pan, lightly oil, stretch wrap and place back into the freezer as QUICKLY as possible. No need to vacuum seal as there isn't any benefit. To use, just remove frozen dough from freezer, immediately unwrap and place on an oiled cookie sheet to slack-out (thaw), drape the stretch wrap that you took off over the dough to prevent drying. As soon as the dough reaches 55 to 60F remove from the sheet pan and place on a floured surface and begin opening the dough into a skin, dress and bake. It will probably take about 45 to 60-minutes for the dough to slack-out properly before you can begin opening it. The dough will freeze more efficiently and faster as a "puck" rather than as a ball and it will slack-out faster too. Yes, they sell commercially frozen dough in this same manner but it is only available through food distributors by the case. We used to get it in for our students to work with so they could experience working with

frozen dough when I did our pizza seminars at AIB.

Tom Lehmann/The Dough Doctor

4408

### **Neapolitan Style / Re: Freezing Dough**

Peter;

Like the approach taken by essentially all commercial producers the frozen dough manufacturers try to produce a dough sold as "pizza dough" that in the broadest terms meets the needs of the greatest number of people. In other words, it's a "do all" dough specific to no particular type of pizza. My standard pizza formula: 100% flour, 1.75% salt, 2% sugar, 2% oil, 58% water, and 0.375% IDY comes close the formula used by many frozen dough manufacturers except that they use CY at 2% (standard frozen dough procedure) and usually include some type of oxidation such as ascorbic acid or an enzyme based bromate replacement as well as a reducing agent to help with gluten development. Additionally, while we normally use a moderate protein content flour the commercial manufacturers use a high protein flour (13.5% and more) or supplement the dough formulation through the addition of vital wheat gluten. There are also some smaller frozen dough manufacturers including coated chemical leavening in their dough formulas to help with oven spring out at the end of the dough's shelf life (12 to 21-weeks).

Keep in mind too that there are custom frozen dough manufacturers like Custom Foods, De Soto, KS, Specialty Bakery, Indianapolis, IN, Drayton Foods, Fargo, SD, and others who mill make frozen dough to a customer's specifications so any kind of pizza dough (within reason) can be had just for the asking.

As for frozen shelf life, I will stick to my guns, we have seen too many doughs fail for what appears to be no reason at all when they are not BLAST FROZEN and held for more than 15-days. Yes, this does apply to a commercial, pizzeria setting where dough failure is not an option and a softer dough than normal cannot be addressed by using a little more dusting flour or handling it a little differently, or even re-ball it. Can you freeze dough and hold it in your home freezer and hold it for a year? Maybe? Will it produce the same results as a dough which was stored for 15-days or less? In one word no. If anyone has found that dough formula please let me know as we are well on our way to becoming multi millionaires! Any of the above named companies plus a bunch of others like Riches would pay a "kings ransom" effectively increase their effective frozen shelf life. There are a lot of things that we can do as home pizza makers and get away with it because we do have the ability to respond to address dough issues as they come up and take action which will allow us to still produce a great pizza but for the most part this cannot be done with commercial dough going into a commercial market. Yes, the dough does change but we are automatically taking corrective action to deal with the problem, I do it all the time when making pizzas at home, just like all of us here but that is not to say that there aren't changes taking place in the dough, failure to recognize that is a failure in the understanding of the physics and microbiology of frozen dough.

Tom Lehmann/The Dough Doctor

4407

### **Dough Clinic / Re: Dense Crumb**

Insufficient yeast, poor yeast activity, insufficient dough absorption, finished dough temperature too cold, insufficient pan proofing time.

It could be due to any of those. Are you allowing the dough to rise to a specific height in the pan (pan proofing) before you dress and bake the pizza?

Tom Lehmann/The Dough Doctor

## Dough Clinic / Re: Got lost in details on my way to a great pizza dough

Ulli;

What you appear to have described is my past 50-years in studying pizza in a research setting. I used to be in charge of experimental baking at the American Institute of Baking/American Institute of Baking International. The problem that you are facing is that you are looking at the whole elephant and asking yourself "How I eat that?" and the answer is one bite at a time, just like everyone else does. You must break it down into manageable tasks and address each one thoroughly until you can make the dough respond in a predictable manner (we call it steering the dough) by implementing the responses that you have identified. Until you can "steer" the dough you haven't identified the mechanism or influence that the test ingredient/subject has on the dough rheology.

Take yeast for example:

First you need to develop a thorough knowledge and understanding of yeast, then list all of the things that can/will influence the yeast such as;

Type of yeast (CY,ADY, IDY,PADY,)

Finished dough temperature

pH of the dough (like when sours are used)

These tests would be conducted using nothing but FRESH yeast samples used at a typical use level for a specific type of pizza, then using the CORRECT conversions, begin substituting one yeast type for another and record results (finished dough temperature MUST be the same for ALL doughs. Now you are getting an idea of what if any differences might be expected with the different yeast types.

Now you're ready to look at variations in finished dough temperature, using each type of yeast you will need to adjust the finished dough temperature in 2F increments from the lowest that might be used (55F) to the highest (110F) and record your findings. By the way, if you miss the target finished dough temperature that dough must be culled from the test as the results will not be valid, and any testing done over more than one day will require that a control be included against which all results will be measured. Note: The control dough MUST be repeatable and you MUST demonstrate your ability to CONSISTENTLY replicate the control dough day after day. This is critical as all results will be measured against the control, and if on any day the control does not perform within its normal parameters the days work must be considered invalid and repeated.

Now you're ready to repeat all of this again but this time you will be looking at the impact of pH on the yeast activity as well as dough feel.

With pH understood you can now move on to how the amount of yeast impacts the overall dough rheology, in this case you will probably begin to see some diverging results occurring such as amount of yeast used v/s finished dough temperature, this is where the fun begins as you will begin to see that the yeast level can be reduced with higher finished dough temperatures BUT eventually you will see that the dough begins to collapse under the weight of the ingredients in the center portion of the pizza due to insufficient leavening power coming from the reduced yeast levels.

And this isn't even all of the study on yeast, there are still all of the other dough ingredients and their interactions such as yeast with salt, yeast with sugar, then there is pH and crust color, pH and crumb structure, sugar v/s milk , sugar v/s egg, and then you begin to study the water, amount of water (dough absorption), type of water (hard water, soft water, de-mineralized water, sulphur water (within potable limits) and water pH, and water temperature and how it affects the dough....Whew! Lots to study there, it took me most of those 50-years in the controlled conditions

along with all of the resources of a certified testing laboratory to address most of that. I say most because every day someone will ask a question that will cause me to say to myself "Gee, that would have been a good one to look at in our study". That's the scientific approach which gets to the soul of pizza but if you want to take a less in-depth approach you might think of just looking at time, temperature variations with each of the different yeast types on a couple of different types of pizzas. Think of it like developing an owners manual as opposed to the blue prints for making it.

Tom Lehmann/The Dough Doctor  
4405

### **Dough Clinic / Re: Question about cold packed jarred pizza sauce**

Norma;

Your SCORE program is probably the same as our KVAC program here in KS, typically a good resource for help or guidance with a small business.

If you were canning salsa you're already "sitting in the saddle" as canning your sauce will be essentially the same and you're already well versed on the importance of pH control. :)

While I no longer work at AIB, they are still a good source for reasonably priced product label development which you will probably require on any prepared product (check with your local laws). There are some exceptions to this that you might qualify under which would include "cottage business" and product being sold on premise as opposed to being sold through other channels such as a grocery store or other vendor. This is also something that the Labeling Department at AIB would be able to help you with or point you to the necessary resource to see if you might qualify. The company that would prepare your product might also be in a position to provide these services too. If you need to contact AIB the person to ask for is Elaine Meloan and their number is 800-633-5137. You can also Google them at American Institute of Baking, Manhattan, Kansas.

One final note: If you do not already have one, I'd suggest setting up something like an LLC to protect yourself and your assets.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4404

### **Dough Clinic / Re: Question about cold packed jarred pizza sauce**

Norma;

Remember, I've been away from this for a couple years now so things may have changed. The "cottage business" is/was an exclusion in the Federal labeling laws (CFR's) that allows small businesses like farmer Jones to sell his canned applesauce at the local farmer's market without jumping through all of the labeling hoops. To qualify your gross business sales could not exceed a certain amount (I think it was \$50,000.00) in a year. The exclusion is probably still in place but you will need to check on it. I just checked and it is still there. Google: (federal code of regulations cottage industry exclusion for food labeling) and if you scroll down a little you will see several references to it.

Tom Lehmann/The Dough Doctor  
4403

### **Dough Clinic / Re: Dense Crumb**

The prevalence of large bubbles during baking would tend to indicate that the yeast was probably not up to "snuff" as your finished dough temperature was fine and your CF was plenty long. I just made calzones over this past weekend and the

yeast that I was using was ADY, hydrated it in 100F water for 10-minutes but did not observe any bubble formation. As this was the only yeast I had on hand at the time I went ahead and used it, like they say, "any port in a storm" after three hours of fermentation (if you can call it that) at room temperature the dough had changed very little from the way it was when I put it into the bowl to ferment, I let it go another two hours and saw only slight signs of fermentation but I used it anyways as we were all waiting for calzones. They turned out OK, but that's about all I can say for them. It is interesting to note that the dough was unusually soft and very extensible with very little elasticity indicating that glutathione had been released from the yeast cells. Upon examining the yeast packets I saw that the expiration date was October 17, 2016. Oops, my bad! We now have a fresh supply of yeast. It happens to the best of us.

Tom Lehmann/The Dough Doctor  
4402

### **Dough Clinic / Re: dry crumb help**

As you've discovered, adding more water really isn't the answer, neither is adjusting the point at which the salt is added to the dough. As you are not making a "traditional" but only "style" of pizza here are a couple of things that might help you achieve a softer, more moist crumb structure.

- 1) Increase the oil to 4% with no other formula changes.
- 2) Add 2% sugar to the dough formula, this will result in a crust that browns faster thus reducing the overall baking time which should give a bit more moisture in the finished crust.
- 3) Add 2% dehydrated potato flakes to the dough along with 5% additional water to compensate for the hydration properties of the potato flakes. This is an old trick that bakers have used for over a century to produce softer bread.

Keep us posted on your results, any pics would probably help too.

Tom Lehmann/The Dough Doctor  
4401

### **Prep Equipment / Re: Dough retarding in bags(?)**

Yes, the bags were twisted too tightly, I normally just give the bag 3 or 4 twists and then tuck.

Tom Lehmann/The Dough Doctor  
4400

### **Prep Equipment / Re: Dough retarding in bags(?)**

I forgot to add that I've found if you pull the bag together at the top and give the dough ball a twist (spin) it won't overly tighten the bag around the dough ball while leaving just enough room for expansion. If the bag is being pulled tightly to the dough ball it is being bagged too tightly.

Tom Lehmann/The Dough Doctor  
4399

### **Neapolitan Style / Re: Thoughts on Natural Leaven in commercial setting**

That's the beauty of building your own store, you can spec in what you want for temperature controls to help manage your "natural" leavening.

This is the secret to making San Francisco sourdough bread, the bakery is built around the need to control the sourdough and produce breads made with it.

Tom Lehmann/The Dough Doctor  
4398

## [\*\*Newbie Topics / Re: Do I still need warm water after proofing yeast?\*\*](#)

The temperature of the remainder of the water is adjusted accordingly to give you your targeted finished dough temperature. When making pizzas at home this could mean using warmer water during the winter months if your kitchen is cold/cool or colder water in the summer if your kitchen is hot/warm. Your chosen method of dough management will also play a part in determining what your optimum finished dough temperature is so you will need to adjust the water temperature to achieve that temperature. As I always say, "You cannot have effective dough management without temperature control". Everything that happens with the dough after mixing is significantly influenced by the temperature of the dough after mixing. Whatever temperature you find that works best for you is your optimum dough temperature, it is then your job to see that all of the doughs you make after that are at least close to that temperature.

Tom Lehmann/The Dough Doctor

4397

## [\*\*Dough Clinic / Re: Basil added to dough - Does it actually add taste to the crust?\*\*](#)

Personally, I wouldn't add fresh basil to a thin crust, if you want a great flavor, brush the dough skin with olive oil and then add fresh basil leaves or rolled and cut basil leaves, then add the sauce and dress the pizza to the order. Or, just add a few fresh basil leaves or cut basil IMMEDIATELY as the pizza comes out of the oven and then give it a sprinkle of EVOO and you're good to go. Forget the dried stuff, it can't hold a candle to the fresh stuff if you're looking for something different.

Tom Lehmann/The Dough Doctor

4396

## [\*\*Neapolitan Style / Re: Thoughts on Natural Leaven in commercial setting\*\*](#)

When you're dealing with a natural leavening system in a commercial setting temperature control HAS to be a prime consideration or you may find one day that you have lost something in your leaven due to a microbial shift. Doing this at home is one thing, but doing it in a pizzeria is totally different as there will be more opportunities for something to go wrong and FAILURE IS NOT AN OPTION.

I would also HIGHLY recommend that you back-up your culture in remote locations so you can re-inoculate your leaven or begin a new one if the need arises without fear of getting a different flavor from a different population of micro-flora.

Tom Lehmann/The Dough Doctor

4395

## [\*\*General Pizza Making / Re: Portioning\*\*](#)

I weigh all of my ingredients.

Tom Lehmann/The Dough Doctor

4394

## [\*\*Neapolitan Style / Re: Thoughts on Natural Leaven in commercial setting\*\*](#)

It's hard to provide any input without knowing how the SD is being managed. Some work with it right out of the cooler while others bring it out of the cooler and allow it to begin to ferment a little at room temperature before using it. There is one person who I've been working with that prepares his SD starters in individual containers (one for each dough), he feeds it, allows it to ferment until it shows good activity and then uses it to make his doughs for use on the following day. He cold ferments the dough in bulk overnight, removes it in the morning to scale and ball and place in dough boxes, some go back into the cooler for use later in the day

while some is left out of the cooler for use up until about 2:00 p.m. when the next box(es) are then ready to go online. He follows the 15% rule for incorporating any unused dough back into fresh dough. It all depends upon how your SD is presently being managed as you will want to keep a process as close to that as possible but still be able to have a ready supply of dough ready to go at any time.

Tom Lehmann/The Dough Doctor

4393

### **General Pizza Making / Re: Portioning**

The scale that I use is the KD-8000 (someone here put me onto it). This is a really great scale with lots of weighing capacity plus you can change modes too, anymore I use it for just about everything from making apple butter, peach preserves, jerky, various cakes, bread & butter pickles, even all of my doughs are weighed on this scale. It operates on regular flashlight batteries and I still have the original set in the scale after two years now. It cost me about \$30.00 with free shipping, one of my better investments!

If you are only going to make enough dough for a single pizza though you might want to look for something with a smaller scaling range and one that weighs down into decimals of a gram. The KD-8000 only weighs to the nearest 2-grams which is fine for me as I usually make enough dough for at least 3 of whatever I'm making.

Tom Lehmann/The Dough Doctor

4392

### **General Pizza Making / Re: Wow! (first pizza since joining this forum)**

No turning back now! :)

Tom Lehmann/The Dough Doctor

4391

### **Dough Clinic / Re: Question about cold packed jarred pizza sauce**

Norma;

I've never seen a case where canning something that didn't need pickling improved it, but admittedly, some things tolerate canning better than others, pasta and pizza sauce are two that seem to work out pretty well as they are already somewhat acid, Alfredo sauce on the other hand, at least for me, isn't in the same ball park compared to fresh made after it's been canned.

Most commercial contract canners will have a R&D laboratory where they can work with you to iron out any difficulties which might be encountered as a result of canning your product.

Tom Lehmann/The Dough Doctor

4390

### **Pizza News / Re: Chemicals in fast food packaging**

Add to that the number of people who reheat their meals in the Styrofoam containers they are sent out in (Chinese fast food) and "dogie" boxes that our left overs are brought home in, or how about bringing home burgers and fries and just plopping them into the microwave to reheat/reheat without removing the burgers from the wrappers. Peter is absolutely correct about the pizza boxes too. What I find strange though is the fact that Potassium Bromate has been found to be a potential carcinogen and yet we still see home bakers clamoring for flour containing it while essentially all of the major baking companies as well as all of the fast food chains have stopped using flour containing bromate for several years now.

Tom Lehmann/The Dough Doctor

4389

### **General Pizza Making / Re: Portioning**

You say "during the rush" are you a pizzeria or other volume producer? If so the jury is divided, some use commercial portioning cups while others (Domino's), (Papa John's) use scales to control topping weights. Take cheese for example, average of 75-pizzas a day and 1-ounce heave on cheese for each pizza equals 75-ounces/4.68-pounds of unaccounted for cheese every day  $X 7 = 32.81$ -pounds a week or 1,706.25-pounds a year X cheese cost at let's say \$3.50 per pound = \$5,971.88 loss per year X how many stores?

If you are just making pizzas at home the scale you are looking at will probably work just fine but speaking for myself, if I know that I've got three pizzas that I have to dress and get into an oven post haste I like to have my ingredients preassembled (weighed in separate containers, low cost paper cups work great for this) so all I have to do is grab and toss but if it's for me and the family forget the portion control on the toppings, I just use the grab and toss method of dressing my pizzas. I've never had any complaints that there was too much or too little of anything.

When I'm building a new or different pizza for the first time I place the skin on a screen which then goes onto a scale, zero the scale, add sauce or whatever the first topping ingredient will be until it looks right to me, make a note of the weight and re-zero the scale, add the next ingredient until it looks right and make a note of the weight, next ingredient, etc. This way the pizza is dressed the way I like it and I know how much of each ingredient I've used so if I need to make an adjustment in the future I can always go back and replicate the original toppings and adjust the weight of any specific topping, like the time my son said it was a great pizza BUT there were not enough green olives (his favorite topping) on the pizza, so being the loving dad that I am I went back and looked to see how much green olive I had put onto his pizza, I then doubled the amount for HIS pizzas and he is now a happy camper.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

4388

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Try making a pizza using ONLY tomato paste for the sauce. The pizzas do not show much sign of a gum line at all, but in one of the pics there does appear to be some sauce intrusion into the crust which might be caused by your sauce being too thin. Using paste will answer that question. The wet area that you see immediately under the sauce is normal but might be improved upon a little by addressing the sauce issue if that's what it turns out to be.

Tom Lehmann/The Dough Doctor

4387

### **Dough Clinic / Re: Got lost in details on my way to a great pizza dough**

You will not be able to use the different types of yeast at the "same" level as the dried yeast forms are so much more concentrated, but you should use them at the same equivalency level. There are two ways to determine this at home, 1) Contact the manufacturer and ask them to provide you with a conversion chart which will show how much of their yeast will be needed to replace different types of yeast to give the same leavening performance. 2) Use a 250-ml graduated cylinder, lightly oil the inside of it, make your dough using compressed yeast at 1%, pay special attention to the finished dough temperature as it is critical in this test (target 80F)

if you can, not a problem if you miss the target by a couple of degrees. Carefully scale 75-grams (exact amount is not critical BUT consistency is), and with lightly oiled hands form the dough piece into a roll (hotdog shape) that can be dropped into the cylinder with ease, use a wood rod to lightly press the dough into the cylinder so it completely fills the bottom of the cylinder. Make a note of the height of the dough (hence the graduated cylinder) and tent the top of the cylinder with a small piece of foil. Make a note of the room temperature as this will need to be relatively constant for these tests. Read and note the height of the dough in the cylinder at 30-minute intervals for up to 3-hours +/- . Now make another dough with ADY at 0.5% and try to achieve the SAME finished dough temperature that you got with the CY dough and repeat the test. If the dough is rising faster the 0.5% conversion amount is too high, if it is rising slower it is not enough, adjust the ADY amount until you get similar rising rates from the ADY as you did with the CY. Repeat using IDY. You can put the rising data (ml height on one axis and time in 30-minute increments on the other) for east of interpretation. When you see the graphs overlying at around 2-hours they should stay pretty close together after that to the end of the test.

To activate the ADY use 1-part yeast and 5-parts water at 100F).

For home application just use regular household 5-grain strength vinegar to adjust the acidity of the dough. You can use a low cost pH meter or you can use litmus paper strips. To use the litmus paper you will need to liquefy a 50/50 dough water (distilled and deionized) blend using a blender, pour into a clean glass container, allow to set for 3-minutes and decant the liquid from the bottom of the glass container into another smaller glass container. Dip the litmus paper strip(s) into the solution and compare the color to determine pH. You will need strips to read pH values in the 4.5 to 5.5 pH range.

This should get you started in your quest.

Keep us posted.

Tom Lehmann/The Dough Doctor

4386

### [\*\*Pizza News / Re: Chemicals in fast food packaging\*\*](#)

Peter;

As you know, there is significant consumer concern over the food safety aspects of KBRO3 by many consumers, so much so that in some states it must be declared along with a statement alluding to the fact that it may cause cancer in some individuals. It is not illegal to use but they are sure not encouraging its use. In Canada as well as all of Europe and I believe Mexico it is flat out banned, due to all of this attention most of the major box chains has stopped using bromate entirely in all of their products and ditto for ADA (azodicarbonamide) due to the recent publicity. Smaller manufacturers do not bring the issue up voluntarily (out of sight, out of mind) but once consumers get wind of what is in the food that they are eating they begin beating on their war drums and things begin to change in one way or another. The smaller and regional chains especially those in the central part of the U.S. are in a much better position than those on either coast to maintain a status quo on things like bromate and ADA (after all, remember it isn't illegal) so they continue to use it but I'll bet that each of those companies have a contingency action plan for addressing the issue when the axe is about to fall on their neck. The big chains just don't want to deal with the bad publicity as it can severely hurt their bottom line (think Jack in the Box and Chipolte as two examples of bad publicity). Shhhhhhhh, let's keep this a secret just between us, unless you have an axe to grind with one of the companies continuing to use bromate, in that case you can contact Dan Rather and he'll take it from there.

With all of that said, I've said this before but I'll say it again, bromate itself IS a carcinogen, but it is converted to bromide during baking (harmless) and for many years it was believed that all of the bromate was converted to bromide, this is until the Japanese refined a method for detecting bromate at levels of ppb (parts per billion) and OMG! There was still some un-converted bromate present! So everyone jumped on the ditch bromate wagon (who wants to consume a carcinogen???) and here we are today, 40-years later, and yes, there are some good alternatives available. My own personal take on it is that one has more to fear from their drinking water than from baked products containing potassium bromate....just don't eat the raw dough.

Hope I didn't bore anyone too much.

Tom Lehmann/The Dough Doctor  
4385

### **General Pizza Making / Re: Portioning**

My mind is wired to think in bakers%.

Tom Lehmann/The Dough Doctor  
4384

### **Newbie Topics / Re: Do I still need warm water after proofing yeast?**

Albert was a wise man.

Amen to that.

I coined this a number of years ago: "Fear not the man who knows little, but fear most the man who knows everything for he knows not what he does not know" Life is an adventure and learning new things makes that adventure fun and exciting.....take my new call phone.....no! Please take it!! Give me my old flip phone back! OK, sometimes learning can be a little stressful but in the end it makes us better in what we do.

Tom Lehmann/The Dough Doctor  
4383

### **Pizza News / Re: Chemicals in fast food packaging**

Nick57;

I'm rowing in the same boat as you are. I was raised at a time when bromate levels were five times greater than allowed today, acrylamide wasn't even a word yet, and fruit and vegetables were just that, no decisions to be made between natural, organic, non-GMO, pesticide free, and whatever. We either bought it or grew it ourselves, we rode bicycles without wearing a helmet and Bactine was a blessing since it didn't burn like alcohol or iodine. Here I am 73-years later still alive and kick'in and except for some self inflicted hearing loss and joint pains I'm still in great health and continue to harvest deer and turkey every year for the freezer and play the part of a coyote population control specialist in between seasons. I'm not about to get overly concerned about the food I'm eating at this stage of my life. I try to eat well, eat in moderation and hope for the best. By the way we eat just about all of our meals at home, it seems anymore just about all fast food contains too much salt, sugar or fat for our liking, and when it comes to pizza we're kinda stuck in a rut anymore as it is either home made pizza or pizza from AJ's New York Pizzeria here in Manhattan, Kansas. We have a special fondness for AJ's pizza.

Tom Lehmann/The Dough Doctor  
4382

### **Dough Clinic / Re: New dough ideas?**

Dan;

From your dough absorption at 45% it appears that you are making what we refer to as thin crispy crust. The problems that you are experiencing are due both to the high yeast level and the very high finished dough temperature. Balling and traying/boxing if not cross stacked isn't helping the matter any either.

Here are my recommendations to begin with;

- 1) Reduce the IDY to 0.4% of the total flour weight.
- 2) Reduce the water temperature to 70F which should give you a finished dough temperature in the 80s.
- 3) Immediately scale and ball and wipe the top of the dough balls with salad oil after you have placed them into the dough box.
- 4) Cross-stack the dough boxes so any one box is perpendicular to the one above and below it, allow the boxes to remain cross-stacked for 2-hours then cover or nest the boxes to seal them and prevent drying.
- 5) Allow the dough to cold ferment (CF) in this manner for a minimum of 24-hours before using. The dough will remain good to use for at least 48-hours, possibly longer (to be determined).
- 6) To use the dough remove box of dough from the cooler, keeping it covered and allow the dough balls to warm AT room temperature until they reach 50 to 55F.
- 7) Remove dough ball from box using a plastic scraper, place dough ball onto a floured surface or into a bowl of flour, remove excess flour from the dough ball and using your existing dough sheeter, open the sheeting rolls to give you a finished dough piece about 2-inches smaller in diameter than what you want your finished skins to be.

Place the partially opened skin on a pizza screen and place into a wire tree rack in your cooler for about 30-minutes to chill down, then cover the rack with a suitable plastic bag to prevent drying. To use the partially opened dough remove from the cooler about 15-minutes before anticipated use to warm slightly, then lightly flour the dough once again and open by hand to the full finished diameter, or if you want, you can use the sheeter to open the dough skin to full diameter. Try both methods to see which one gives you the better finished crust.

If your pizzas are heavily dressed with vegetable toppings you might want to consider baking at a lower temperature (500 to 525F) as this will allow more time for the toppings to dry out so you don't get what I refer to as a "swamp" pizza.

Like I said, this procedure should address the issues you have been having with the dough failing towards the end of the day and it will give you dough to use on the following day(s) too.

You might plug this formula and procedure change in and let us know how it works for you, we MAY need to make further changes to the finished dough temperature and/or the dough management procedure based on your observations, but this should get you pointed in the right direction.

Tom Lehmann/The Dough Doctor

4381

### **Dough Clinic / Re: twin diving arm mixers for brick oven**

The mixer is very similar to an Artofex mixer (actually the name of the manufacturing company but now used in common reference to this type of mixer) which is designed to emulate hand mixing of the dough (a very gentle action) which is very popular with pastry bakery as they don't want to over develop the gluten resulting in dough that is difficult to shape into all those nifty little shapes that our pastries come in. Since we normally don't want to develop much of the gluten, just enough to allow the dough to be handled on the bench without being overly sticky, this mixer will probably take a bit longer to properly develop the dough but otherwise it should work just fine.

Tom Lehmann/The Dough Doctor  
4380

**Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Is the IDY that you are using fresh? Just opened package? Also, exactly which IDY are you using? In Europe for example, SAF and Fermipan both sell what they refer to as their Gold Label IDY. This is different from the red label product in that it has a high sugar tolerance but very poor sodium (salt) tolerance which would certainly slow the yeast activity in view of the fact that you are using 2.4% salt in your dough formula.

If the IDY is a red label product I would still consider reducing the salt level to 2% to see if that helps with the fermentation rate to give more fermentation to the dough balls.

Tom Lehmann/The Dough Doctor  
4379

**Dough Clinic / Re: New dough ideas?**

If you're lacking in fridge space you might consider bagging the dough balls as this takes much less space and it is really the "ticket" to dealing with stored not having sufficient refrigerated storage space.

As for stacking the pre/partially opened dough skins, no, what you are proposing will not work as it does not allow for rapid cooling of the skins. When cooling on screens in a wire tree rack there is free airflow to both the top and bottom of the skins which effectively cools the skins in a rapid manner. Once the skins are cooled for 45 to 60-minutes they can then be removed from the screens and packaged/wrapped as you describe here for use later in the day. The idea is to have the dough THOROUGHLY chilled before wrapping and stacking. If they are not thoroughly chilled they will continue to ferment in the stack and you're back to square one with nothing gained.

Tom Lehmann/The Dough Doctor  
4378

**Neapolitan Style / Re: Thoughts on Natural Leaven in commercial setting**

The accepted R.H. (relative humidity) for a dough fermentation room is 85 to 87% relative humidity. At this humidity level the dough will not develop a dry skin over the top. If a soft, leathery skin is acceptable you can drop the R.H. down to the 80 to 82% range.

Tom Lehmann/The Dough Doctor  
4377

**New York Style / Re: Oregano Pre/Post bake**

One thing to remember about oregano is that all oregano is not created the same. Different types of oregano have a different pungency and add to that the fact that oregano has a fairly short "actual" shelf life, by this I mean that unless properly stored (refrigeration but preferably the freezer) there is a perceptible loss/change in flavor after as little as 30-days from opening a sealed container. Some suppliers will buy large quantities of oregano and dole it out to fill orders which is not a good thing as you have no way of knowing how old the oregano actually is.

One of the last things that we worked on at AIB prior to my retirement was investigating the commonly heard complaint that cheese just doesn't have the flavor that it used to have. What we discovered was that the over use of dried oregano was literally dominating the entire pizza flavor profile and you probably couldn't have tasted the "delicate" notes of Limburger Cheese if it had been used

as the sole cheese on the pizza. We began experimenting with reduced amounts of oregano and our sensory panel members began commenting on the cheese flavors coming from the pizza. We then began working with Micro-Leaf oregano and found that our sensory panel had no problem identifying differences in the cheese even though oregano was being used as a flavoring on the pizza. We confirmed our findings at several pizza shows where we prepared pizzas flavored with both fresh basil and Micro Leaf oregano and were able to effectively reduce the amount of cheese used on a 12-inch pizza (our standard show format) to as low as 3.5-ounces before we started hearing comments on the lack of cheese flavor. When we were at 4.5-ounces of cheese we had a lot of comments on how good the cheese tasted even though it was a full 2-ounces less than what we used on our standard 12-inch pizzas. To a home pizza maker this may not seem to be very important but to pizzeria operators (our audience) it represented a very tidy sum at the end of a year.  $2 \times$  number of pizzas made during a year divided by  $16 \times$  price paid for a pound of cheese. And since they don't exactly give dried oregano away the reduced use or elimination of dried oregano significantly contributed to offsetting the cost of the Micro Leaf oregano not to mention the potential for greater consumer acceptance. As a side note, we observed that show patrons would come back by our kitchen area later in the day to comment on the fact that while they normally got heart burn when eating pizza they did not get it after eating our pizza, this we attributed to the reduced amount/lack of dried oregano.

I'm not saying that fresh oregano is better than dried oregano but I will go out on a limb and say that I personally think dried oregano is overused by a large margin and this might be impacting sales for some pizzerias. We use absolute minimum amounts of basil and oregano at AJ's New York Pizzeria and believe it or not we are locked into using Grande WM Mozzarella Cheese since a taste testing indicated that you could pick up the flavor change when we used a different cheese.

Just some interesting facts that I thought I'd share while on the topic of oregano.  
Tom Lehmann/The Dough Doctor  
4376

### **Dough Clinic / Re: Problems handling wet dough. Sticking, etc.**

Apone;

A couple of things to keep in mind are;

1) your wood peel is actually better than a metal blade peel for prepping the pizza on and peeling it into the oven. Your metal blade peel is best suited to peeling your finished/baked pizza out of the oven.

2) After opening the dough ball into a pizza skin (skin) place it onto your wood peel using parchment paper or a release agent such as fine corn meal, semolina flour, wheat bran, rice flour, etc. There is no one best release agent and if you ask ten people what the best release agent is you will get ten different answers. They all work, but you will need to experiment with any one or combination to see which one works best for you.

3) After placing the skin on the peel dress it (apply sauce and toppings) as quickly as possible and shake the peel occasionally to ensure that it is still free from the peel (not sticking), after you finish dressing the skin give the peel one final shake and immediately peel the dressed skin into the oven.

You also mention using "00" flour. Pizzas made using this type of flour should be baked in a very hot oven at or above 700F/371C for best results.

There is plenty of help here at this site to get you started making some great pizzas so don't be afraid to ask questions.

Tom Lehmann/The Dough Doctor  
4375

## **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

In two words: You bet! :)

Tom Lehmann/The Dough Doctor

4374

## **General Pizza Making / Re: How I roll!**

That's essentially the same dough rounding method that we use. You can also see it in detail at my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> just click on Learn to Make Pizza Dough and the method is shown in Part 2. The procedure is also shown in a video that I made for PMQ which can be found on their web site at <[www.pmq.com](http://www.pmq.com)>.

I agree that this is a very easy way to round dough pieces. We have literally done hundreds of dough balls at a time without undue strain, as for speed, once mastered it procedure is very fast! We can normally round about 100 to 110 dough balls in 20-minutes (one person). If anyone has been in one of our seminars this is the procedure that we taught our students.

Tom Lehmann/The Dough Doctor

4373

## **Dough Clinic / Re: Freezing Pizza dough**

Peter;

Didn't we just have some discussion on freezing pizza dough?

If you could work your magic again it might set the stage for further discussion.

Thanks,

Tom Lehmann/The Dough Doctor

4372

## **Dough Clinic / Re: Freezing Pizza dough**

Peter and Apone;

I agree, with a little baker's yeast added it might be done effectively, but let's go out on a limb here and try something that we have done with S.F. sourdough, go ahead and produce your dough just as you normally do but when it comes time to dress the skin place it on a piece of parchment paper and very lightly brush with oil, then set it aside to proof/rise for 30-minutes, then place the skin into the freezer, taking care to place it on a board or cardboard circle to keep it flat. After the skin has been completely frozen wrap in stretch film and let's see if it can be held for up to 10-days, maybe a little more. To use the frozen skin remove from freezer, unwrap and place onto a piece of parchment paper which will allow you to easily move the slacked-out (thawed) dough skin. Cover the frozen skin with a large bowl or cardboard box to help keep it from drying out (the oil that you put on the dough earlier will help in this respect, the bowl or box will keep drafts away from the skin while it is thawing. Due to the cross section dimension it won't take too long for the dough to slack-out, as soon as it is slacked-out dress and bake the skin in your normal manner. The reason why we allow the skin to proof/rise between forming and freezing is to give the dough some height to make-up for the oven spring that will most likely be less than normal (this is somewhat like a pre-proofed frozen dough skin (think Freschetta Pizzas). Please keep us informed on your results.

Tom Lehmann/The Dough Doctor

4371

## **Shop Talk / Re: Dough Divider**

These are similar to the old Dutchess manual dough dividers which would have the

same problem if not properly maintained. The solution to the problem back then was to thoroughly remove all rust and then just keep it oiled with mineral oil. DO NOT USE ANY OTHER TYPE OF OIL as it will polymerize over time and create a layer of varnish over the surfaces which will gum everything up. You can buy mineral oil from any supplier servicing the BAKERY trade (we used to get it in 5-gallon pails), sometimes it is referred to as "divider oil" or even "rounder oil", regardless of what it is called it's still just plain old mineral oil.

Tom Lehmann/The Dough Doctor

4370

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Did you notice the words "for sweet and savory" in the description of the yeast? There is a possibility that this yeast is not suitable for high salt applications. To test this I would suggest making a dough just as you have been but use only 1.5% salt. Let's see if this gives improved yeast performance.

Tom Lehmann/The Dough Doctor

4369

### **General Pizza Making / Re: How I roll!**

Because bakers usually use this method for rounding bread dough the weight of the dough balls will be as small as 3-ounces for buns and up to 24-ounces for some of the larger pan breads. Like with everything else though, the objective is to develop consistency in your rounding technique so all of the dough balls are about the same with regard to tightness. This is actually pretty easy to do once you have mastered the technique.

Tom Lehmann/The Dough Doctor

4368

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

If the pizzas fail you can always have a cheese on rye sandwich, that partial loaf of (rye bread?) looks awfully good! :)

Tom Lehmann/The Dough Doctor

4367

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Peter;

From their description (pastry, cakes, sweet dough, etc. but no breads) I'm wondering if this isn't what we would call a "graham" flour made from 100% whole soft wheat. This is the type of flour that graham crackers are made with, hence their name. Normally though we don't see protein levels much above 10 or 11% for this type of flour, then too it might be made from a hard red wheat variety which has gluten properties better suited for making pastry than bread/pizza. One thing to note though, while the analysis shows nothing of the presence of fiber/bran (all flour has at least some bran/fiber) from the description it sounds like it is a whole wheat flour, that being the case the bran might be absorbing water over a period of time causing the dough to become more viscous/stiffer and more difficult to leaven/rise. If this were the case the dough absorption would need to be increased to possibly something in the 70 to 75% range remembering that the dough will be initially soft and sticky as the bran will not have sufficient time to hydrate during mixing but that condition should show signs of improvement in an hour or so. Another option would be to make a "soaker" of the flour and all of the water, allow to hydrate for at least an hour, then add the remaining ingredients and mix the dough in the normal manner.

Tom Lehmann/The Dough Doctor  
4366

### [\*\*Specialty-Grain Pizzas / Re: Golden 86\*\*](#)

Do you have a specific reason for adding lecithin to your dough formula? When we did the work many years ago looking at the effect of emulsifiers on pizza dough we found that in general, emulsifiers are not well suited to use pizza doughs as their hydrophilic properties tend to promote moisture migration from the sauce and toppings into the dough which under certain circumstances can result in the development of a gum line just under the sauce.

Tom Lehmann/The Dough Doctor  
4365

### [\*\*Specialty-Grain Pizzas / Re: Golden 86\*\*](#)

Emulsifiers allow oils to hold water molecules (think mayonnaise) by interfacing between the oil and water. As emulsifiers are hydrophilic and lipophilic (water and oil loving) they hold the two together forming an emulsion. It is this action which can lead to the development of a gum line under the sauce since the moisture in this area can be bound by the emulsifier rather than repulsed (this is why oil is applied to a skin that will be pre-sauced). Additionally, lecithin really isn't very functional in a dough system, the greatest use of lecithin is in the formulation of a pan release oil where the lecithin provides the necessary "cling" properties to the oil preventing it from running off of the vertical sides of the pan.

Tom Lehmann/The Dough Doctor  
4364

### [\*\*Shop Talk / Re: Sliced mozzarella vs shredded\*\*](#)

The three ways that I like to add Mozzarella cheese are shredded (but then the pizza looks so "commercial" and just like everyone else's pizza, then there is sliced, but I never add the whole slices unless I'm adding it under the sauce (Chicago style) instead, I like to break it apart into pieces and use these to randomly place on top of the pizza for more of an artisan appearance and lastly, there are the balls of Mozzarella, like those from Grande. I like to peel these as you would an orange and place the pieces randomly on top of my pizzas, the differing sizes and thickness gives the pizza a great appearance. Some even like to add the fresh Mozzarella cheese in this fashion after baking. I've done this occasionally but I like to put the pizza back into the oven for another minute after adding the cheese in this manner to get a better melt. I did not even mention diced cheese because it is so devoid of any interest, it just looks like a layer of cheese on the pizza, and beside that, you actually need more diced cheese than shredded to get the same coverage. I might add that I'm not going for full coverage when using torn pieces of sliced or peeled balls. My target is 4-ounces for a 12-inch pizza. It all depends upon what look you are going for, if you want the pizza to look like it came from a specific pizzeria/chain you need to use the form of cheese that they use, for me personally, I always go for a more gourmet/artisan look so I use more sliced or balls than shredded.

Tom Lehmann/The Dough Doctor  
4363

### [\*\*Chitchat / Re: Super Bowl Predictions.....?\*\*](#)

My own interest in the game is probably a 20 on a scale of 100, but my prediction is that someone, one of the two playing teams, will come out the winner. During game time I plan to keep myself amused with my new, at home, do it yourself root

canal kit. :)

Tom Lehmann/The Dough Doctor  
4362

### **Dough Clinic / Re: Freezing Pizza dough**

You are correct that doughs made using bakers yeast are better suited to freezing than those made using a sourdough. When dealing with the conditions encountered in home freezing of dough there is no one dough formula better suited to freezing than any other one. As a general rule the only change to a dough formula that will be subjected to home freezing is to increase the yeast level by approximately 50%, the exact amount of increase will need to be determined through experimentation with your specific dough formulation.

Tom Lehmann/The Dough Doctor  
4361

### **Dough Clinic / Re: Problems handling wet dough. Sticking, etc.**

Apone;

I believe some members here have used parchment paper in their wood fired ovens which are also very hot. If you have a problem with your parchment paper burning you will need to peel the pizzas directly onto the oven hearth using a peel dust to facilitate the dough releasing from the peel. When I make multiple crusts I like to pre-open the skins and just place them on the counter/bench top with a little flour under each one. A trick that I often use is to find some large cardboard pizza circles and put my peel dust on them then place the opened skin on the circle while it is awaiting its turn to be dressed and baked. In a pizzeria we use multiple wood prep-peels instead of the cardboard circles as the skins can be dressed and peeled into the oven with minimum handling. In your case you will need to slide the skin off of the cardboard circle onto your wood prep-peel for dressing and peeling into the oven. If there will be a delay between opening the skins and dressing/baking they can be placed into the cooler/fridge for holding until you're ready to use them. As for getting a stuck, dressed skin off of a peel, you can try lifting it and working a little more peel dust under the skin to see if that will work but all of the handling normally tears the skin so what I usually end up doing is to salvage the toppings and discard the skin, then be sure to THOROUGHLY clean the peel and use a little more peel dust the next time and probably shake it more often too. If you can get some fine corn meal you can use it by itself as a peel dust if you are experiencing severe sticking problems, other wise it is usually blended with something else like rice flour or even wheat bran or semolina flour to make a peel dust.

Tom Lehmann/The Dough Doctor  
4360

### **Dough Clinic / Re: Problems handling wet dough. Sticking, etc.**

Apone;

Yes, you are correct.

Tom Lehmann/The Dough Doctor  
4359

### **Dough Clinic / Re: Dr.'s email?**

Mike;

You can reach me at <thedoughdoctor@hotmail.com> or you can call me at 785-537-1037 anytime after 10:00 a.m. CST.

Tom Lehmann/The Dough Doctor  
4358

## [\*\*Shop Talk / Re: repairing dough presses and repair parts\*\*](#)

Dieter;

The old Doughpro hot presses have a heated head and a non-heated, swing out platten. If the head is heating properly and will heat up to around 250F you're good to go. The top head temperature is adjusted to a point where the dough just releases cleanly from the head. Dwell time is typically around 7-seconds, after the platten is lowered the platten is swung out and the pressed skin peeled off of the platen. Be sure to put a little oil on the platten occasionally and be sure to lightly oil the dough balls too for improved pressing. These presses like to have a moderately soft but relaxed dough so it is also common to incorporate a reducing agent into pressed dough formulations to reduce snap-back after pressing. If you find that the doug skin is tearing during the pressing operation the dough is too stiff.

Tom Lehmann/The Dough Doctor  
4357

## [\*\*Dough Clinic / Re: Dr.'s email?\*\*](#)

Yes, I'm located in Manhattan, Kansas.

Tom Lehmann/The Dough Doctor  
4356

## [\*\*Dough Clinic / Re: Dr.'s email?\*\*](#)

Yes I do, I've got friends on the north side of Wichita that we visit a couple of times a year, and then there is Cabela's and Gender Mountain as well as Coleman's discount store.

Tom Lehmann/The Dough Doctor  
4355

## [\*\*New York Style / Re: Effects of hydration levels\*\*](#)

If you add too little water to the dough the resulting dough will be tough, stiff and difficult to work with and depending upon how low the absorption is the dough could be extremely difficult to open into a skin from the dough ball stage. As absorption is increased the dough becomes progressively softer and more extensible making the dough easier to work with and open into a skin. When maximum dough absorption has been exceeded the dough will become excessively soft and difficult to work with, if you're balling the dough the dough balls may not hold their shape and tend to flow together or flatten during the fermentation stage. As for finished crusts, very low absorption levels will require the services of a sheeter to open into a skin resulting in a crust that is plat with little or no raised edge. If low enough it may qualify as a cracker type crust and possess very crispy eating characteristics but with a dry mouth feel. As absorption increases the dough becomes softer and rises more during baking giving more oven spring to the dough which typically results in more of a raised edge on the crust. Finished pizzas will typically have a nice crispy bottom and edge while having a soft but tender eating characteristic. When the dough absorption is excessive the pizza may be misshapen due to poor dough handling properties, and the dough may collapse under the weight of the toppings, especially in the middle of the pizza resulting in a very thin center section with a very tough, leathery eating characteristic, as there are no toppings around the edge the rim will expand freely as a result of oven spring potentially resulting in an excessively large crust edge. As the dough collapses in the center you may also notice a lack of crust color development in the center section of the pizza resulting in the heat altered transfer properties of the

dough/crust now allowing heat to pass through into the sauce and toppings without the dough achieving a sufficiently high temperature to develop the desired crust color. There are a good many more things that might be mentioned but these are the main ones.

Tom Lehmann/The Dough Doctor  
4354

### **Dough Clinic / Re: dough management**

For a 24-hour cold ferment I like to use 1% CY with good dough management practices in place. If you have a problem managing the dough I would advise dropping this to 0.25% CY.

Tom Lehmann/The Dough Doctor  
4353

### **New Forum Members / Re: How to make a perfect pizza dough**

Qualities of a "good" pizza;

Since we eat with our eyes it must have an appetizing appearance which means, at least for me, a nicely browned crust with a little browning on the cheese (this is subjective though) and topping ingredients that can be readily recognized (I don't like mystery toppings) and the balance of toppings to cheese must look right so the pizza doesn't appear to be cheap.

Then we eat with our noses too so the pizza must have a tempting aroma and since it is considered to be of Italian origin part of that aroma might be a little basil and/or oregano lacing that aroma.

Lastly the pizza must have a great flavor, the crust or toppings shouldn't taste salty (a somewhat common problem), you should be able to taste the cheese as well as the toppings on a really great pizza or if you want a "good" pizza you can dice the toppings and mix them together so all of the toppings as of one flavor (BORING!) To accomplish this use larger pieces of topping that will retain their flavor and texture better and actually look great. We are actually beginning to see the frozen pizza manufacturers here in the U.S. doing this same thing. The sauce is another thing that contributes to the taste of the pizza, it can be sweet, tangy, or tart whatever you decide on just be sure to keep it the same all the time. My own personal preference for sauce is to slices of fresh tomato with basil leaves under some of the slices, but that's just me. I like the artisan/gourmet appearance it gives the pizza.

And one last thing, let your pizzas look just like everyone else's pizza and your pizza will be judged by your customers just like everyone else's, but make your pizzas look a little different so they stand out and you just might find customers flocking to your door to get one of those GREAT pizzas, what makes them so great? They look different and taste a little different too, like I always tell my clients "Dare to be different".

Tom Lehmann/The Dough Doctor  
4352

### **General Pizza Making / Re: Mickey's frozen pizza in Loganville**

Norma;

As with any vegetable topped frozen pizza the toppings will suffer greatly from a slow/static freezing process (the reason why we harvest our gardens before the first hard frost). All frozen pizzas going into commercial channels that I'm aware of use blast freezing to freeze their pizzas. As I've mentioned before, blast freezing comes in two flavors, mechanical, where we freeze at temperatures of -20 to -35F (the lower temperature is more typical) and cryogenic, where we use an industrial

cryogen (liquid nitrogen or liquid carbon dioxide) and freeze at temperatures in the -65 to -85F range. The blast freezing is essential in forming a smaller ice crystal which doesn't destroy the cell structure of the vegetables like the larger ice crystals creates with static freezing. Tip: use just meat toppings or if you can access them, use moisture controlled/IQF vegetables for the toppings. If you want to see these in action just pick-up a Di Giorno pizza from your local supermarket and you will see them first hand. That's one the secrets to keeping the vegetable toppings looking so fresh on the Di Giorno pizzas.

Tom Lehmann/The Dough Doctor  
4351

### [\*\*Dough Clinic / Re: Prevent skin during bulk cold ferment\*\*](#)

Oil it and place (drape) a piece of plastic over the bulk fermenting container to trap the carbon dioxide being released from the yeast on top of the dough creating a mini green house climate over the dough which will prevent it from drying. We do this all the time in large commercial operations and it works very well.

Tom Lehmann/The Dough Doctor  
4350

### [\*\*General Pizza Making / Re: Mickey's frozen pizza in Loganville\*\*](#)

Norma;  
When moisture controlled IQF vegetables are made the vegetables are first partially dehydrated by vacuum drying and then immediately IQF.

This allows the vegetables to retain color and texture much better than regular IQF vegetables, and they just plain don't weep. The main supplier I think is still Con Agra Foods. We used to use them in our pizza seminars all the time.

Tom Lehmann/The Dough Doctor  
4349

### [\*\*Dough Clinic / Re: Prevent skin during bulk cold ferment\*\*](#)

Clarkth;  
Nope, you assumed wrong, I just take a plastic Walmart or grocery bag and tear it open and DRAPE it over the fermentation container. If you tear only one side of the bag open you can slide the bag over your container (if it's not too large) like a sock and just let the bag drape over the container. You really don't want or need to seal it closed. The carbon dioxide being heavier than air will form a protective layer over the surface of the dough, the purpose of the plastic is to prevent any drafts from blowing the layer of carbon dioxide off of the dough surface.

Tom Lehmann/The Dough Doctor  
4348

### [\*\*New York Style / Re: 1st attempt of Tom Lehmann's NY style Dough\*\*](#)

Very good bake on the pizza too! Great bottom bake from what I can see too. I agree with Hermit about letting the dough cold ferment longer just to see what you think of the flavor that you get with a longer cold ferment. When I developed the dough it was found that we got the best overall results after 2-days of cold fermentation but the dough still performed very well for us on day 3 too, so don't be afraid to experiment and "tweek" things along the way to make it just the way you like it. :)

Tom Lehmann/The Dough Doctor  
4347

### [\*\*Hearth Ovens / Re: Baker's Pride Il Forno Classico vs Y600\*\*](#)

Most screened pizzas seem to bake best at 500 to 525F in a deck oven. This will allow the bottom of the crust to be done at the same time the top of the pizza is finished baking.

Tom Lehmann/The Dough Doctor  
4346

**[General Pizza Making / Re: How to make this pizza? | What kind of pizza?](#)**

The internal structure of your pizza looks a lot like what you provided as your target pizza but the bake on your pizza is stronger than that of the target pizza. To address this you might try reducing the baking temperature for your next attempt.

Tom Lehmann/The Dough Doctor  
4345

**[General Pizza Making / Re: Colony Grill spots on cheese?](#)**

Those pizzas look like they were topped with diced cheese.

Tom Lehmann/The Dough Doctor  
4344

**[New York Style / Re: 1st attempt of Tom Lehmann's NY style Dough](#)**

To add another log t the fire, When we CF the dough we only slow down the yeast activity, it does not stop, so it continues to feed. Through enzymatic conversion of starch to simple sugars (glucose and fructose) the yeast can typically generate enough sugar to support it for several days, after that it runs out of nutrient and the yeast begins to cannibalize itself which releases the plasma material contained within the yeast cells (glutathione) into the dough. Glutathione is a reducing agent, meaning that it breaks down the protein chains making the dough significantly softer, weaker and much more sticky. By adding sugar to the dough formulation we are adding additional nutrient to support the yeast allowing it to continue to actively ferment well beyond the time at which the converted sugars have been metabolized by the yeast. BUT during the fermentation process the yeast excretes acids, carbon dioxide, and alcohol. The carbon dioxide is the primary leavening gas produced by the yeast as it feeds, the alcohol will slowly degrade the protein as will the acids (acetic, lactic and propionic). The formation of these acids is what inhibits crust color development in doughs which have been fermented for several days. The only way t get these doughs to color up is to make sure we have added sufficient sugar to the dough so at the time the dough is used there is a surplus of sugar available to participate in the Maillard browning reaction and ultimately in caramelization which results in the crust color development. Without the added sugar in the formula we can only develop the crust color through application of very high temperatures during baking. It is this inhibiting effect of acids upon crust color development that results in sourdough bread having very little crust color development.

When we reball the dough it is because the dough has become over fermented and weak in structure. The re-ball process does three main things to help the dough  
1) It degases the dough making it easier to work with. 2) It realigns the gluten structure which has a strengthening effect upon the gluten/dough. 3) It introduces air into the dough structure which oxidizes some of the protein bonding points within the gluten structure which in turn actually strengthens the protein/gluten /dough to reverse some of the damage to the protein structure caused by the excessive fermentation. I have greatly simplified this for better understanding for those of you who are not cereal chemists and to give everyone a better understanding of what happens during fermentation and why.  
I hope this sheds a little more light on the topic.

Tom Lehmann/The Dough Doctor  
4343

**[Newbie Topics / Re: Deep dish pizza pan](#)**

Aluminum, cast iron or steel, they all work very well. My own personal preference is an anodized black, non-stick finish, deep-dish pan made by Lloyd Pans at <[www.lloydspans.com](http://www.lloydspans.com)>. These are a bit pricey at just a tick over \$25.00 a pan but they will last a lifetime. If you can snag a steel cake pan (usually dark green in color) grab it! I've found these at thrift stores on a pretty regular basis, usually in 7 or 8-Inch diameter but they're perfect for individual size pan pizzas. A real find is when you see a 12 or 14-inch commercial cake pan. Don't let a little rust scare you, it will easily clean off and you can then season the pan to seal it and you're good to go. A good alternative to the Lloyd deep-dish pan is and heavy weight aluminum deep-dish pan that has a dark, anodized finish which is either 1.5 or 2-inches deep. These are easily found on the Internet at a very reasonable price.

The choice is yours.

Tom Lehmann/The Dough Doctor  
4342

**[Dough Clinic / Re: Fermenting and Proofing question](#)**

Considering the amount of ADY used and the amount of fermentation the dough was subjected to I'm guessing that the dough might have been over fermented to the point of becoming "bucky" or extremely elastic.

I would suggest beginning with a cold fermentation process as it's much easier to manage.

Adjust the water temperature to give you a finished dough temperature between 75 and 80F (70F water +/-).

Mix the dough in your "normal" manner.

Check the finished/mixed dough temperature and record.

Immediately scale and ball the dough.

Wipe the dough balls with oil and place into individual plastic bread/food bags.

Twist the open end of each bag to form a pony tail and tuck the pony tail under the dough ball as you place it into the fridge.

Allow the dough to cold ferment for a minimum of 24-hours, 48-hours is much better and you can go even longer if you want.

I'd suggest trying one dough ball at 48-hours, one at 72-hours and one at 96-hours to see what works best for you in YOUR kitchen.

To remove the dough ball from the bag just invert the bag over a bowl of dusting flour, flour the dough ball and open into a skin by your preferred manner. Once you have this mastered you can begin introducing periods of room temperature fermentation to see how it works for you. Speaking just for myself, I use only cold fermentation as I like the flavor it gives and it is so easy to manage. I like to use my dough after 48 and 72-hours cold fermentation time as for me that time gives me the product that I like, but since we are all looking for something different, I encourage you to experiment with cold fermentation, room temperature fermentation and hybrid room temperature + cold fermentation dough management procedures as they will give you differences in flavor as well as physical crust differences too. Experimenting is a fun and rewarding (good pizza) learning process.

Tom Lehmann/The Dough Doctor  
4341

**[Sicilian Style / Re: Cold Ferment in the pizza pan or in a ball](#)**

I like to give the dough several days CF as a dough ball to develop the gluten as well as develop flavor, then open the dough ball into a skin for the pan/deep-dish pizza and allow it to proof/rise in the pan at room temperature for about 30-minutes and then take it to the fridge to CF several more hours. When we do deep-dish pizza I pull my dough balls the evening before we have pizza. I allow the dough to temper at room temperature for an hour or so, then shape it/fit it to the pan and allow to proof/rise at room temperature for 30 to 45-minutes. I then take it to the fridge (piece of foil crimped over the top of the pan to prevent drying) to CF overnight. On the following day, about an hour before I'm ready to dress and bake the pizza I remove it from the fridge and allow it to temper a little (about an hour) then dress and bake the pizza. This gives me a very nice, open crumb structure, with minimum work on my part.

Tom Lehmann/The Dough Doctor  
4340

**Dough Clinic / Re: Dough hook on 5 qt KA mixer question**

There is no comparison between the "J" hook and the spiral dough arm, it is that much better (the spiral dough arm).

Tom Lehmann/The Dough Doctor  
4339

**Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

If the two doughs are not rising equally the conversion rate is not correct for your specific dough formulation. The conversion provided by the manufacturers are based on some unknown dough formulation and it is almost always on the low side, or so I have found, as it puts the dry yeast in a better cost comparison to the fresh yeast.

Tom Lehmann/The Dough Doctor  
4338

**Sauce Ingredients / Re: Pizza Sauce with Anchovies?**

I wasn't aware that "real" Italians made it any other way. :-D

Tom Lehmann/The Dough Doctor  
4337

**Dough Clinic / Re: Testing doughs without cheese?**

Are you planning to do your testing on pizzas with the cheese used under the sauce (such as is the case with Chicago style pizzas) or where the cheese is used on top of the sauce? If used under the sauce the pasta route may not be a viable option due to the significantly higher moisture content of the pasta as opposed to cheese.

Tom Lehmann/The Dough Doctor  
4336

**New Forum Members / Re: Starting a pizza shop for the second time**

When I saw your post at first I thought you were a different "Big Dave". The one I know would NOT be getting back into a store though.

If you will contact me directly at <thedoughdoctor@hotmail.com> and request a copy of my sauce formulas I will be glad to send you a copy. These sauce formulas have a track record of over 30-years and make a good starting point to make your own sauce.

Tom Lehmann/The Dough Doctor  
4335

## [\*\*Dough Clinic / Re: Testing doughs without cheese?\*\*](#)

Kramerica;

In that case the pasta should work fine for you. It's easy to figure out the dough weight for a 16-inch pizza if you know the dough weight used for the 12-inch pizza as you mentioned. Since the 16-inch pizza is 1.778 times larger than the 12-inch pizza just multiply the weight to make your 12-inch pizza by 1.778 and this will give you something pretty close to the dough weight that you will need. As for getting the leaping the best approach is to use a solid deck baking surface as you are, bake your pizzas right on the deck and employ high baking temperature, you will need to go higher than 500F. The addition of browning agents to the dough such as sugar and DMP will generally contribute to a more even browning of the crust.

Tom Lehmann/The Dough Doctor

4334

## [\*\*Dough Clinic / Re: Dough hook on 5 qt KA mixer question\*\*](#)

If you're having a problem with the dough not "picking-up" properly, or at all the problem is almost always due to insufficient dough size to properly interact with the mixing arm. In those cases the most common solution is to use the flat beater at first, until the dough mass begins to form and then change over to the dough arm to complete the mixing process. You have to be careful though as using the flat beater with too large of a dough size or using it too long can/will stall the mixer which is not good for mixer longevity.

Tom Lehmann/The Dough Doctor

4333

## [\*\*Newbie Topics / Re: What size pizza pans\*\*](#)

If I'm baking on screens I have one of each size that I regularly use (10, 12 and 14-inch) They are dirt cheap. If I'm making a deep-dish pizza(s) I normally make only 12-inch pizzas as I have a number of pans in this diameter, and if I'm making pizzas for a group I need a minimum of four pans which are a bit pricey so I use only one size but have a number of them. All of my other pizzas are either baked on a stone or partially baked on a screen and then decked for the remainder of the baking time. If you are using something like the old "power pans" which look something like a flat disk with 1/4 to 3/8-inch diameter holes in it I also like to have a couple in each of my sizes as they are relatively cheap. The deal is that you need more deep-dish pans since you will be utilizing the pans for a longer time such as for both proofing and baking which combined could easily take an hour or more while screens and disks are used for thin crust pizzas so they are utilized for a much shorter period of time, 10 to 15-minutes so you don't need as many. Some friends of mine work with only a single screen or disk but I like to work with a minimum of two so I can have one pizza in the oven while I'm dressing the next one.

Tom Lehmann/The Dough Doctor

4332

## [\*\*Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?\*\*](#)

Even when in the fridge the dough continues to ferment and depending upon your flour absorption properties and the dough absorption used in making your dough, that additional CF time could easily produce a dough that is more extensible than desired.

By the way, your pizzas look great!

Tom Lehmann/The Dough Doctor

4331

## [\*\*Newbie Topics / Re: Separating dough ball for multiple pies?\*\*](#)

To reduce the amount of handling the dough receives I like to divide my dough immediately after mixing. It also eliminates the problem of me forgetting to divide the dough until I'm about ready to make my pizzas...Oops!

Tom Lehmann/The Dough Doctor  
4330

## [\*\*Newbie Topics / Re: Separating dough ball for multiple pies?\*\*](#)

JPB;

The only reason why I prefer scaling and balling the dough right away is that it is easier to manage and requires less attention on my part.

When I do a RT ferment prior to a CF I just do it with the individual dough balls. If I want to re-ball after the RT I just pop the dough out of the container (I don't use a bag for RT) ball it, wipe it with oil and bag it, then go on with whatever I'm doing, entertaining, visiting, watching a video). I'm a very firm believer in the KISS principle. My wife says it is not a good idea to get between me and whatever I'm doing when I'm in the kitchen :).

Tom Lehmann/The Dough Doctor  
4329

## [\*\*Newbie Topics / Re: What size pizza pans\*\*](#)

Lester;

When you say "pans" am I correct in assuming you are referring to deep-dish pans and not baking disks?

This being the case you will not have the sides of the pan to support the sides of the dough if you make a 12" deep-dish pizza in a 16" pan.

If you are making thin crust pizzas you will find that the moisture laden air over the pizza will collect in the pan forming a moist air dome over the pizza (trapped there by the higher sides of the pan). This can/will impact the way the top of the pizza bakes as compared to the bottom of the pizza and is especially so if you will be baking on a stone.

Tom Lehmann/The Dough Doctor  
4328

## [\*\*Dough Clinic / Re: Fluffing and Collapsing dough?\*\*](#)

OK, first order of business is getting your Mom appeased and happy to sit down and enjoy one of your pizzas so I'm going to suggest that you go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and go to the RECIPE BANK or you can also just Google "[www.pmq.com/Recipe](http://www.pmq.com/Recipe) Bank". Use the word "dough" for your search and you will find my no-fail home made pizza dough recipe.

Now, getting back to your original question, it sounds like your yeast level is too high or more likely than not your finished (mixed) dough temperature is too warm/hot. The temperature of the SMALL AMOUNT of water that you hydrate the active dry yeast (ADY) in should be 95 to 100F (use a thermometer), the remainder of the water that you add to the dough should be about 75F. This will give you a finished (mixed) dough temperature right around 80F. After mixing the dough divide it into desired weight pieces, oil each dough piece (canola oil) and place into individual plastic bags (food bags work great but DO NOT use zip-lock bags) or you can also used reclaimed bread bags or in a pinch plastic grocery or Walmart bags work well too. Just pull the bag snug (not tight) around the dough ball, twist the open end to close and tuck the twisted pony tail under the dough ball as you place it into the fridge. The dough will be ready to use after 24-hours but it is usually

better after 48-hours. To use the dough just invert the bag over a floured surface allowing the dough ball to fall out under its own weight, then flour the dough ball and begin opening it into a pizza skin by your preferred method. Once you have this mastered you can begin experimenting with different dough management procedures like you see being discussed here. The experimenting part is where the fun is at, and you will still end up with some pretty decent pizza too.

Tom Lehmann/The Dough Doctor  
4327

### **Detroit Style / Re: Detroit Pan crust crispness**

Most of the par-baked crusts that I've seen used for making Detroit style pizzas were not baked with anything on them at all. Fit the dough to the pan, allow to proof for about an hour (actual time will be variable due to differences in dough formulation) and bake at 400F just until the crust is firm and beginning to show some color development, remove the par-baked crust from the pan and place back into the cooled pan or another pan which has been greased with Butter Flavored Crisco, then dress in the normal manner. This seems to work quite well. The alternative method is to put only 1/2 of the sauce on the dough when it goes to the oven for par-baking, then when you re-pan the crust you add the remainder of the sauce and dress the pizza in the normal manner. I've never seen any real benefit to par-baking the crust after it is dressed. You are by far better off just baking the pizza to just short of full bake, then remove it from the pan and deck it for a minute or so to finish off the bottom.

Tom Lehmann/The Dough Doctor  
4326

### **Dough Ingredients / Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment**

At room temperature, fermentation takes place at a much faster rate than at refrigerated temperatures (75F+/- v/s 38 to 42F). Since fermentation progresses at a much faster rate at this elevated temperature if you were to use the same amount of yeast at RF as you do at CF the dough would quickly over ferment and be somewhat difficult to manage as it would be much more sensitive to temperature variations such as finished dough temperature and room temperature. It is for this reason that we have found it to be advantageous to reduce the yeast level when going from CF to RF. With that said, this does not mean that you could not just use the same yeast level for both, but in this case you will need to pay close attention to temperature control and the overall fermentation time will be quite short resulting in a different finished crust flavor profile. We can see this to the extreme when looking at an emergency dough where we increase the finished dough temperature to 90 to 95F, and double the yeast amount resulting in a dough that is ready to use in less than 2-hours at room temperature. There are few who would argue that the flavor of a crust made using an emergency dough leaves more than a little to be desired, BUT it does serve its purpose in that it will give us a dough that is ready to use in a short time.....sure beats not having a pizza to eat. :)

4325

### **Dough Clinic / Re: Fluffing and Collapsing dough?**

Hans;  
That is the correct dough recipe that Peter has directed you to in the PMQ Recipe Bank. It is an easy recipe to work with and it is not overly sensitive to time or temperature variations. In a number of cases I've left the dough ferment in the bowl after mixing for the better part of a day (5+ hours) and the dough still

performed well and gave us great pizzas. I developed the recipe many years ago when I was teaching home pizza making to local farm families and also did a few evening home pizza making classes too. You might ask, why a wooden spoon? The answer is: To prevent over mixing the dough....sounds strange??? You mix the dough until you fear that if you were to try to mix the dough any longer that you might break the spoon, then you know the dough is sufficiently mixed. Like I said, this is a fast and easy to follow recipe. Can it be improved upon? Absolutely! Have fun with it, adjust the amount of ingredients, adjust the fermentation time, cold ferment the dough, but at some point in time I would HIGHLY encourage you to get a scale that will accurately weigh in grams so you can determine the exact weight of the ingredients and then convert the "recipe" to "formula" based on bakers percent. This will allow you to more accurately make formula adjustments as well as manipulate the size of the dough while keeping it in correct balance. Finding the ingredient weights from volumetric portions and converting those weights into bakers percent have been covered in discussions here fairly recently.

Tom Lehmann/The Dough Doctor  
4324

### [\*\*Detroit Style / Re: Detroit Pan crust crispness\*\*](#)

Kristen;  
The only problem with cutting from bulk is that you can easily over work the dough making it difficult to fit to the pan. When using a dough ball you can open the dough to fit the pan with minimal handling which makes life a little easier.

Tom Lehmann/The Dough Doctor  
4323

### [\*\*Dough Clinic / Re: Trying to perfect a no knead american style\*\*](#)

Pepapi;  
I think those "tough spots" were due to the flour absorbing some of the oil. The procedure that you are using is very similar to the one that we use to make a cracker type crust but only with 40 to 45% absorption. The trick here is to let time do the work for you. DO NOT use oil when mixing the dough (it really doesn't need oil for this type of pizza) but if you insist, just oil your hands when you knead the dough to work the oil in that way. Mix the dough until most (it doesn't need to be 100%) of the flour is hydrated, then transfer to a suitably sized container for fermentation (be sure to lightly cover the container during the fermentation process to prevent drying (Tip: Use a container at least several inches higher than the highest the dough will rise to. This will allow for a protective layer of carbon dioxide to accumulate over the dough further protecting it from drying. I like to allow the dough to ferment/hydrate and develop (through bio chemical gluten development) for 24-hours, then proceed as you are presently doing. I like to make this type of dough into a pizza without a pronounced raised edge, just a slight raised edge is what I go for, and my preferred method for opening the dough into a skin is to use a rolling pin to open it to size and then go around the edge and pinch an edge onto the skin. This type of pizza, when done correctly will produce a cracker type crust with great crispiness and best of all, it is notorious for retaining its crispiness. We are seeing pizza buffets beginning to gravitate to either the thin crispy (made with 50 to 55% absorption) or the thin cracker type crust (made with 40 to 45% absorption) for this reason.

Tom Lehmann/The Dough Doctor  
4322

### [\*\*Chitchat / Re: Pizza Making.com Fest 2017\*\*](#)

If I might add, this would be a great idea to incorporate into the Ohio Restaurant Assn. Show in Columbus, Ohio (normally in late Jan. or early Feb. each year). Many vendors are already there plus a lot more. It is a very low cost show to attend and I bet that they would be more than glad to collaborate. Properly advertised it could significantly increase our base, just think of how many home pizza bakers there are out there who might attend something like this? Who knows....it could take us in a whole new, untapped direction? Bradie Berry at the Ohio Restaurant Association <bberry@ohiorestaurant.org> would be the person to contact to explore any possibilities.

Tom Lehmann/The Dough Doctor  
4321

**Dough Clinic / Re: Trying to perfect a no knead american style**

Going to 60% will pull you away from the thin crispy type of crust to something what many like to refer to as "American" style crust (more like a Domino's type of crust) but sure you can increase the absorption if you want to. 5% oil is a lot of oil so yes, I would suggest increasing the water by the same amount as oil is deleted. If you want to incorporate less oil but get more impact from it try wiping the surface of the dough with a little oil during the kneading process. This will give your finished dough something of a layered characteristic resulting in a Danish like crumb structure in the finished crusts. In that case you don't need to worry about the oil that you are putting back into the dough through the kneading process as it will only be around 1%.

Tom Lehmann/The Dough Doctor  
4320

**Dough Clinic / Re: Fluffing and Collapsing dough?**

Yep, that's what it was designed for. We used to make a very basic sauce using tomato sauce and some herbs or when in season we used fresh tomato slices for the sauce. For toppings we just cleaned out the fridge...we used sliced hot dogs, hamburger patty, fried chicken, fish, you name it! The only concession we made was to instruct each participant to bring 8-ounces of mozzarella cheese with them. I always donated the flour....Pillsbury Bread Flour, the reason I selected this flour is because it works well and because it was available to everyone at any of our local supermarkets. We mostly used ADY unless someone wanted to bring IDY or CY with them from their home.

We held the training sessions as you would hold a pizza party. Someone in the group would volunteer the use of their kitchen (group size would depend upon the size of the kitchen) and was always set up and guests invited by the volunteer with the kitchen. It was always a lot of fun and a very rewarding experience.

Tom Lehmann/The Dough Doctor  
4319

**New Forum Members / Re: How to make a perfect pizza dough**

Peter? Got your ears on? Now that dates me! :)

Tom Lehmann/The Dough Doctor  
4318

**Dough Clinic / Re: Fluffing and Collapsing dough?**

I'm guessing that it should be OK but if you still experience the same problem your all purpose flour might be too weak which will mean that you will need to switch over to using a bread type flour.

Tom Lehmann/The Dough Doctor

## [\*\*Dough Ingredients / Re: Help plesae with IDY adjustment for Room Temperature Ferment vs Cold Ferment\*\*](#)

I think I know where you are coming from. I see this quite frequently in some of the newer pizzeria operations. If the dough balls are not cross-stacked or cross-stacked long enough to facilitate efficient and moderately rapid cooling of the dough it will over ferment. When this happens the yeast is generally reduced to a level where the dough no longer blows but now the yeast level is so low so as to reduce the amount of oven spring the dough can exhibit and in many cases the dough doesn't rise properly in the center portion of the pizza. This is where I'm called in to address the mysterious problem. All that is necessary is to get the dough cooled efficiently (part of a good dough management program) and to restore the yeast level to where it needs to be and life is again good. The same thing will happen if one tries to bulk ferment the dough in the cooler thinking that they are now CF the dough while in fact, they are really just putting the container of dough in the cooler but the dough is not cooling down as planned for due to the density of the dough as well as the heat contribution from the heat of metabolism created by the feeding yeast (about 1F per hour). While I'm referencing dough performance in a commercial pizzeria here the same thing happens in a home setting when we do a bulk CF, or don't control the finished dough temperature, or put the dough into a closed container and then try to CF the dough balls. In many cases the dough over ferments before it can cool down to a point where fermentation rate is controlled.

Tom Lehmann/The Dough Doctor

4316

## [\*\*New Forum Members / Re: Influence of salt over dough rising\*\*](#)

Emptyfill;

A little or moderate amount of salt will effectively strengthen the dough. This is why in commercial operations it is a common practice to use what is referred to as the delayed salt addition mixing method. The dough will mix out and the gluten will be developed faster resulting in a shorter mixing time to achieve full gluten development without salt, then about 4-minutes before the completion of mixing the salt is added and incorporated into the dough to produce a normal feeling dough with normal processing characteristics. Remember though that pizza dough is NOT mixed to full gluten development or anything even close to it so for all practical purposes this is a moot issue when making pizza dough.

Dough made without salt also tends to be somewhat sticky and more difficult to handle or process where as dough made with salt will always have a drier, less tacky feel which is generally important in pizza production, if for no other reason it will reduce the amount of dusting flour required to process the dough be it by hand or through forming equipment. When it comes to fermentation salt at much more than 2.25% will begin to slow the rate of fermentation and at 3% the effect is quite apparent unless the yeast is increased to compensate for the slower rate of fermentation. At high levels the salt will all but stop fermentation, or so it is said but my experience is that it just slows the rate of fermentation to a crawl. As for its impact upon the flavor of the finished crust we have found that the lowest salt level that you can have before flavor is impacted is 1.75%, below this level the finished crust begins to taste different (like something is missing) and when you get to levels of 1% and less the most common flavor/taste cited is that of starchiness in the baked product. I have seen this a number of times where a pizzeria is making their dough without sufficient salt and the customers are complaining that the crust tastes "starchy". Knowing that flour contains both starch and protein they

erroneously go on a quest to get the highest protein flour possible thinking that with more protein there will be less starch...doesn't work that way and they're stuck with the starchy tasting crusts, this is when I'm called in and all we need to do is go back to their original flour and increase the salt level and presto! The starchiness goes away. This used to be a problem a number of years ago when making sodium reduced yeast leavened products but today we have some truly excellent salt substitutes available to work with that are based on all new technologies. They are decidedly better than the "Lite-Salt" that we used to work with.

I hope this also sheds a little light on your question.

Tom Lehmann/The Dough Doctor  
4315

### **Dough Ingredients / Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment**

For up to a 3-day (4-days on the outside) CF I almost always use 0.375% IDY. When I'm targeting 4 to 5-days specifically I reduce the yeast level to 0.25%. But remember that I target a finished dough temperature of 70F (like you do) and I leave the container(s) open for 2.5 hours for the 3-day CF and 3.5-hours for the 5-day CF. If my dough ball weights are more than 16-ounces I use 0.3% IDY for a 3-day CF and 0.2% for the 5-day CF, and I also go to 3.5-hours cross stacked (open container) time. This is due to the fact that it is much more difficult to efficiently cool the larger dough balls.

Tom Lehmann/The Dough Doctor  
4314

### **Stones/tiles/steel, Pans & Accessories / Re: Sharpening stone**

All of our knives as well as those of my family members are sharpened using a diamond sharpening block. This is a plastic block with a metal strip glued onto it with industrial diamonds glued onto it. I have two of these blocks, one in a medium grit and the other in a fine grit. It just takes a pass or two to achieve a very sharp edge on the medium grit then a couple of passes over the fine grit to polish the edge and they're good to go. The only down side is that you need to develop a little skill in holding your blade at about a 20 degree angle to the sharpening surface, and they are not particularly cheap at about \$50.00 per sharpening block. These are commonly available at wood working stores like Wood Craft where they are used to sharpen chisel and block plane blades. I also have a couple of "paddle" type diamond sharpeners too these are about 6-inches long and 1-inch wide, made of hard plastic. There is the same type on diamond grit on a piece of metal glued to one end. They work OK but are better for a quick touch-up of the edge than periodical sharpening. I also got these at Wood Craft but my son found his at....of all places.....Walmart a couple of years ago. These smaller ones go for just a few dollars each and are available in coarse, medium and fine grit. The coarse grit is just too aggressive and leaves a very rough surface so I reserve it just for working a nick out of a blade or for getting the edge started on a really dull blade and then the edge gets smoothed up as I continue with the medium and fine grit.

Tom Lehmann/The Dough Doctor  
4313

### **Newbie Topics / Re: What size pizza pans**

Because New York style pizzas are baked right on the deck but with that said, there is nothing in the laws of physics that says you cannot make your own New York style pizza using a pan, disk or screen. It all depends upon how authentic you want

your pizza presentation to be. Making pizzas at home is sorta like buying a burger at Burger King.....you can have it your way.

Tom Lehmann/The Dough Doctor  
4312

**Stones/tiles/steel, Pans & Accessories / Re: Sharpening stone**

Once I have an edge on the knife I like to use a ceramic rod to maintain the edge rather than a steel, don't ask me why...it's just something I've always done.

Tom Lehmann/The Dough Doctor  
4311

**Dough Ingredients / Re: Help plesae with IDY adjustment for Room Temperature Ferment vs Cold Ferment**

Peter;

Actually, I did come from the bread side (the "Dark Side" if you will) but since my background has always been in research and production I soon discovered the divergence in technology between bread and pizza so I was able to conduct my research on pizza production technology from the very start (or close to it) knowing that it was different from that of bread. So yes, you are correct in assuming that I approached pizza differently from bread from very early on. But I can say this, after trying to pound square pegs into round holes I came to the conclusion that pizza and bread technologies were very different and I set out on what has become a life long quest to understand the aspects of pizza technology. It seems that just about the time you think you have it someone comes up with a different approach to making pizza, such as bake to rise/oven rising, pre-proofed frozen, high fiber, low salt, carbohydrate free, gluten free, and whole-grain/multi-grain. It's all in the game of trying to keep up with the changing technologies of pizza as it continues to evolve.

Tom Lehmann/The Dough Doctor  
4310

**Shop Talk / Re: Oven for low commercial production?**

The one, do it all, plow horse of ovens that won't break the bank is a good, old fashion deck oven. If you opt to buy a new one I'd suggest going with a Marsal and Sons oven for well under \$10,000.00 for a single deck. If you search the internet suppliers you can find a good selection of used deck ovens as well for around \$2,000.00 for a single deck. Look for Marsal, Blodgett, and Bakers Pride for the top names. By all means go with a gas oven if at all possible, and buy an oven with a stone or composite deck, I don't recommend buying an oven with a steel deck as many of these ovens (characterized by a steel deck) were built for bakery applications (bread, buns, pastry, etc.) and do not have the high BTU burners needed for rapid heat recovery in pizza production.

You might also want to visit the PMQ (Pizza Marketing Quarterly) web site at <[www.pmq.com](http://www.pmq.com)> as they have a lot to offer to pizzeria operators too, especially in the Think Tank and the Recipe Bank, as well as a good number of instructional videos too, I also have videos posted on my web site at <[www.doughdoctor.com](http://www.doughdoctor.com)> best part of all, like here, it's all free. Between here and PMQ you should find all the help you will need to get pointed in the right direction.

Tom Lehmann/The Dough Doctor  
4309

**Chicago Style / Re: First Fully Stuffed Deep Dish under "cruel" conditions**

Ohhhh, poor boy! You didn't get to really enjoy that great looking pizza! :) But your

wife did and that what really counts in the end. Your description was making my mouth water already before I saw the picture.

Great Job! ^^^

Tom Lehmann/The Dough Doctor  
4308

### **Shop Talk / Re: Oven for low commercial production?**

You might look at what Northern Pizza Equipment

<[www.northernpizzaequipment.com](http://www.northernpizzaequipment.com)> has to offer. Shop around to get an idea of what you can get for how much before you make the decision to buy. I would also suggest that you might want to look at one of the spiral mixers presently being discussed in another thread here. These are EXCELLENT mixers and will grow with you into the future, and they are going new for about what you might expect to pay for a used 60-quart Hobart or other similar planetary mixer. I would advise staying away from any of the "pocket" mixers such as a 12, 20 or 30-quart capacity mixers for dough mixing as they just don't have the capacity you will ultimately need. If you go with a spiral mixer as a dough mixer you won't be disappointed. So, with a spiral mixer how do you make your sauce? Two options 1) Use a prepared sauce right from the can....don't look down on it, it is used more often than you might think. 2) You can mix it by hand in a stainless steel pot using a hand held stainless steel wire whip. Then too, if you can luck onto a low cost 20 or 30-quart mixer with a flat beater and a stainless steel bowl you might grab it for use as a dedicated sauce mixer. These mixers show up at restaurant sales and liquidation sales all the time.

Tom Lehmann/The Dough Doctor  
4307

### **Shop Talk / Re: Oven for low commercial production?**

Stanislaus is my "go to" and Escalon is a close runner-up. If you are looking to make a really unique and different presentation that has the earmarks of an "artisan" pizza be sure to try the Stanislaus 74/40 Tomato Filets (drained for about 30-minutes and placed on the skin just as they are as a replacement for a conventional sauce. This combined with either fresh basil (not the dried stuff) or basil pesto is really hard to beat and it will allow you to stand apart from the others. I can help you with the presentation when the time comes.

Tom Lehmann/The Dough Doctor  
4306

### **Dough Clinic / Re: How do you cook the crust without burning the cheese?**

If you just want to make a decent pizza try baking in a deep-dish (at least 1.5-inches deep or more), the pan needs to be dark colored or well seasoned to absorb heat, put a little oil in the pan to help improve heat transfer from the pan the the dough. Do not bake on a stone that has not been pre-heated, instead bake on a lower rack position to get more heat to the bottom of the pizza and less to the top. The addition of malt or sugar will also help the crust begin to develop color faster than one made without these browning agents, and lastly, keep your dough skins under 3/8-inch in thickness as this will reduce the amount of dough that will need to be baked.

Just in case you're wondering:

The deep-dish pan will contain the cooler moisture laden air over the top of the baking pizza to help prevent burning the cheese and it will allow you to cover the pizza with a piece of foil during a portion of the baking process to help control the color of the cheese.

The dark colored pan will readily absorb heat for a faster bake.

The oil in the pan will improve the heat transfer from the pan to the dough.

All things equal, the thinner dough skin will bake faster than a thicker one.

The addition of a browning agent (sugar, malt, milk, eggs) to the dough will promote faster crust color development to help bake the crust faster.

You might experiment with some of these to see if any of them help you get what you are looking for. Once you understand these dynamics and how they affect your pizza in your oven you can probably incorporate some of them into your baking procedure to achieve a more specific type of pizza presentation.

One last thing, you didn't mention anything about the temperature of your cheese at the time when you apply it to your pizza, but if you apply the cheese frozen you can slow the rate at which it heats up to get some additional control over the browning of your cheese.

Tom Lehmann/The Dough Doctor

4305

### **Dough Ingredients / Re: How much of a difference does brand of flour make?**

Additionally, when the flour is bleached this means that the beta carotenoid pigments (yellow) in the flour have been bleached out making the flour whiter in color. This used to be an important aspect of flour used for making white pan breads but anymore more breads are made using non-bleached flour. As for bromated V/S non-bromated, that's an issue that you will need to resolve based on the health concerns being expressed over the use of bromate in flour. From a flour performance stand point I personally see little if any significant impact of bromate on flour performance in all but some very specific applications such as high absorption dough that will be fermented for a long period of time, and even then, my jury is still out.

Tom Lehmann/The Dough Doctor

4304

### **Dough Ingredients / Re: Do you use any seasonings in your dough?**

At one time herb infused pizza doughs were pretty popular but we don't see that much of them anymore though there are still some commercial manufacturers producing it. We even used to include sun dried tomatoes in the dough. I can't say that it did a lot for the flavor of the crust but it did add some dimension to the appearance of the finished crust.

Tom Lehmann/The Dough Doctor

4303

### **Sauce Ingredients / Re: Basic Primal Flavors**

I've got to add that I've seen more otherwise very good pizzas ruined due to the over use of dried oregano and occasionally dried basil. I recently posted our results of a study we did a few years ago in one of the threads here where we investigated what was said to be a loss of flavor in the cheese available today as opposed to years ago. What we found was that there was no loss of flavor at all, but instead the over use of dried herbs was completely overpowering the more subdued flavor of the cheese (for which we pay dearly). When the dried herbs were once again in proper balance or eliminated and replaced with fresh herbs the cheese flavors became much more accentuated and readily identified by our sensory panel as well as audience participants (at pizza shows) who were our impartial "Guinea Pigs" to further validate the sensory panel findings.

Tom Lehmann/The Dough Doctor

4302

### [\*\*Sauce Ingredients / Re: Basic Primal Flavors\*\*](#)

As strange as it might sound, carrot juice is a pretty decent way to add a level of sweetness to the sauce without actually adding sugar which can result in scorching of the sauce around the edges of the pizza in some instances.

Tom Lehmann/The Dough Doctor

4301

### [\*\*Dough Clinic / Re: Different sources give me different advice on dough? What's the difference?\*\*](#)

As for the yeast, it all depends upon the type of yeast that is being used. Active dry yeast (ADY) needs to be pre-hydrated in a small amount of 100F water prior to addition to the dough, while instant dry yeast (IDY) can usually be added without being pre-hydrated. Compressed yeast/fresh yeast/block yeast (CY) can be just crumbled on top of the flour and mixed into the dough, or it can also be suspended in a portion of the dough water prior to addition of the other dough ingredients (it's a toss-up with CY, you can use it either way).

The dough management process that you use to make your pizza will dictate if you need to punch the dough or not. Most of the time the main reason for punching it down is to help keep it in the container but secondary effects are that it helps to give the dough a more uniform temperature, and helps to prevent the development of a dry skin or crust on the dough. It does not make the finished pizza less "airy" unless you form the pizza skin using a rolling pin to open the skin to full diameter/size which can result in significant degassing of the dough potentially resulting in a more dense crumb structure in the finished crust.

If your dough is allowed to ferment for too long of a period of time it is said to be over fermented. An over fermented dough MAY be characterized by a strong alcohol aroma, sourness from excessive acid production and weakness in the dough. To some these are the sought after characteristics, to others it is not. In any case this is controlled by the amount of yeast that you add to the dough (less yeast = less of these characteristics) as well as the finished (mixed) dough temperature. Temperature is what drives/controls the rate of fermentation so if you want to have your dough ferment less within a given period of time lowering the temperature of the dough will also help. The two accepted methods for temperature control are finished dough temperature (mentioned above) and dividing the dough into individual pieces for each pizza, forming into balls and placing into the fridge for storage. This will slow the rate of fermentation sufficiently to allow for up to several days of cold fermentation to develop flavor.

There is a whole lot more to it than that, but that's a pretty good thumb nail sketch to answer your questions.

Tom Lehmann/The Dough Doctor

4300

### [\*\*Gluten Free / Re: Anybody made gluten-free pizza with an Uuni?\*\*](#)

It sounds like a case of gluten intolerance more than Celiac disease but that's beside the point, you might also try baking the pizzas on a piece of foil or a large foil tray like the ones used for making fruit and cheese trays at your local supermarket. The bright reflective surface would also serve to protect the crust from being over baked on the hot deck.

Tom Lehmann/The Dough Doctor

4299

## [\*\*Dough Clinic / Re: Dough recipe for a Hamilton, NJ style tomato pie like Delorenzo's or Papa's\*\*](#)

This sounds like a thin cracker type crust. Any basic dough formula will work but if you don't have one here is one to begin with;

Flour (all Purpose) 100%

Salt 2%

Yeast (IDY) 0.2%

Oil (variable) 0 to 8% (I'll explain).

Water: 45% (80F)

Put water and IDY in mixing bowl, whisk well to suspend the yeast. Wait 10-minutes and add the salt immediately followed by the flour and begin working the dough with a wooden spoon, stirring until you think the spoon might break, then begin working the dough using your hands until you have a crumbly/chunk looking dough. There will still be plenty of flour visible, that's normal. Transfer the dough to a suitably sized container that has been lightly oiled (the one you mixed the dough in should work OK), tent the container with a piece of plastic or foil and set aside to ferment/hydrate for 3-hours at room temperature. Turn out of the bowl and knead just a few times (Really, just a few times, no more) then divide the dough into desired weight pieces and push together to form something like a hockey puck, lightly oil each "puck" and wrap in stretch wrap and place in the fridge for at least 24-hours (I think 48-hours is better). Remove dough from fridge and allow to temper AT room temperature for 60 to 90-minutes or until the dough is JUST pliable. Remove the dough from the wrap and place on a floured surface and using a rolling pin or pie/pastry open the dough up into a skin about 1/8-inch in thickness (you can adjust this if you wish) Dock the dough and place it on your baking platform or prep peel. You can trim the dough to a round shape if necessary.

LIGHTLY brush the surface of the skin with oil and dress as desired (easy on the sauce though) and bake at 500 to 550F until the bottom has good color. This produces a very crispy crust with generally excellent crispiness retention. If you want the finished crust to be more tender eating or less "hard" begin adding oil to the dough until the desired tenderness is achieved. The best way to add the oil in this case is to add it to the water but when you do you must begin mixing the dough IMMEDIATELY upon adding the flour. Failure to do so will only result in lumps of oil soaked flour throughout the dough.

If you're handy in the kitchen this procedure might sound familiar to you, it is a very similar procedure that we use to make a pie dough.

Tom Lehmann/The Dough Doctor

4298

## [\*\*Dough Clinic / Re: How do you cook the crust without burning the cheese?\*\*](#)

Have you thought about building an outdoor oven? There are lots of posters here who have done just that and they have a great time making pizzas in everything from a modified BBQ grill to a home built or a commercially designed oven for their back patio.

Tom Lehmann/The Dough Doctor

4297

## [\*\*Dough Clinic / Re: Reducing bake time\*\*](#)

When we "deck" the pizzas after an initial screen bake we do it for only 30 to 45-seconds to prevent exactly what you are describing. For baking pizzas in a deck oven 6 to 8-minutes is what I would consider as a normal baking time. You can make the crust brown faster (not bake faster) by adding sugar to the formula or if you have sugar in the dough formula and delete it the crust will be somewhat more

difficult to brown in the oven. All things equal, I would suggest deleting any sugar, milk, eggs or malt from the dough formula as this would result in less browning/caramelization taking place when you deck the pizza.

Tom Lehmann/The Dough Doctor  
4296

### **Dough Clinic / Re: More fermented vs. less fermented dough?**

If you want to maximize the open cell structure characteristic without overly impacting the flavor characteristics of the finished crust one must think about ways to allow the dough to expand more readily/easily during the baking process. In essence, this is accomplished by making a softer, more extensible dough. Here are the more common methods employed to accomplish this:

- 1) Maximize the dough absorption (this is how we get the open cell structure in Ciabatta bread and English muffins).
- 2) Incorporate a dough relaxing/reducing agent into the dough formula (L-cysteine/PZ-44, glutathione/dead yeast/RS-190, onion and garlic, protease enzymes, in specific cases diastatic malt, and non-heat treated milk).
- 3) Adjust the manner in which the pizza is being baked to allow for maximum oven spring characteristics.
- 4) Addition of volume enhancing agents/strengtheners to the dough formula. These will include DATEM, sodium stearoyl-lactylate (both found in the Di Giorno and other "bake to rise" type crusts), coated ascorbic acid, and to some extent the use of bromate (bromated flour).
- 5) The manner in which the dough is opened can have a significant impact upon the crust cell structure. In general, post forming proofing creates a more open cell structure, but gently hand forming techniques typically provide for the most open crumb structure characteristics. Then there is laminating the dough as part of the forming process, this method creates a very unique "fish mouth" appearing crumb structure which is characteristic of laminated dough. These characteristics can be created by a number of different methods. 1) The dough gently formed into a flat, fairly thin shape, and a plastic fat applied to 2/3 of the surface, then the fat free surface folded over 1/2 of the side containing the fat with the last portion containing fat folded over the top forming layers of dough-fat-dough-fat-dough. This can then be rested and the folding process repeated again but without the addition of additional fat. An alternative method is to use commercial hard fat flakes but lacking the ability to secure these you can use butter, margarine, or shortening and roll it out between two pieces of waxed paper to 1/4-inch thickness, freeze thoroughly, remove from freezer, remove waxed paper and place on a lightly floured surface and proceed to chop into roughly 1/4-inch bits and pieces (smaller is OK), immediately place back into the freezer on a flat pan (pie pan works well), now make your dough with no more than 2% oil and mix in your normal manner. At 4-minutes BEFORE completion of mixing add the frozen fat pieces and mix just enough to thoroughly incorporate them (YOU WANT TO HAVE AND SEE THOSE PIECES OF FAT). Remove dough from mixer, place on floured surface and form into a rectangular sheet about 3/4-inch thick, give the dough a 3-fold and place into the fridge for a couple of hours (you can even go overnight if you want), remove from fridge and allow the dough to warm just enough to form into a skin. Dress and bake in your normal manner. NOTE: The amount of frozen fat pieces added to the dough should be a MINIMUM of 8% of the total dough weight, but it can be as much as 20 to 25% (my experience is that 15% works the best).

If you don't want to go this route you can do it the way the cracker producers do it. Start with your regular dough formula processed in the normal manner, when you are ready to open it into a skin, open the dough as thin as you can into a

rectangular shape, using a heat source (blow dryer) dry the surface of the dough to form a dry skin (not to bake it or crust it), then give the dough a 4-fold (this is where you fold each left and right side to the middle and then fold one side over the other. Allow the dough to rest until this can be repeated again. Then allow it to rest until the dough can be formed into a skin. The dry dough will help to create the fish mouth pockets (not a true open crumb structure) in the finished crust.

There are MANY different ways to fold dough made in this manner, they all achieve a similar end result so if you use a different method it won't change the end result.

Tom Lehmann/The Dough Doctor

4295

### **Dough Clinic / Re: How do you cook the crust without burning the cheese?**

Boy! With the limitations you've placed upon yourself I can't see where you have many choices for what you end up with regarding your pizza characteristics.

Obviously you ARE firing up your oven, even if for a short time. Use a frying pan to make a par-baked crust. A thin crust will just take a couple of minutes at most (use a lid to speed up the baking process), and flip it over in the pan to get both sides finished, use your pre-cooked sauce into which you have added your meats and vegetables of choice (this further cuts down time and energy costs). Remove crust from frying pan, add the sauce and cheese and place into cold oven, start oven and bake just until the cheese melts for maximum energy savings or bake a little longer if you wish. I wouldn't worry too much about anything else until such time as you have the ability to make changes to the process which will allow you to manipulate the baking process to achieve something more along the lines of what you are looking for. With all of that said, if you can tell us what you don't like about the pizza you are presently making and what changes you would like to see, maybe we can provide some additional direction for you to work with. Too much information (TMI) is never a bad thing here as it allows the many experts here to better understand exactly what you are doing, what your challenges are and then hopefully provide meaningful direction.

Tom Lehmann/The Dough Doctor

4294

### **Dough Clinic / Re: Resting During Mixing... Why?!**

Joe;

What you are describing is a process typically used in conjunction with high absorption doughs. The rest period mid way through the mixing process allows for better water absorption into the flour without the need to mix the dough more than absolutely necessary (under mixed dough is usually desirable in pizza production). This is also a form of Autolyse.

Tom Lehmann/The Dough Doctor

4293

### **Stones/tiles/steel, Pans & Accessories / Re: Peel help**

Agreed :) Can't go wrong with it and with just a little care it will last a lifetime. Mine is going on 35-years now. If the handle is too long for you it's an easy matter to resolve with a saw and a piece of sand paper to smooth over the rough edge after cutting the handle to whatever length you prefer.

Tom Lehmann/The Dough Doctor

4292

### **Shop Talk / Re: opening a pizzeria very soon!!! dough amount???**

Assuming that you will be managing your dough effectively you should be able to

get at least two, maybe three days refrigerated shelf-life from the dough balls. Hopefully you are planning on a soft/quiet opening so you and your staff will have a chance to "test fly" things without getting mobbed right off the bat. This will allow you to make the necessary adjustments to accommodate those pesky things that only show up after the lights are turned on. As for how many dough balls you will need, the answer is as many as you can inventory. Keep track of the number you use and replenish the inventory based on how well things go. Remember, you are going to be the new "dog" on the block so everyone is going to be coming in to check you out. Three hundred dough balls is not unusual, nor is five hundred. In your business plan you should have some daily projections based on observed sales of other pizzerias close by. Increase that amount by a minimum of 50% knowing that if you don't sell out, the dough balls will still be good to use on the following day.

Tom Lehmann/The Dough Doctor  
4291

### **Dough Clinic / Re: Resting During Mixing... Why?!**

Peter;

To a lesser extent, yes they do, but unless the flour is damaged due to sprouting prior to milling (almost unheard of in the U.S.) the impact will be minimal as observed in a dough (like bulk dough as opposed to dough balls). The greatest asset of the rest period is to allow time for the flour to more thoroughly hydrate. In large commercial bakeries the usual practice is to fully develop or even over develop (fatigue dough process) the gluten at which point it will more fully hydrate. In pizza making we really don't want to develop the gluten so that method is off of the table leaving only time as the mechanism to achieve full hydration of the flour which takes us back to our autolyse.

Tom Lehmann/The Dough Doctor  
4290

### **Dough Clinic / Re: How do you stretch out pizza dough?**

If you are having a problem with dough memory the problem is most likely to either using a type of flour that is too strong for your dough management procedure or insufficient fermentation. The easiest way to learn how to open a dough ball into a skin is to use a rolling pin or dough sheeter (pizzeria) to open the dough to about 2-inches less than the desired finished size and then finish opening the dough to full size by a combination of table stretching and hand tossing. We developed this method a number of years ago to teach novices how to open the dough more efficiently in the shortest possible time. The more traditional methods can take months, sometimes even years to learn but using this method we have been able to teach the skills needed to open the dough in about 30-minutes. What we have found is that as one develops his/her confidence in opening the dough in this manner they soon begin to make changes to the procedure while still opening the dough in such a manner so the finished skin has a uniformly thickness across its entire center section. This method is shown in videos posted on my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and at the Pizza Marketing Quarterly web site at <[www.pmq.com](http://www.pmq.com)>. I also have a video of the procedure being used at a local pizzeria where we train all of our new hires in this procedure. In the video you can see one of the employees opening the dough using a sheeter, the employee is a college student that never worked in a pizzeria until 6-weeks before this video was taken. If you would like to get a copy of this video just send me an e-mail <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)> requesting the video of dough being opened at AJ's Pizzeria.

Tom Lehmann/The Dough Doctor  
4289

**[General Pizza Making / Re: Anyone else get exhausted after pizza making?](#)**

Tired? Never! I just get all "pumped-up" and I can't wait until they come out of the oven, then I can enjoy some great pizza. If they are not so great I know exactly who to blame!! I love to experiment making different presentations using different toppings and then watch the looks on the faces of my test subjects as the pizzas come out of the oven and are cut and plated before them. Sometimes I will even partake in the obligatory "chef's sample" (a small slice of each pizza) but normally I wait until I've served all of my guests and then I get the last pizza coming out of my oven. Why you ask? Because by then they have eaten their fill, and the last pizza is made to MY specifications with the toppings that I want and best of all....since the others are already full, it's mine, all mine!!! :) At that point the most common comment is "Gosh! That looks awfully good! But I can't eat another bite." Mission accomplished, time for me to enjoy MY pizza without much competition.

Making pizza is too much fun to get tired.

Tom Lehmann/The Dough Doctor  
4288

**[Dough Clinic / Re: Resting During Mixing... Why?!](#)**

Evelyn and I discussed this a number of time when she participated in our annual pizza seminar. This is when we did some testing and found that in a bulk dough you really couldn't see much if any dough reduction/softening attributed to protease activity, the reason being that it is so difficult to assess in a bulk fermented dough, and then when we subdivided the dough and formed it into dough balls any softening of the dough was lost in reworking the dough as it was formed into balls. But when we repeated this using dough balls you could see some softening of the dough which was attributed to protease activity (but unconfirmed) after 30-minutes. After 24-hours the effect was more noticeable. It is the protease activity which partially accounts for the reason why over fermented dough get so soft and flows out to look more like a pancake than a dough ball and the thing about protease reduced dough is that it cannot be restored in strength by any means because the protein chains have been broken at random, non-bonding points so they cannot be restored even with the use of oxidation. I used to explain this to my students using a bicycle chain as an example. L-cysteine/PZ-44 or glutathione/dead yeast reduce the dough by cleaving the protein chains at specific (sulphydryl/SH) bonding points, much like a master link in the bicycle chain, so this means that you can take it apart and put it back together again (in our case using oxidation like ascorbic acid/AA, azodicarbonamide/ADA or bromate/KBRO<sub>3</sub>, to name but a few. The protease on the other hand, breaks the chain at random points much like breaking the chain using a hatchet, now the chain cannot be be put back together again (much like Humpty Dumpty) so the dough is permanently soft or in severe cases more like a batter. This is why I only recommend the use of protolytic enzymes in very specific applications.

Tom Lehmann/The Dough Doctor  
4287

**[Sauce Ingredients / Re: For when time/money is short, what is the best jarred sauce?](#)**

I buy house brand crushed or mini-diced tomatoes and take it from there myself. About as easy as it comes and just about as cheap as dirt, but better tasting :)  
Tom Lehmann/The Dough Doctor

4286

**[Newbie Topics / Re: Are bread machines worth it?](#)**

While some may find them useful, in my world they are never used. A number of years ago my wife's girl friend challenged me to a bread making contest, she with her bread machine and me making it by hand. I won....."hands down". The only really good thing that I've ever seen come from a bread machine is the Pillsbury Bread Flour, available at just about every supermarket in the U.S. This flour was introduced at the overwhelming request of bread maker owners who thought the key to making their own "store bought" bread was in using the same flour used by commercial bakeries. How many times have we heard that about pizza too? Well, the bread makers went away for the most part but the flour has still remained....a blessing for us common pizza makers.

Tom Lehmann/The Dough Doctor

4285

**[Pizza Cheese / Re: Which types of cheese go on which types of pizzas](#)**

I'm all over the board with cheese, but my go-to's are shredded WM Mozzarella with a little Parmesan and a touch of Romano to round out the flavor on my "regular" feed me pizzas. The next step up for me is to use block or ball fresh mozzarella that I tear or peel and use alone or in combination with some dollops of ricotta for my more "artsy" pizzas which are usually made with slices of fresh tomato and fresh basil with sliced garlic cloves. Lastly, my seafood pizzas are always made using about only 1/3 of the normal amount of shredded mozzarella but in turn it gets a healthier (if cheese can be healthy) dose of shredded Parmesan cheese. I really like the appearance of the shredded Parmesan on the more sparsely topped seafood pizzas, especially when it is lightly toasted. Aside from my standards I like to use a representative cheese as the main cheese or a blending cheese for more specific pizza types, such as Feta for Greek themed pizzas and a Mexican cheese blend from our local HyVee supermarket for the Tex-Mex style pizzas.

Tom Lehmann/The Dough Doctor

4284

**[Dough Clinic / Re: Trying to perfect a no knead american style](#)**

Fat is referred to as a "tenderizer" meaning that it provides tenderness to the finished/baked product. If you want to see first hand how it impacts the eating properties of a tortilla (just a little different from a pizza crust) buy some fat-free tortillas and some regular tortillas (regular tortillas contain approximately 8% fat). You will find the fat-free ones to be significantly tougher than the regular tortillas (I don't know how anybody can eat them). Increasing the dough absorption changes the dough viscosity to give a different type of bake but it also usually gives a somewhat thinner crust which will quickly become moisture laden from the sauce and toppings releasing water during baking resulting in a very tough, leathery eating experience in a DELCO environment. I think by far, the best DELCO pizza is made using the cracker type crust. This is ASSUMING you are already doing all of the normal things to enhance your DELCO pizza such as using an air impingement oven to ensure the maximum dryness to the top of the pizzas, allowing the pizzas to steam off for a minute before boxing, using a plastic mesh mat (Pizza Savor) or ripple sheet under the pizza in the box, using a box with steam vents that are open (you would be surprised at how many pizzas are delivered in boxes where the vents have not been opened). Nothing good has ever come of a pizza that was boxed, placed into a moon (insulated) bag and run around in a car or some other vehicle

for 30-minutes before being placed onto the table for maximum enjoyment. The best that we can hope for is to lessen the impact of DELCO and give our customer a pizza that still qualifies for inclusion on their "acceptable" scale. Just as a side note, I might add that overall, the pizza industry has not been very good at this as evidenced by the great and continued growing popularity of the bake to rise pizzas available in the frozen food section at our local supermarkets.

Tom Lehmann/The Dough Doctor  
4283

### [\*\*General Pizza Making / Re: Best Frozen Pizza Brand \(for when time or money is tight\)?\*\*](#)

Cooking sauce??

The slowest/longest part of making a great pizza from scratch is waiting for the dough to ferment from a few hours to a few days. If you are really pressed for time and want a "feed me" pizza that is a little better than a store bought one try buying the CHEAPEST CHEESE PIZZA and toss a couple of them into the freezer for those "special" occasions. Remove from freezer, remove wrapping and add some of your own toppings like slices of fresh tomato (helps to mask the flavor of the stuff already on the pizza), onion, green pepper, pepperoni, etc. Finish with a sprinkling of additional cheese and pop that baby into the oven as per directions on the box and in a short time you can be enjoying a fairly decent pizza, or how about just stopping by a local take and bake pizza shop (Papa Murphy's) for one of their "gourmet delights".

Lots of options to explore without breaking the bank or taking a day off to make and bake.

If you are really into making "on the spot" pizzas at the end of a hard day working at the mine, you might try making some extra dough the next time you make pizza, open the extra dough into skins and freeze, then wrap in stretch film. They'll keep for several weeks in your freezer. Tired and hungry? Remove one of the frozen skins from the freezer, unwrap, place on a lightly floured surface or on a lightly oiled baking pan, take a hot shower and when you come back the skin will be sufficiently slacked -out (thawed) to proceed with dressing (the pizza that is) and baking. By the time you've discovered what has happened to planet earth during your day at the mine on the TV, your pizza will be done and it'll be time to grab a cold beer from the fridge and have your dinner. :)

Tom Lehmann/The Dough Doctor  
4282

### [\*\*Shop Talk / Re: opening a pizzeria very soon!!! dough amount???\*\*](#)

Tatoo;

None of the pizzerias that I've helped open over the years have ever gone to a "grand opening", the soft/quiet opening always morphed into full-on business within a few days and word of mouth took care of the rest. If you run into a few hiccups during those first few days don't sweat it, everyone experiences them, learn from them and make corrections as needed and charge on!

Would you like to have increased security in your restaurant? This is what I did; After things settled down a bit I sent a letter to our local police department thanking them for their service to our community and as our way of saying "thank you" we are offering a ??% discount on dine-in service to any (name your town) police officer. To receive your discount just show your ID at the time of paying your check and we'll discount your food (mind you, I said "food" not liquor) by XX%. (I don't remember my exact wording anymore but it was something along those lines). Did it help us any? I can't say, but I can say that we never had any problems

at the store.

More recently I've also added active military to the discount list with a simple sign stating that all active military personnel with identification will receive a XX% discount on their food.

In addition, get involved in local school and community programs/fund raisers as they are a great way to gain visibility and a strong loyal following.

These are just a few ideas that you might entertain to help strengthen your community base.

Tom Lehmann/The Dough Doctor  
4281

**General Pizza Making / Re: [Video] \$5 Pizza vs. \$135 Pizza**

"Better ingredients make better pizzas" Where have I heard that before? While there is a grain of truth in that statement (if it were completely true then PJ's pizzas would be the best available, after all, they do use the "best" ingredients, don't they? They say that they do.) We all know that's hog wash, so what goes into making a truly great pizza? Sure, you need good ingredients to start out with but by themselves they do not make a great pizza. There has to be balance to the pizza in flavor, aroma appearance and crust to toppings. The sauce has to meet your customer's expectations (highly variable) as does the crust, thin, thick, something in between, type of bake, flavor, texture and aroma are prime considerations in the crust. When all of these meld together we have created a pretty darn good pizza and it doesn't take the highest quality ingredients to do this, just knowledge and ingenuity at putting it all together in a very attractive package and presenting it to the customer. I used to use the example of a pile of bricks and a bunch of mortar with my students, what could you build from it? I know what I could build from it and it wouldn't be very pretty or functional, but now ask that same question to a brick mason (one who is knowledgeable in such things) and you can build you a castle if you want one. Same bricks, same mortar, just how they're assembled, that's what makes the difference.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4280

**General Pizza Making / Re: Best Frozen Pizza Brand (for when time or money is tight)?**

Is this Domino's? Great! Please send a large pizza topped with mushrooms, sausage, fresh tomato, onion and green peppers to (my address).

There ya go...all in 30-minutes or less!

Tom Lehmann/The Dough Doctor  
4279

**Dough Clinic / Re: Trying to perfect a no knead american style**

In my humble opinion, EVOO is just wasted when used in the dough. Instead, try using a Pomace oil, I like to use the Bertoli brand. Cheap but has a very robust flavor which is ideal for use in the dough. Save the EVOO for a post bake drizzle or use on your salads or as a dipping oil by itself or combined with a little balsamic vinegar.

Tom Lehmann/The Dough Doctor  
4278

**New York Style / Re: Too much gas??**

What is the finished dough temperature? Are you following my dough management

procedure or a modified version? A simple adjustment in temperature might solve the problem.

Tom Lehmann/The Dough Doctor  
4277

### [\*\*Dough Clinic / Re: Poolish vs. biga\*\*](#)

Bob;

66% absorption is a "sponge", a soft sponge, but still a sponge. I personally don't like working with sponges when long fermentation times are employed since they seem to have a mind of their own and continually keep trying to rise out of the container. When I do need to use a long fermentation sponge I always drop the yeast level back to not more than 0.25% CY and then come back at the dough side with a full compliment of yeast as the yeast in the sponge will be pretty well useless at that point.

Tom Lehmann/The Dough Doctor  
4276

### [\*\*Neapolitan Style / Re: Starting Out ... Help with Dough?\*\*](#)

A good flour for you to work with is Pillsbury Bread flour available at most supermarkets.

Tom Lehmann/The Dough Doctor  
4275

### [\*\*Dough Clinic / Re: Poolish vs. biga\*\*](#)

Inver;

I would consider anything longer than 6-hours to be a lot of fermentation for a sponge. One method that I've been working with lately is to use a 60% sponge with 55% absorption and allow it to ferment at room temperature for 6-hours, then mix it into a dough (no additional yeast) and then take it directly to the bench for scaling and rounding/balling, followed by a normal dough management procedure (oil dough balls, individually bag, CF for 24-hours, temper AT room temperature for 1.5-hours, remove from bag and open into a skin, dress and bake immediately). So far I've had very promising results with much improved flavor profile in the crust over a straight 24-hour CF procedure.

Tom Lehmann/The Dough Doctor  
4274

### [\*\*Pizza Cheese / Re: Powdered Cellulose in granulated cheeses\*\*](#)

We have never found an issue with it. It is nothing more than pure, purified cellulose. It is neutral in color and flavor and it has a very high absorption, and it is made to approximately 200-microns in size (finer than flour) hence its use as an anti-caking agent. It serves the same purpose as flour or starch when shredding our own cheese.

Tom Lehmann/The Dough Doctor  
4273

### [\*\*Pizza Cheese / Re: Powdered Cellulose in granulated cheeses\*\*](#)

When I'm shredding my own cheese at home I just coat the end of the block that I'm shredding and the flour or starch helps to keep it from forming difficult to manage clumps of shredded cheese in the bowl. If I need more cheese I coat more of the block and continue shredding.

Tom Lehmann/The Dough Doctor  
4272

### **Neapolitan Style / Re: Starting Out ... Help with Dough?**

If your finished dough temperature is between 75 and 80F you should be good to go. You might want to research some of the earlier threads where we discussed bagging the dough as an option for storing the dough in the fridge.

Tom Lehmann/The Dough Doctor  
4271

### **Neapolitan Style / Re: Pizza dough VERY tough to stretch**

Also, experiment with adding a little more water. Different flours will require different dough absorption and it can make a significant difference in how the dough handles.

Tom Lehmann/The Dough Doctor  
4270

### **Sicilian Style / Re: Grandma & Grandpa**

My experience has been that if Sicilian style pizzas are baked on a deck surface the bottom of the pizzas get too dark or over done. When baking these in a home oven I like to use the standard issue oven baking rack and if using a commercial deck oven I place a pizza screen under the pan to create an air gap between the pan and the hot deck surface which helps to control the bottom bake.

Tom Lehmann/The Dough Doctor  
4269

### **Sicilian Style / Re: Grandma & Grandpa**

A dark colored, preferably non-stick flat bottom pan will serve you well, if you want to stay on the "truer" side of the tracks use a square or rectangular shaped pan. Because you will be proofing the dough in the pan the holes will only allow the dough to flow into them thus effectively locking the dough to the pan after baking so you will want to have a solid bottom pan. You might want to look into buying a deep-dish pan gripper to help you get the pizza out of the pan, not a necessity but nice to have.

Tom Lehmann/The Dough Doctor  
4268

### **Dough Clinic / Re: Poolish vs. biga**

When "old" dough is used it is used in either of two ways, it can be added back to fresh dough just as it is but it is recommended that the total amount not exceed 15% of the total fresh dough weight to which it will be added. This is commonly done by pizzerias to avoid tossing out any dough at the end of the day. Due to the age of the scrap dough it does impact the flavor of the dough just as a sponge does, this is why the amount has to be regulated, and you also need to be careful that the new dough weight does not over burden your mixer. The second way is can be used is as a "mother dough" aka "madre de la masa". In this case the scrap dough is usually used as the sole source of yeast for the new dough (again, much like a sponge where all of the yeast is in the sponge with none being added at the dough side). While some do not control the amount of scrap dough when used in this manner if you are going to achieve any level of dough consistency or predictability the amount has to be controlled. Remember, yeast does not multiply in a sponge or a dough so if the scrap dough is still actively fermenting you can calculate how much yeast you're actually adding to the dough when used as a "mother". I've never found any distinct advantage to using the scrap dough as a "mother" except for the fact that it forces us to ferment the dough to which it is added for a longer

time which in turn results in a different flavor, but then you can do the same thing by just adding less yeast to the dough and fermenting longer. Sure, there are some inherent flavors being introduced into the new dough with the "mother" but usually the amount added is quite small so the impact on flavor is minimal. When old dough is added back to new dough we recommend to limit the amount added to not more than 15% of the total fresh dough weight but in reality most shops will add back as much as their mixer can effectively handle. This amount will vary with the size of dough being made in a specific size mixing bowl by a specific mixer. For example, if you're mixing 50-pounds of flour in a 80-quart bowl you have about 86-pounds of fresh dough being mixed. At the 15% rule you can add 12.9-pounds of scrap dough....is your mixer strong enough to handle that? Now, if you are only mixing 40-pounds of flour in the same mixer and bowl the amount of fresh dough being mixed is 68.8-pounds so  $15\% = 10.3$ -pounds of scrap dough, BUT since the mixer has extra capacity to mix more dough weight it is common to add more than 15%. How much more? To be honest, they try to mix all of the scrap dough into the fresh dough so as to avoid the need to put it into the trash. The problem here though is that all of that scrap dough can have a significant impact upon both the rheology of the fresh dough and the flavor of the crusts made from it resulting in inconsistencies in the finished crusts.

When dealing with a sponge-dough process we always express the sponge as a ratio like 50/50 or 75/25 with the first number being the percent of the total flour going into the sponge to be fermented for a specific period of time. The second number is the remainder of the flour which is incorporated back with the sponge after the sponge fermentation time. This keeps the entire process extremely consistent. There are some commissary operations considering the implementation of a sponge-dough process to improve the flavor profile of their finished crusts. The main obstacle for them right now is a general lack of understanding of the sponge-dough process, the additional equipment and space needed = \$\$\$\$\$, and the impact of it on the refrigerated shelf life of the dough. It usually reduces it from 5 to 7-days to something more on the order of 3 to 5-days and that means a huge additional cost in distribution.

Tom Lehmann/The Dough Doctor  
4267

### **Dough Clinic / Re: Protease...**

What protease provides is a certain amount of weakening of the gluten structure which is referred to as "mellowing" of the gluten structure. It is this mellowing that improves the dough by making it more extensible as opposed to elastic, this also reduces dough "memory" or "snap-back" at the time of opening the dough into skins and to some degree helps to improve oven spring which contributes to the desired open grain/crumb structure characteristics desired in pizza. When an excessive amount of protease enzyme is present in the dough the dough can be weakened to the point where it actually turns into a batter. This same thing can also happen if the dough is allowed to ferment too long. Protease will remain active in the dough until such time that it is destroyed by the heat of baking (160 to 180F). This is the reason why we seldom recommend the use of protease enzymes in processing systems where scrap dough will be generated, the protease will continue degrading/hydrolyzing the protein in the scrap while it is being saved or collected for re-incorporation into fresh/new dough which adds another dimension of variability into the scrap dough which in turn brings inconsistency into the way the new dough now processes as well as creating inconsistencies in the characteristics of the finished product.

A good example of a protease enzyme at work is in Adolph's Instant Meat

Tenderizer; Papaya also contains it (this is why it is eaten after a meal in Latin America as the proteas in the papaya can aide in digestion); Fresh pineapple is also a good source too.

Protease = (pro-tea-ace) :)

Tom Lehmann/The Dough Doctor  
4266

**Dough Clinic / Re: Poolish vs. biga**

JPB;

Those numbers as they relate to a sponge-dough procedure indicate that 60% of the total flour will be used in making the sponge (or preferment if you wish to call it that) and the second number (55%) indicates that the sponge will be hydrated with 55% of its weight in water.

Tom Lehmann/The Dough Doctor  
4265

**Dough Clinic / Re: RT/CF fail, not totally sure why**

From your description it appears to be a classical example of an over fermented dough (soft, extensible, tears easily, lacks oven spring). I can't answer your question on flavor as I don't know what you are looking for flavor wise but in this case I would expect to find some tartness in the flavor due to excessive acid build up or if it was REALLY over fermented you can get some "off" flavors developed due to loss of the yeast, additionally you will also get a different flavor from the finished crust because it did not rise during baking, hence it did not bake out and develop the flavors as a result of denaturing proteins during the baking process.

Tom Lehmann/The Dough Doctor  
4264

**Dough Clinic / Re: RT/CF fail, not totally sure why**

You keep going back to the word "elastic" that is a word that aptly describes a slightly t moderately over fermented dough. The word we use in the baking industry for this characteristic is "bucky" the next stage is known as let-down, this is where the dough now begins to show extensibility once again but in this stage the dough can be difficult to open as the dough wants to form thin spots in the skin as you open it and there isn't much that you can do to correct this. The final stage is break-down, this is where the dough handles like a wet dish towel, it will be extremely extensible and stickiness will begin to appear.

I can't say just why you are getting less flavor development but here are some things to keep in mind when working with two stage fermentation systems;

1) The more flour that is exposed t the effects of fermentation the more flavor the finished crust will have.

2) The temperature of the ferment is CRITICAL, especially with highly liquid ferments. A high absorption ferment employing less than 60% of the total flour is notorious for not developing flavor in the finished, baked product. In the baking industry we refer to these as liquid ferments or "brews". It is believed that the acid content builds so fast in these systems that it blocks the action of the enzymes on the flour so there is less flavor development, especially in the oven where baking plays a big role in flavor development.

3) Any liquid ferment system is much more sensitive to temperature variations than sponge systems where the absorption is almost always under 60%.

Tom Lehmann/The Dough Doctor  
4263

## **Dough Clinic / Re: Fresh yeast**

In one word, no, BUT if you use different strains of yeast such as some of the brewer's yeasts that you alluded to, now you're riding a horse of a different color, and the answer is going to be most likely yes, but remember that all brewers yeast will not ferment dough as we know it very well so you will need to experiment with the different strains to see what works and what you like as a flavor profile. Point is, just because a specific strain of yeast is used in making beer doesn't mean that it will create the same flavor in a baked crust. When I was in Saudi Arabia we made some great home brewed (and highly illegal) beer and wine using the yeast from the bakery. Any kind of brewer's yeast was illegal. The only main difference between brewer's yeasts and baker's yeasts is that while the baker's yeast will tolerate up to about 10% alcohol, brewer's yeasts will tolerate one to two percent alcohol.

Tom Lehmann/The Dough Doctor

4262

## **Dough Clinic / Re: RT/CF fail, not totally sure why**

That would also make sense to me too so a slight adjustment in procedure might be all that's needed to bring the dough back into alignment with where it should be.

Tom Lehmann/The Dough Doctor

4261

## **Dough Clinic / Re: RT/CF fail, not totally sure why**

Acids are only part of the flavor profile, a good deal of what we perceive as flavor comes from the degradation of flour proteins during the baking process. The more of the proteins exposed to the acids for a longer period the more are broken down during the baking process which also contributes to the flavor of the finished crust. In addition to acids the flour is also exposed to the effects of proteolytic enzymes which also results in more break down of the proteins during baking. Flavor development in yeast leavened products is a very complex thing as there are so many interactions taking place during flavor development, in fact, bread flavor (the flavor resulting from yeast fermentation of a flour based dough) is one flavor that flavor chemists have never been able to duplicate...it's that complex.

Tom Lehmann/The Dough Doctor

4260

## **Dough Clinic / Re: Wet Unworkable Dough**

Changes in the finished dough temperature (determined immediately after mixing the dough) will significantly influence the rate at which the dough ferments with a higher temperature resulting in a faster rate of fermentation. If a dough is mixed at a higher temperature at any one time you might expect to find that the dough is fermenting more and thus could be softer and in severe cases over fermented to the point where the dough begins to break down becoming weak and sticky. If a dough is too cold as compared to your other doughs it could exhibit characteristics of under fermentation such as being difficult to open into skins while showing excessing dough memory/snap-back as you attempt to size the dough skin.

Additionally, keep in mind that flour is a variable ingredient and all lots of flour as well as similar flours from different manufacturers may exhibit different dough absorption values. This said, don't be afraid to make the necessary adjustments to the dough absorption to gain an improvement in dough handling properties, remember....we're making pizza dough, not nitroglycerine.

Tom Lehmann/The Dough Doctor

4259

## [\*\*Starters/Sponges / Re: Why Sourdough Bread is One of the Healthiest Breads \(Authority Nutrition\)\*\*](#)

Peter;

These are excellent videos. I might add though that what is being referred to as a "tension pull" is the same thing that is accomplished by bench rounding the dough as I've demonstrated in my videos. This is as opposed to forming the dough balls as many do, by picking the dough up and using gravity to assist, keep pulling the dough back up upon itself which really does a pretty good job of degassing the dough as it is formed into a ball. I notice also that while bulk fermenting the dough is mentioned, it is only a single dough ball that is being fermented. My experience is that in bakeries where sourdough breads are made in a similar manner the dough is not bulk fermented (bulk fermentation = 25 to 85-pounds of dough being fermented in a single piece) the reason for this is because the act of removing/portioning dough from the bulk piece and then forming it into a ball is counter productive in that it serves to degas the dough more than what is desired (no degassing of the dough is what is actually desired so any degassing is not desirable).

These are just my own personal observations that I thought I'd call attention to for clarification.

Tom Lehmann/The Dough Doctor

4258

## [\*\*Dough Ingredients / Re: Vegetable Oil vs. Olive Oil\*\*](#)

But then if we didn't cook/bake our food we might succumb to an early demise resulting from food poisoning, as opposed to waiting for a long time for our prepared foods to do us in. We used to have a food safety director at the AIB who used to say that if it wasn't for the oven bakers would have poisoned mankind thousands of years ago. :-D

Tom Lehmann/The Dough Doctor

4257

## [\*\*Dough Clinic / Re: Fresh yeast\*\*](#)

Oops! Sure did mis-type that!! I meant to say that brewers yeast will tolerate about one to two percent MORE alcohol than bakers yeast. Not of critical importance to a baker but critically important to the likes of Augie Busch and Hiram Walker. :)

Tom Lehmann/The Dough Doctor

4256

## [\*\*Shop Talk / Re: Trying to figure out the Cracker Crust theory\*\*](#)

Welcome to the web site!

The cracker type crust is indeed what PH used to make back in the 60's and early 70's. Today you see it being made at Mr. Ghatti's as well as at Incredible Pizza, there are MANY others but these are possibly the most visible. The dough is made by mixing for only about 2-minutes or a little less, it is then portioned, formed into a "puck" like shape as you would a pie dough, placed on a sheet pan with a little dusting flour under the dough pieces, covered, placed into the cooler and allowed to hydrate for 24 to 48-hours. It is then removed from the cooler and allowed to warm to about 50F and then floured and run through a dough sheeter using 2 or more passes (usually 3 but sometimes 4) it is then placed onto a screen and excess trimmed off using a spatula, it's then dressed and baked as any other pizza. We have discussed this a few times before here if you want to research some of the old postings on cracker type dough/crusts.

Tom Lehmann/The Dough Doctor  
4255

[\*\*Pizza Ovens / Re: Pizza \(!?\) oven found in Mexican ghost town\*\*](#)

AKA a "bee hive" oven. These are used mostly for baking bread type products in this case most likely bolillos.

Tom Lehmann/The Dough Doctor  
4254

[\*\*Newbie Topics / Re: Baker's percentage with combination of different flours?\*\*](#)

Bakers percent is based on the weight of the gluten forming flours only. All non-gluten forming flours are looked at just as any other added ingredient. For example:

The dough contains 5# of regular bread flour plus 5# of whole wheat flour and 3# of spelt flour. The total gluten forming flour weight is 10# which is equal to 100%. The spent flour weight is divided by 10 and multiplied by 100 to give the correct bakers percent for the spent flour.  $3 \div 10 = 0.3 \times 100 = 30$ , the spelt flour in this case would be correctly shown as 30%.

If the total dough absorption was 66% it would be based only on the gluten forming flour weight (10#) so to find the weight of the water , using your calculator here are the steps:  $10 \times 66$  (press the "%" key and read the water weight in the display window (6.6-pounds) Note: The answer will always be in the same weight units (pounds, ounces, grams, kilograms, etc.) that the flour weight is shown in.

The yeast weight (0.5%) is also based on the 10-pounds of flour weight so  $10 \times 0.5$  (press the "%" key) and read 0.05-pounds in the display window.  $0.05\# = 0.05 \times 16\text{-ounces} = 0.8\text{-ounces}$ .

Tom Lehmann/The Dough Doctor  
4253

[\*\*Newbie Topics / Re: Baker's percentage with combination of different flours?\*\*](#)

Craig;

We do not consider spelt to be the main source of structure in a dough system. In this regard we look at it in the same way that we look at rye flour. Yes, there is gluten there, yes you can make bread from just spelt or rye but in formulating doughs it is not considered to be the main flour from which we base our percentages on. Rye and spelt, and even buck wheat formulas are specialized formulas that do not conform to the basics of formula balance, this is why we formulate specifically for the use of these flours.

Peter is absolutely correct in that the unique absorption properties of each ingredient added to a dough formulation must be determined so as to allow the total dough absorption to be adjusted to compensate for the absorption properties of that ingredient. When we begin working with flours where bran is present (whole-wheat flour) we have to compensate in the dough absorption for the absorption properties of the bran. Failure to do this will result in a dry dough and less than ideal finished crust characteristics. The suggested method for determining the absorption properties of whole-wheat flour as well as other types of specialty flours or grains such as used in a multi-grain formulation has been covered in detail in other postings here so I won't go into all of the details of the procedure at this time.

Tom Lehmann/The Dough Doctor  
4252

## **Dough Ingredients / Re: Vegetable Oil vs. Olive Oil**

Everything is a trade-off of one kind or another. We have eliminated many of the pesticides available to work with so we developed plants with insect or disease tolerance but then someone said that this was not "natural" so the objections were voiced against GMO's. New varieties of food plants are constantly being developed and introduced with unique "resistance" properties (drought, fungus, bacterial, insect) but in short time the very things that the plant resists morph and the resistance is lost or severely compromised so another variety must be introduced to take up the fight. Failure on our part to maintain this ongoing battle can result in world wide food shortages/famine. Just look at what happened just a few years ago when two years of less than ideal growing conditions for all wheat varieties, not just in the U.S. but across the globe, resulted in a world wide shortage of wheat...we all remember what we were paying for a bag of flour back then. Some flour mills were even closed down due to lack of wheat to mill into flour. Yes, we did have drought resistant varieties of wheat to plant but it takes nearly a full year to plant and harvest the seed wheat and then distribute it to farmers for planting which will be harvested 6 to 9-months later. Like many readers here, we try to eat healthy and safe food so we grow our own but that lasts for only so long, then we're forced to visit the local supermarket just like our city brethren for our food, or at least a portion of it. While we don't like all the "stuff" producers/growers use on our food it does make it available without shortages and that's the compromise that my family is willing to accept, maybe some day science will bring us food that is resistant to everything without someone objecting to it but for now we've got to put food on the table.....please pass me the bowl of compromise, it's tasting mighty fine today.

Tom Lehmann/The Dough Doctor  
4251

## **Sauce Ingredients / Re: How to get sauce to be thicker**

Or, just add some raw garlic and or onion (garlic or onion powder works well too) to your sauce, refrigerate it over night and thicker sauce you will have.

Tom Lehmann/The Dough Doctor  
4250

## **Sauce Ingredients / Re: How to get sauce to be thicker**

Be careful when using immersion blenders as they can easily puree your tomato product resulting in the sauce exhibiting significant syneresis upon standing. I've always found a more gently mixing action to be better. If you are using the blender to break up tomato product use a slower speed if possible and don't get too carried away.

Tom Lehmann/The Dough Doctor  
4249

## **Dough Clinic / Re: Wet Unworkable Dough**

24-hours minimum with 48 even better.

Tom Lehmann/The Dough Doctor  
4248

## **Dough Clinic / Re: Wet Unworkable Dough**

oops, that was CF time that I gave you. Once it's time to open the dough into skins bring the dough from the fridge and allow it to warm AT room temperature to a minimum of 50F, a lot of pizza makers like to leave it get a bit warmer though so

60F is also quite acceptable.  
Tom Lehmann/The Dough Doctor  
4247

**Dough Ingredients / Re: Do you use any seasonings in your dough?**

Depending upon how much you put into the dough. If we're adding 10% or less you can generally expect minimal impact, but when you get up to 15% and more the story can begin to change and at 30% or more the impact can be quite significant. There are a lot of things that will impact the amount that can be added without severely impacting the gluten structure, the size and shape of the material is probably the most critical with the larger particle sizes having the least overall impact.

Tom Lehmann/The Dough Doctor  
4246

**Prep Equipment / Re: Feedback on Eurodib 30qt spiral mixer?**

Just my humble opinion, but I really think you would be much better served with the 50-quart mixer. You are looking to make up to 50-Kg./110-pounds of dough 3 to 4 times a week. That would be two doughs in the 50-qt. mixer or 4 in the 30-qt. mixer, and 3 in the 40-qt. mixer. The 50-qt. mixer will provide you with your needed capacity for right now while also providing you with capacity to accommodate future growth without the need to spend hours mixing dough. Even with the 50-qt. mixer you are looking at a total time of about an hour, maybe a little more to mix and process two doughs. By the way, I've yet to see a spiral mixer that I really didn't like. As a dedicated dough mixer they are heads and shoulders above any planetary mixer, and they just seem to last forever. I think a number of followers here that have them as well as followers of the Think Tank at the PMQ (Pizza Marketing Quarterly) web site <[www.pmq.com](http://www.pmq.com)>, perhaps some of them will comment on their experience with spiral mixers too.

Tom Lehmann/The Dough Doctor  
4245

**Prep Equipment / Re: Feedback on Eurodib 30qt spiral mixer?**

Yes, you're correct, you can mix a dough as small as 25% of capacity on a spiral mixer. This means that a 50-qt mixer will handle a dough as small as about 10-pounds/4.54-Kg. in total weight. As for that specific brand of mixer, I can't help you on that as I have no first hand experience with the brand, but as I've said, I've not seen a really bad one yet which is more than I can say for planetary mixers and you can't beat the price with a stick!

Tom Lehmann/The Dough Doctor  
4244

**Dough Ingredients / Re: Any issues w/ keeping pre-measured amounts of flour and yeast mixed in the same container?**

Actually, this is something that we do all the time in pizzerias. There is no problem mixing flour, salt, sugar and IDY (ONLY) together. We refer to them as "goodie bags". We normally use commercial bread bags or Food Bags for this, but in a home setting you can use just about any container. No need to refrigerate, room temperature storage is just fine. How long will it keep? We have used IDY in commercial bakery mixes where we had a 90-day room temperature/ambient shelf life. At home where the conditions might not be as well controlled you will get two weeks without any problem at all. I see where you store your yeast in the freezer, not a problem BUT you might want to consider bringing it out of the freezer the

night before you plan to use it to allow it to come up to room temperature. If you open a cold bag of yeast, or anything for that matter in a room or environment with any kind of humidity you will get condensation forming on the inside of the container as well as the contents almost immediately. Moisture is the biggest detriment to the quality or shelf life of IDY. That what you have heard about not mixing yeast and salt or sugar together is true only for CY but with IDY both the salt and sugar actually help to preserve the quality of the IDY. Keep in mind though that when mixed/blended with the salt and/or sugar the mixture should only be added to the flour and blended in, it is not recommended that it be put directly into the water as this will allow for hydration of the IDY and set the stage for potential interaction between the salt/sugar and the IDY. ADY does not work in this application as it must be pre-hydrated in 100F water prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
4243

### **Dough Clinic / Re: balling technique and schedule**

For me, I almost always ball the dough immediately after mixing. Even if mixing the dough by hand. In that case I just mix my dough, divide it into whatever weight pieces I need, and then, using just a little flour on the bench/counter top I form each piece into a ball, oil it and place it into a plastic bag for cold fermentation. When mixing the dough in a dough mixer I again take it immediately to the bench/counter top where it is rounded into a ball using little or no flour. I then bag the dough for whatever CF time I am using. You can see my rounding procedure on videos that are posted on my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> or you can access them through the PMQ (Pizza Marketing Quarterly) web site at <[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor  
4242

### **Dough Ingredients / Re: Anyone know anything about this Red Star bread machine IDY yeast?**

I would have ABSOLUTELY NO HESITATION to use it. SAF Yeast said that their IDY Red Label couldn't be used in dry mixes too, today it is widely used in making goodie bags and some commercial mixes too. Hummm, guess they didn't know that it would work in dry mixes too. (SAF is now part of Red Star). If you don't want it just package it up and send it to me and I'll gladly use it. :-D

Tom Lehmann/The Dough Doctor  
4241

### **General Pizza Making / Re: freezing tomatoes to release water for reduction?**

The problem with freezing the tomatoes is that most of the "juice sacks" (there is a correct name for them but is always escapes me) are destroyed resulting in a thin, rather texture less puree after they have been further degraded during the baking process. Just try putting some slices of vine ripened tomato on your pizza to replace the sauce and you will find that you have texture, flavor and eye appeal. One of my favorite commercial ways of replicating this here in the U.S. is to use the Stanislaus 74/40 Tomato Filets (drained for 30-minutes). Even a coarse diced tomato that has been gravity drained to remove most of the juice works pretty well too. You might get a spec. sheet from Stanislaus on their 74/40 product and then take that out to local vendors to see if they can get you something similar. Hand torn pieces of whole plum tomato that have been drained also work well and is widely used in New York City.

Tom Lehmann/The Dough Doctor  
4240

**[Shop Talk / Re: new to mixers looking at a spiral mixer](#)**

In another thread we have been discussing spiral mixers to some length, you might want to look at those posts. You can't go wrong with a spiral mixer as a dedicated dough mixer, but if it were me, I would opt for a slightly larger mixer. One person can easily scale and ball upwards of 15-kg. of dough in the time that it takes to mix a dough (about 10-minutes). This will free you up to other chores sooner than spending over an hour prepping your dough. Remember, spiral mixers will efficiently mix doughs as small as 25% of the rated bowl capacity.

Tom Lehmann/The Dough Doctor  
4239

**[Shop Talk / Re: new to mixers looking at a spiral mixer](#)**

Actually, the dough comes out of the bowl quite easily if you just add a very small amount (about 1-cap full) of oil at the end of the mixing cycle. You just pour it down the inside of the bowl (not on the dough) and let the mixer run for a few SECONDS, the dough will just about jump right out of the mixer. This is how it's done using planetary mixers too. To clean them you just pour a gallon, or so, of HOT water into the bowl, cover it with a sheet of plastic and allow it to steam for 30-minutes, then just scrub it out using a plastic bristly pot brush, bail it out (this is why I like to see a drain plug in the bowl as it makes cleaning so much easier...no need to bail), sanitize and you're done. Many of these mixers are on wheels which allows them to be moved out of the way when not in use.

Tom Lehmann/The Dough Doctor  
4238

**[New Forum Members / Re: Planning to open restaurant serving whole wheat pizza](#)**

Whole-wheat as well as multi-grain/whole-grain doughs of all kinds require some extra handling and techniques in their production if they are to be done correctly. We have discussed this in much detail in earlier posts which you might want to read to help bring yourself up to speed if you have not already done so. I also have an article on the subject in PMQ Magazine (In Lehmann's Terms), you'll need to search through the archives to find it, but it covers all of the "gory" details on how to make these great tasting crusts.

Tom Lehmann/The Dough Doctor  
4237

**[Dough Clinic / Re: Dough not rising well after being in freezer \(or fridge\)...](#)**

You have deviated significantly from the original dough management procedure with the addition of the 24-hour room temperature fermentation period. From what you have described I think there are two different things coming into play to raise havoc on your dough. 1) I think your dough is being over fermented. The initial 24-hours at room temperature is probably pushing the gluten to its limit, then after you place it into the fridge it takes a LONG time to cool to the point where fermentation is slowed to a rate that will allow for holding the dough for several days in the fridge. 2) On top of the over fermented dough condition the mere act of freezing the dough damages a significant amount of the yeast resulting in the release of glutathione from the yeast cells (glutathione is a well known reducing agent in that it breaks down the proteins/gluten resulting in a much softer, more extensible gluten structure). Glutathione aka "dead yeast" is also sold as a

substitute for PZ-44 for making dough softer and more extensible, which is one of the characteristics that you are seeing.

If you want to continue using your present dough management procedure I would suggest reducing the amount of yeast used in the dough. I can't say how much you will need to reduce it as there are just too many variables in play but I would start with reducing it to 1-gram and then 0.5-gram if necessary. To do this you will need to change from a "recipe" with ingredients measured in volumetric portions (rather inaccurate) to a "formula" where all of the ingredients are actually measured in weight measures (most commonly "grams"). To do this you will need to get a good scale that will weigh your ingredients in grams. These are available on the Internet for a very reasonable price (right around \$30.00 or a bit less).

Tom Lehmann/The Dough Doctor  
4236

### **New York Style / Re: pizza doughnut**

It's not always a quality issue, you can have the best crust on earth and then destroy it during baking leaving you with a lot of effort and nothing to show for it. Additionally, the Untied States is a country where bread is not traditionally eaten as "bread" anymore, it is consumed as part of a sandwich (keeps the fingers from getting messy) like a hamburger, hot dog, ham and cheese, etc. When you do see bread being eaten it is essentially always with butter or margarine. Do you see the pattern? Pizza crust is just another piece of bread to many folks, especially young people, since they are not used to eating bread just as it is they want something to put on it, be it ranch dressing, dipping oil, butter, or whatever. I think most kids would eat the crust more often if you gave them a side of peanut butter to dip it in! This is one reason why the "cheese-in-the-crust" concept did so well when it was first introduced....crust/bread and cheese = hmmmm, a cheese sandwich. Now we're seeing it being done using bacon where crust/bread and bacon = bacon sandwich, everything goes better with bacon! :-D

Tom Lehmann/The Dough Doctor  
4235

### **Dough Clinic / Re: Dough not rising well after being in freezer (or fridge)...**

Following my 50% rule I'd suggest reducing the room temperature fermentation time by 50% (12-hours) and see what that gets you, then adjust accordingly from there. Be sure to keep a record of your finished (mixed) dough temperature as well as the room temperature as temperature is the main driver of fermentation (the warmer the dough the faster it will ferment or the more it will ferment in any given amount of time. One other thing, regardless of what the recipe says, ADY and IDY are not directly interchangeable gram for gram. On an equal weight basis the IDY provides about 20% more yeast cells than ADY.

Tom Lehmann/The Dough Doctor  
4234

### **New York Style / Re: pizza doughnut**

I'll Amen that! A great crust/edge, rim, whatever you want to call it is well worth eating, just like great bread. Too many times though I've seen it totally destroyed during baking. When I developed the Hearth Bake Disk I was very selfish and took this into account by putting a non-perforated area around the outer edge of the disk. The dimension of this non-perforated section varies with the disk diameter. It is designed to protect the edge of the crust from the high velocity airflow of the air impingement ovens (the disk is designed to work ONLY in air impingement ovens) thus reducing the amount of bake received by the outer edge/rim and preventing it

from turning into a "pizza bone" during the baking process. By the way, I did not get paid, nor do I collect a royalty on any Hearth Bake Disks sold by Lloyd Pans. It was a design change to help owners of air impingement ovens produce pizzas closer to that which many of them used to make in their deck ovens but with the speed and convenience features of the air impingement oven.

Tom Lehmann/The Dough Doctor  
4233

[\*\*Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?\*\*](#)

You are correct, both fermentation time and temperature affect the fate of fermentation. loss of or insufficient elasticity is normally associated with over fermentation of the dough so reducing the fermentation time should increase the elasticity (springiness) of the dough. Those are some pretty good looking pizzas!

Tom Lehmann/The Dough Doctor  
4232

[\*\*Newbie Topics / Re: Baker's percentage with combination of different flours?\*\*](#)

A simple test is to just make one dough with 100% of your regular pizza flour and then make another with 25% of the flour replaced by dark rye flour, then do it again using a 50% replacement and lastly with 100% replacement. If you want to some excitement go so far as to treat all of the doughs in exactly the same manner. While these grains do contain some amount of glutenin and gliadin it has a totally different structure to it so it behaves very differently in a dough system.

Additionally, by treating them as any other ingredient it is much easier to calculate the correct dough absorption as each type of flour will have its own absorption which must be accounted for in the total dough absorption. Just try making three doughs all with the same absorption, one would be a regular pizza dough using your favorite flour, the second would be with 50% of the flour replaced by a dark rye flour and the third would be with 50% of the flour replaced with a whole-wheat flour, I'm betting that by day's end you will see a difference between the doughs. The only time when we consider one of the lesser flours (whole-wheat, spelt, triticale, buck wheat, and rye) the main flour or include it with the regular white flour (if used in the dough formula) is when it becomes the main contributor to the doughs structure, such as in whole-rye bread (pumpernickel), whole-wheat-bread, etc. The basic science and physics behind baking at home or in a commercial establishment be it a bakery or pizzeria is the same. It's just that we can give our doughs much more care and attention in handling at home than we can in any commercial establishment, that why we can get away with doing things in our kitchens which would be unheard of or impossible in a commercial setting where we have to make allowances for some level of automation.

Tom Lehmann/The Dough Doctor  
4231

[\*\*Prep Equipment / Re: Feedback on Eurodib 30qt spiral mixer?\*\*](#)

Bradtri:

Yeah! Right!

I'm fully retired and working as much or more than I did when I was employed full time by the American Institute of Baking.

I know how the retirement gig goes, I've got this love/pastime/hobby/side job, work to keep me amused during my retirement, then you decide on day "Hey, maybe there is something to this!" So you take on more assignments and hire more people and BANG!!! There you are, growing, and with the free time offered by your

retirement it will all make perfect sense to you...that's when you know you're hooked! I think you might be in the same group as I'm in where "retirement" is never an option, not at least until someone closes the lid.

Never say "never". I wish you the best of luck with your catering business. :) :) :)  
Tom Lehmann/The Dough Doctor  
4230

**[Newbie Topics / Re: Baker's percentage with combination of different flours?](#)**

Are you using a light, medium or dark rye flour?  
Tom Lehmann/The Dough Doctor  
4229

**[Newbie Topics / Re: Baker's percentage with combination of different flours?](#)**

Pound for pound, ounce for ounce both dark rye and stone ground whole-wheat flour have significantly absorption values than any of the white flours due to their bran content which is unquestionably slow to hydrate. light rye flour is the most highly refined of the three classes of rye flour being likened to patent flour of the rye flours. The two main characteristics of rye flour are that it exhibits a VERY SHORT mixing tolerance, unlike white patent grade flour which exhibit pretty decent tolerance to mixing, and then there is the issue of stickiness which is inherent in rye doughs. This stickiness is such a dominant trait of rye that back in the late 60's a variety of spring wheat was released for growing called Red River -68. This was a hybrid variety of wheat from parent stock of wheat and rye, the flour that was milled from Red River -68 was all but unusable due to the stickiness inherent in doughs made with this flour. Plus the mixing tolerance was also quite poor adding to its shortcomings. This was one of those wheat varieties that was released prematurely due to its exhibited drought tolerance (we were in a drought that year) and it seemed like a good idea at the time. Rye is very different from wheat in many ways. With all of that said, if we're talking about adding only 10 or 15% of a flour made from grain other than wheat the amount present will have but a very limited impact upon anything, including the absorption of the dough as the difference in amount of water needed will amount to just a couple percent of the total wheat flour amount, and just about any decent wheat flour with enough protein content to make bread will easily have tolerance for several percent variation in absorption. You can even add soy flour or corn flour at up to about 15% without making any absorption changes (just look at it like you do your "pizza" flour) and you will still make a decent product. It's when you begin incorporating these non-wheat based flours at 25% and more that things start to become very interesting. If you ever used all whole wheat flour and used a dough absorption typical to regular "pizza" flour (about 62/63%) you might have experienced a dry, stiff dough which produced a finished crust with a flavor and texture profile akin to that cardboard.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
4228

**[Shop Talk / Re: Opening a restaurant](#)**

A few other things to put on your "look out" list are:  
Make sure your oven will be allowed in the location you have selected.  
If wood fired it may need to have a catalytic converter.  
Rather than 100% wood fired thing about a combination of gas and wood, use the

gas option to keep the oven hot when not in use and do all of your baking with wood....best of both worlds.

Make sure your ventilation system is designed for a wood fired oven....better yet, get it along with the oven from the oven manufacturer.

Don't forget to notify your insurance agent of the fact that you will have a wood fired oven...it can make a difference.

Be sure to allow 1.5 times the oven depth as the minimum free space in front of the oven for your oven tenders to work safely in.

Think spiral mixer if you can go with a dedicated dough mixer....they're about as close to "bullet proof" as you can get.

Tools: Oven broom & rake, spinning peel, oven peels, and wood prep-peels.

Tom Lehmann/The Dough Doctor

4227

### **Dough Clinic / Re: There are so many fine ways to mess up dough**

The colder the dough the slower the rate at which fermentation progresses ,so, indeed by cooling the dough to 32F the fermentation rate was much slower than it would have been if the dough were held at a higher temperature. Yes, there would be some compromise in flavor development due to fermentation under those conditions...but there is a point in flavor perception where the flavor of the crust is on a plateau, meaning that it is difficult to subjectively flavor shifts resulting from a change in the amount of flavor imparted to the dough as a result of fermentation.

To clarify, yes there probably was a flavor difference but it might not have been perceptible and to quote a professor I once had "Reality is but a perception so perception is reality" Based on that astute reasoning the answer might be that no flavor change in the finished crust would be noted.

Tom Lehmann/The Dough Doctor

4226

### **Dough Clinic / Re: Over knead vs. under knead**

That's an easy one!

UNDER.

As long as the ingredients are combined into a homogenous mass and the dough is allowed to ferment you really don't really need any more mixing than that.

Tom Lehmann/The Dough Doctor

4225

### **Dough Clinic / Re: Over knead vs. under knead**

To some extent it can also apply t making bread too but it all depends upon the type of bread we're talking about. French/baguette, bolls (cannon balls) or round loaves if the dough is managed correctly really don't need mechanical mixing, but if we're talking about pan breads we are talking about mixing the dough to some level of gluten development.

Tom Lehmann/The Dough Doctor

4224

### **General Pizza Making / Re: Making a pizza that travels well and people with eat 2 hours later.**

Additionally, if you want to have a softer pizza use shortening in it (lard, margarine, butter, Crisco or my favorite Butter Flavored Crisco) at 8 to 10% of the flour weight. Adjust the level accordingly to give the the amount of softness you want.

Tom Lehmann/The Dough Doctor

4223

## **Dough Clinic / Re: There are so many fine ways to mess up dough**

JPB;

Didn't somebody one say something about "Outta sight, outta mind"? It happens here more than I might care to openly admit. I just recently found some extra white sauce that I had saved from the last time I made a seafood pizza. Two problems: 1) I still can't remember the last time I made a seafood pizza here (made some for my son over the holidays at his home but not here in our home. 2) It appeared to be in dire need of a shave and because I didn't want to go to the trouble of shaving it I just tossed it out into the toxic waste container. :)

Tom Lehmann/The Dough Doctor  
4222

## **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Reducing the yeast level can work under some circumstances providing that there is sufficient yeast in the dough to properly leaven the dough and support the weight of the applied toppings during the critical stage of oven spring during baking. If the yeast level is insufficient the dough will not rise as anticipated in the center section where the toppings are applied but the outer edge will rise pretty well as expected. To achieve a less chewy finished crust the best options are as follows: 1) Use a lower protein content flour. 2) Incorporate more dough fermentation into your dough management procedure. 3) Incorporate fat (ideally shortening/plastic fat) into the dough formulation. Begin at 2% and work up in 2% increments and at some point you should see a more tender eating and softer textured pizza.

Tom Lehmann/The Dough Doctor  
4221

## **Dough Clinic / Re: Over knead vs. under knead**

For the white pan bread aspect I cannot answer your question as there are so many variables at play such as:

Do you use a straight dough or sponge-dough procedure?

What is the protein content of your flour?

What is the loaf weight as compared to pan capacity?

What is your dough formulation like?

What are your sponge/dough temperatures?

If using a sponge-dough process what is the sponge % and fermentation time?

How high above the pan edge do you proof the dough?

As for dough mixing for white pan bread it is customary to mix the dough until you can achieve a clear gluten film and good dough extensibility while maintaining the finished dough temperature between 78 and 85F.

Remember, when making white pan bread that the better developed the gluten film is the finer the finished crumb structure and the softer the bread will be.

Tom Lehmann/The Dough Doctor  
4220

## **General Pizza Making / Re: Getting started...**

Do you have an idea of what kind/type of pizza you want to make for the events? Have you met with your local SBA to discuss what will be ultimately needed for you to get started in a business? (LLC./Inc.); insurance, permits/license, inspections, any special vehicle insurance. You will soon find out if you haven't already that everyone is standing with a hand out stretched and it ain't to shake your hand.  
Tom Lehmann/The Dough Doctor

4219

**Dough Clinic / Re: Over knead vs. under knead**

Pizzapap;

If you are trying to make what is referred to as open top white pan bread using a conventional type of loaf pan (dark color please) the accepted pan volume to dough weight is on the order of 5cc per gram of dough weight. To check if your dough weight and pan size are a match first weigh the dough piece that will be going into the pan, then multiply by 5. This will give you an idea of the pan size required for your dough weight. To find the pan size (internal volume) just place your bread pan on a grams scale and zero it out, then fill it with room temperature water right up to the top rim, note the weight in grams, since 1cc of water weighs "approximately" 1-gram you now know your pan internal volume. It should be close to the number you got when you multiplied the dough weight by five. If not divide the internal volume of the pan (weight in grams) by five to find the correct dough weight for your particular pan size. Remember, there are MANY, MANY different size loaf pans so you need to do this simple exercise to find the correct dough weight for your specific pan size/dimension/internal volume. If you are not trying to make a loaf of pan bread resembling that which one might buy at the local supermarket or village bakery none of this applies.

Tom Lehmann/The Dough Doctor

4218

**New York Style / Re: pizza doughnut**

Walter;

Your response reminds me of a question I used to ask my students "How do you tell a successful pizzeria from one that isn't?"

Answer: The successful one will remain in business for more than one year. When developing a pizza for a new pizzeria one has to keep in mind that they are NOT developing a pizza for them, instead they are developing a pizza for their customers. They will be on the jury and decide if YOU have a good pizza or not. Here at AJ's we developed a New York style pizza (AJ's New York Pizzeria) but our customer base wanted a very crispy pizza which we gave to them, hey, they were paying for it so they should get what THEY want. Results: Adam has been in business for 9-years now and he has three very successful stores plus voted best pizza by K-State Students, Best Pizza in Manhattan, KS. and just last year one of the three best pizzas in Topeka, KS, where he has one of his stores. They don't do a "Best Pizza" there, instead they do a "One of Three Best Pizzerias" award. To me that's what making a great pizza is all about....being successful and giving your customers what they want.

Tom Lehmann/The Dough Doctor

4217

**Dough Clinic / Re: Diastatic Malt powder**

Jay;

I stand to be corrected on this, but if I remember correctly the amount of 20L malt powder that is added to make malted flour at the flour mill is about 2-ounces per 100-pounds of flour. This amount will vary with the amount of natural occurring amylase in the flour. What you are experiencing is the reason why malted flour or the addition of malt (either diastatic or non-diastatic) is not recommended for baking at high temps. What I'm afraid that what you are going to find is if you use a malt level that helps with the crust color issue you will not get the other benefits you are seeing from the addition of the malt. In any case, 2-ounces per 100-pounds

is equal to 0.0044% of the flour weight. So, using a non-malted flour you might begin by adding half of this amount of 20L malt (0.0022%) and working up from there if necessary. This is equal to 0.022-grams per Kg. of flour weight. Can't weigh this small amount? Just put 2.2-grams of the malt powder in 500-ml of water, at that dilution each 5-ml/grams (close enough) will provide 0.022-grams of malt per 1000-grams/1Kg. of flour weight.

Tom Lehmann/The Dough Doctor  
4216

### [\*\*General Pizza Making / Re: freezing tomatoes to release water for reduction?\*\*](#)

Now you're talkin' my language! ^^^  
Tom Lehmann/The Dough Doctor  
4215

### [\*\*New York Style / Re: pizza doughnut\*\*](#)

Here in the mid-west we just say "Hey, let's go out for some pizza". This is almost universally followed by "Where do you want to go?" This is then followed (by the person suggesting going out for pizza) with a suggestion for going to their favorite pizzeria. Point is: Everybody doesn't like the same kind/type of pizza so they go to the place that best meets their needs whether it be quality of food or quality of service (ideally both) but even convenience enters into the picture occasionally too. Pizza did not achieve its great popularity and longevity by being stagnant, instead, it has and continues to evolve as our American tastes continue to change. It wasn't too terribly long ago that you couldn't even give a deep-dish pizza away in St.Louis (thin crust reigned supreme) and in Chicago, any pizza with char on the crust was considered to be burnt and promptly sent back to the kitchen to be baked

"correctly", we all know how that turned out. I think it is nice and even interesting to know something about the heritage and ancestry of different kinds of pizzas but to get hung-up absolutes is beyond my meager comprehension, and when it comes to pizza we eat what we like, what tastes good to US at any one point in time. I say this because over time our tastes do change and I for one am thankful that there are enough different "styles" of pizza out there to meet my changing tastes. But at the end of the day, I'm still attracted back to the Chicago thin crust pizzas, not because they're go great (they are very good indeed) but because when I'm enjoying one it brings back a lot of memories of another time (the word for it is nostalgia), and once I've eaten my fill, I snap out of it and go back to my current favorite pizza which for right now is the AJ's #6 (Doctor's Delight) and even though my DNA is all over it I'll eventually tire of it and move on to something different which will , in turn, make me appreciate it all that much more when I go back and have another #6 after being away from it for a time. That's how the world works.

Tom Lehmann/The Dough Doctor  
4214

### [\*\*Dough Clinic / Re: How to tell when flour goes bad?\*\*](#)

How to tell when flour has gone bad 101:

- 1) It appears to clump. Those clumps are caused by insect webs (Indian Meal Moth).
- 2) It has dark colored specks in it. (Confused Flour Beetles or Cigarette Beetles)
- 3) You see what appears to be grains of rice in the flour. (These are insect larvae aka "worms")
- 4) You see very small holes in the bag, especially immediately above the upper most flour level. (These are due to all or any of the above).

5) Off aroma either due to development of rancidity or exposure to "other" aromatics. (like uncovered butter in the fridge).

Most flours will remain insect free for up to about a year if stored in such a way so as to prevent insects from getting into the flour. (a sealed metal container is the best way to store flour).

For long term flour storage refrigerate it or better yet, freeze it.

If you don't have the refrigerated or freezer space this is a proven method for storing flour for over a year: Place the flour in your freezer (you can do this in small lots if space is an issue) and leave it in the freezer for 6-weeks, then transfer to a metal container that has a tight fitting lid. Flour has been known to be stored for several years in this manner.

If long term stored flour as good as freshly milled flour? It all depends upon the application and your sensory sensitivity. It will function normally in making dough, possibly even better due to the fact that the flour has most likely oxidized to some extent which can make the flour show signs of increased strength, especially during mixing and balling. From a sensory standpoint some will argue that the finished product doesn't have the same flavor as when made from freshly milled flour. This is true, but the question is: is the taste difference perceptible when used in making pizza with all of the other flavors and aromas present? This is a personal thing that you will need to decide for yourself.

Back to #1, 2 and 3 above, these are not considered to be dangerous from a health standpoint, not appetizing, but not dangerous, think of it as added protein. In some cultures this added protein is a very important part of their diets. Also, in my training I was taught to always look at the inside of the bag, just above the flour to see if there was any signs of insects as this is where they tend to collect. What you do with the flour after finding insects is up to you, if you sift them out you will only get the adult insects and larvae but you cannot sift the eggs out so the problem will return very quickly as the eggs hatch. This is why it is usually recommended that the flour be disposed of if insect presence is noted, plus, they are adventuresome so you can also expect to find them exploring for new territories and setting up house keeping in any number of other food item you might have in close proximity (cake and pancake mixes are a very popular item....take it from someone with first hand experience.

Lastly, where did all those insects come from? They can come from the flour mill, usually in the form of eggs, but today this is a rare occurrence, a much more likely source of introduction comes from the place where the flour is being warehoused or from the store where you bought the flour at, and yes, even from our own homes if we do not regularly inspect the place where we store our flour and/or mixes at.

By the way, if you see mold growing on the flour (more common in humid environments), regardless of the color of the mold, it's best to not take any chances and discard the flour.

Tom Lehmann/The Dough Doctor  
4213

### [\*\*New York Style / Re: pizza doughnut\*\*](#)

JKB;

Speaking just for myself, it has changed but not so much that I can't relate back to it, and if it did change to the point where I couldn't relate to it, I'd just relegate it to past memory. Much like I do when I go back to the old farmstead and see the house, barn, milk shed and outbuildings while in reality I'm seeing houses, houses, and more houses (it's a subdivision now), but I won't let that rob me of the memories. Then I find my way to Ed and Joe's Pizzeria in Tinley Park, Illinois. Even if the pizza has changed somewhat, the name is still the same and that has to count

for something when you're grasping for straws.

Nuff said.

Tom Lehmann/The Dough Doctor

4212

### **Dough Clinic / Re: gluten strands**

It is helpful and beneficial but not mandatory. I have made no knead doughs for well over 30-years now and I've found that after letting biochemical gluten development take place a few stretches and folds helps to make a better dough. What I am not a follower of is spending more than a minute or so kneading the dough as a means of developing the gluten, I'll leave that for those with aspirations of developing biceps like those of the village blacksmith.

Tom Lehmann/The Dough Doctor

4211

### **Dough Clinic / Re: How to tell when flour goes bad?**

Bradtri;

Yep, those buckets will work just fine. I should have mentioned them in my response. If they have the usual snap-on lid you would be well advised to get a de-lidder (tool for removing those hard to remove lids).

A few years ago I bought a new small chest freezer from Menard's (just over \$100.00) for storing ingredients in. I try to maintain at least 50-pounds of flour in the freezer packaged in metal cans (used to have popcorn in them). I use a plastic bag for a liner in the cans and remove what I need from the freezer to keep the kitchen supplied in flour. Never had a problem, but come to think of it, those metal can lids aren't so easy to open either, and there isn't a tool made to make opening them any easier.

Tom Lehmann/The Dough Doctor

4210

### **Stones/tiles/steel, Pans & Accessories / Re: Pizza pros, GET IN! Need expert opinion**

What do you want to bet that the non-stick black coating on that pan is nothing more than Teflon? What the photograph shows is the exact reason why we have transitioned to anodized aluminum for the black, non-stick coatings.

Not a problem to continue using it but I'd suggest making a hard plastic scraper to use in the pan rather than a metal one to help "dig" the pizza out of the pan.

There are any number of suitable anodized aluminum pans with a dark finish that will work better than Teflon but keep in mind that those finishes can also be damaged by using metal implements (not as easily as Teflon) so care will still need to be taken. If you want to have a pan that is impervious to all but a vicious attack with a sharp pointed knife look into one of the deep-dish pans offered by Lloyd Pans <[www.lloydpans.com](http://www.lloydpans.com)> / Paul Tiffany <[ptiffany@lloydpans.com](mailto:ptiffany@lloydpans.com)> They're a bit pricey at about \$25.00 each but well worth it as you will probably never need to replace it. Others here have used their pans and report good success with them. I've had mine ever since they came out (many years ago) and use it all the time and it still looks a lot better than the pan in the picture. I might add that I use a metal cake decorating spatula to help get the pizza out of the pan too. Look Ma...No scratches! ;D

Tom Lehmann/The Dough Doctor

4209

### **Dough Clinic / Re: gluten strands**

What I do is to mix the dough using a wooden spoon so as to prevent over mixing the dough (when you think the spoon handle might break it's time to stop mixing). I then scrape the dough out of the bowl onto a lightly floured surface and lightly oil the bowl, then I give the dough a couple of folds (literally) and place it back into the bowl, lightly oil the top of the dough, drape a piece of plastic (actually a Walmart bag that has been cut open) over the bowl and then I find something constructive or amusing to do for the next couple of hours. Then I turn the dough out of the bowl, and knead it for about a minute, or so, and place it back into the bowl, cover it again and go back to what I was doing for another hour, then I turn the dough out of the bowl again (no need to use a floured surface this time), I then scale into individual pieces and form into balls. I lightly oil each dough ball and place into individual plastic food or bread bags, twist the open end into a pony tail to close and tuck the pony tail under the dough ball as I place it in the fridge to cold ferment overnight/24-hours +/- . Remove the bagged dough ball(s) about 60-90-minutes before I anticipate opening it/them into skins. To remove the dough ball from the bag just invert the bag over a floured surface allowing the dough ball to invert the bag as it falls from the bag, from this point on open the ball into a skin by your preferred method.

By the way, if plans should change and you will not be having pizza for dinner on the following day after making the dough, don't sweat it, the dough will remain good to use if left in the fridge for up to 48-hours, possibly more.

Tom Lehmann/The Dough Doctor  
4208

### [\*\*Dough Clinic / Re: How to tell when flour goes bad?\*\*](#)

Thanks for the easy on and off tip. Maybe it's time to think about retiring my metal cans. With the plastic buckets there wouldn't be an urgent need to use a plastic bag as a liner either. Just goes to show ya, you're never too old to learn something new! :)

Tom Lehmann/The Dough Doctor  
4207

### [\*\*Off-Topic Foods / Re: Garlic Oil\*\*](#)

Jon;  
That's an excellent article, short, concise and right to the point, and it pulls no punches. Because of the number of questions we get on infused oil (especially garlic infused) I think this would be a great reference for Peter to put into the references so we can refer the article to anyone down the road.

Tom Lehmann/The Dough Doctor  
4206

### [\*\*Dough Clinic / Re: How to tell when flour goes bad?\*\*](#)

JPB;  
Whole-wheat flour turns rancid so fast because it contains the germ oil of the wheat which is not very stable. In commercial bakeries we don't even buy it in bulk, instead we purchase it by the pallet to ensure rapid turn over. We consider the shelf life of whole-wheat flour to be not more than 2-weeks unless held under refrigeration or frozen. The reason why the bread that you made using the rancid flour didn't smell rancid is because the free fatty acids (responsible for the rancid aroma) are steam distillable so they are removed during the baking process (for the most part) BUT the resulting bread made with the rancid flour will develop rancidity at an accelerated rate after cooling severely limiting shelf life of the bread.

Tom Lehmann/The Dough Doctor  
4205

**General Pizza Making / Re: Pizza restaurants using "emergency-type" dough?**

Some of the problems associated with an emergency dough include:

Lack of crust flavor.

Need to make dough continually during the day.

May not exhibit the best properties when opening the dough balls into skins.

Variability with the dough which leads to variability of the finished crust (not acceptable in commercial practice).

Need to discard dough not just at the end of the day but periodically during the day. (think \$\$\$\$\$)

While emergency doughs "COULD" be used in the everyday operation of a pizzeria they are not intended for that purpose and really don't fare all that well in that application because it seems that you are always short of dough and waiting for it to mature to a point where it can be used (I'm sorry, but we're all out of dough at this time, would you mind calling back/coming back in an hour, our dough will be ready then) Hummm? Or the other side of the coin goes something like this: Boss! We have a boat load of dough that is ready for use and some of it is already over fermented but we don't have any customers in the store! What do you want me to do with all of that dough? Do you REALLY want to go there???

The most popular /common procedure used by pizzerias is to make the dough during down or slow time, scale and ball, cold ferment 24 or more hours before use. The stores can then work to a fixed inventory of their different size dough balls, meaning that they will not run out of dough if that proverbial Gray Hound Bus pulls up outside of their store at 4:00 p.m. Friday afternoon. Even the big box chains operate on dough made from their commissaries on a modification of this procedure. There was once a time (back in the 50's and early 60's) when we used to make a batch of dough in the early afternoon and allow it to ferment in the bowl until the store opened at 7:00 p.m. We would grab a handful of dough and cut it from the bulk piece, then run it through a sheeter cut it to size, dock, dress and bake. Scrap dough was tossed into a container to be used later if necessary, otherwise it was tossed in the trash. The problem with this method was that we frequently ran out of dough, that was then, when pizza wasn't as popular as it is today, and sales were not as high either. Just think of trying to run a pizzeria like that? Yes, it can be done, and it is done but you're better have something else going for you. I remember when we used to plan our trips to Pizza Hut so it coincided with the time when they usually ran out of deep-dish dough (early 80's). We'd order a large deep-dish pizza hoping that they didn't have any ready (proofed) to go yet. As a result they would offer us a medium and a small size which actually gave us more pizza than the single large size did....score another win for the Lehmann family!

By the way, I've only had one pizza that I couldn't learn to like...Lemmy's Pizza, here in Manhattan, KS. They would have had a better product if they had dressed a cardboard pizza circle and served it that way. Was it just me? Well, they were in business here for maybe two years.....you decide.

Tom Lehmann/The Dough Doctor  
4204

**Off-Topic Foods / Re: Garlic Oil**

Jon;

Where did you find it in four pages? :-D Most of the stuff that I have to wade

through reads more like a doctoral thesis, and then you need to read it over again just to harvest the gems of wisdom/knowledge contained there within. :( I'll say it again, that is by far, the best summary of the issue regarding infused oil I've yet seen. I wish we had it back when we were actively discussing infused oils a while back.

Again, thanks for finding it!

Tom Lehmann/The Dough Doctor  
4203

### **Off-Topic Foods / Re: Forgot the YEAST! What can I do with this Dough?**

Done it myself a number of times. Think of it like this: Without the yeast in the dough you are just letting the flour and ingredients hydrate, not much more, not much less. Toss the dough back into your mixer along with the yeast, if IDY just add it dry and mix for about 4-minutes or if using a high speed mixer or food processor suspend the IDY our any yeast for that matter in a small amount of water and mix just enough to incorporate the yeast suspension into the dough then begin managing your dough, be it for bread, rolls, or pizza crust by your normal procedure.

Tom Lehmann/The Dough Doctor  
4202

### **General Pizza Making / Re: Pizza restaurants using "emergency-type" dough?**

For a restaurant, it is not what I would call a working or "professional" "recipe" for the following reasons:

- 1) It is a recipe portioned more for home use than commercial use.
- 2) A mixer that small is hard to find in any commercial establishment let alone to mix dough. 12 or 20-quart mixers are about the smallest mixer you would ever find being used in a commercial setting but I've never been in a pizzeria where they were used for making dough except for some small specialty dough.
- 3) The procedure is totally wrong (too long and complex) for commercial use. Why would you be concerned about undissolved salt or sugar??
- 4) A million dollars in sales a year on this pizza? Maybe? Hey, people have bought worse! Using the mixer in question? Never.

Just something to keep in mind when thinking of an emergency dough: Emergency dough is a lot like a commercial frozen pizza dough. The formulas are actually quite similar, the only difference is in the final dough temperature. One is cold while the other is hot, and when it comes to fermentation neither has very much fermentation but the much warmer emergency dough will be ready to use soon after mixing while the frozen dough will need to go through a defrost period followed by a warming period before the yeast begins to actively ferment the dough so frozen dough while similarly formulated is not suitable as an "emergency" dough.

Tom Lehmann/The Dough Doctor  
4201

### **Dough Clinic / Re: gluten strands**

I've always done it on the counter top, I feel too constrained working in a bowl. Clean-up is never an issue for me as there is little to clean-up after the kneading process. The only time that I can remember ever kneading the dough in the bowl was when I used to make bread in our hunting camp. I didn't have a counter top to work on so I was forced to knead the dough in the bowl...can't remember ever getting any complaints on the finished bread. :chef:

Tom Lehmann/The Dough Doctor  
4200

**Dough Clinic / Re: gluten strands**

My yeast level for that process is 0.25% IDY.  
Tom Lehmann/The Dough Doctor  
4199

**Dough Clinic / Re: Wet dough is for high or low temp oven?**

Cassio;

It sounds like you are baking on a stone. In a home oven where the temperature will be around 500F/260C you can use a low absorption dough (45 to 55%) or an intermediate absorption dough (58 to 63%) or a high absorption dough (65 to 72%) without much of an issue. Dough absorptions above 73% are best when baked at higher temperatures (650F/343C) and above.

I wouldn't worry about the crust/pizza drying out too much in your home oven, that's what you are looking for as it will provide for a nice, crispy crust under your pizza...unless you want to have a soft, limp pizza?

Note:

The above is based on the premise that you will be baking directly on a single piece of stone.

Also, keep in mind that all flours are not the same, so dough made with your flour might have a vastly different texture than a dough made with one of our flours at the same dough absorption. As a rule, if your flour has at least 12% protein content the above numbers should apply.

Tom Lehmann/The Dough Doctor  
4198

**New York Style / Re: Too much gas??**

Josh;

Exactly what do you mean by "degas it"? Degassing the dough is different from flattening it as a part of the dough being opened into a pizza skin. If you are pounding the dough out or otherwise working the dough to degas it this might be your problem too. A very easy way for a novice to open the dough ball into a skin is to allow the dough to temper AT room temperature until it reaches 50 to 55F, and then using a rolling pin or pastry pin roll the dough out to about 2-inches LESS in diameter than what you want the finished size to be, finish opening the dough to full size by hand. This is a very easy method to learn and it helps you to learn how to open a dough quite well.

Tom Lehmann/The Dough Doctor  
4197

**Dough Clinic / Re: Wet dough is for high or low temp oven?**

Then you will be baking on a stone or composite deck and the only limitation on dough absorption will be your ability to handle the dough (like peeling it into the oven).

If the dough absorption is too high and the oven temperature is too low the dressed portion of the dough will rise in the oven (oven spring) but then collapse before the structure can set. If the baking temperature is sufficiently hot the dough will rise and set before it can collapse making for a lighter, less dense crumb structure.

Tom Lehmann/The Dough Doctor  
4196

## [\*\*Cracker Style / Re: Cracker Crust - stone vs cutter pan?\*\*](#)

A cutter pan without question, but with some type of decking under it.

Tom Lehmann/The Dough Doctor

4195

## [\*\*Cracker Style / Re: Cracker Crust - stone vs cutter pan?\*\*](#)

A solid bottom cutter pan is used. Get a dark colored (anodized aluminum) one if you can, if you can't be sure to season it prior to use.

Tom Lehmann/The Dough Doctor

4194

## [\*\*General Pizza Making / Re: I have tons of leftover grape tomatoes; any good sauce recipes I can use?\*\*](#)

I split them in half leaving a hinge of skin between the two halves and dry them, then package into zip-Lock bags and store in the freezer. I then use them just as you would sun dried tomatoes.

Tom Lehmann/The Dough Doctor

4193

## [\*\*Dough Clinic / Re: From fresh to frozen\*\*](#)

Teresa;

Before I can answer your question I really need to have more information from you.

1) Where will you be marketing/selling the pizza from (your store or another location)?

2) Will there be any meat toppings on the pizza?

3) Thin crust, thick crust, deep-dish?

4) How many pizzas are we looking at making and selling per week?

5) What kind of frozen shelf life are you anticipating getting? What is the minimum acceptable frozen shelf life?

With the answers to these questions I can get you pointed in the right direction.

Tom Lehmann/The Dough Doctor

4192

## [\*\*Dough Clinic / Re: multi-day fermentation vs. same day\*\*](#)

I'm afraid it doesn't work that way. There are different acids and different amounts of the acids produced during cold and room temperature fermentation which account for a big piece of the flavor picture between cold and room temperature fermentation. Doubling the yeast does not double the yeast activity. Since you have more yeast producing acids when you've doubled/increased the yeast the rate of fermentation will accelerate. This is why some people say that the dough "just got away from them" and fermented way too fast. Additionally, temperature is a main driver of fermentation so now that you have more yeast cells working for you any slight variation in finished dough temperature can result in erratic fermentation.

Above all else you have to keep in mind that yeast is a micro organism and it responds to temperatures just as other microbes do, that is a slight difference in temperature at the lower temperature ranges (40 to 50F) will have only a small impact upon the rate of fermentation but at the higher temperatures (80 to 90F) that same magnitude of temperature change will have a significant impact upon the rate of fermentation.

Tom Lehmann/The Dough Doctor

4191

## [\*\*Dough Clinic / Re: multi-day fermentation vs. same day\*\*](#)

The thing that would need to be controlled are:

Amount of yeast.

Dough temperature.

Dough size/mass (larger doughs heat up more due to heat of metabolism than smaller doughs).

Dough weight as it relates to cooling rate.

Fermentation time.

Type of container the dough is fermented in (aluminum with high heat conductivity will impact fermentation differently than plastic with lower heat conductivity).

Temperature of the environment where the dough is fermenting.

Dough formulation can/will impact the fermentation rate.

These are just the things that immediately come to mind, I'm sure there are more.

Tom Lehmann/The Dough Doctor

4190

## [\*\*Dough Clinic / Re: Re-Balling for Oven Spring?\*\*](#)

It's hard to say without knowing more details of how you are managing your dough. If you are using a multi-day ferment, the answer might be yes if the dough is getting somewhat over fermented, but if you're using a same day or 24-hour dough it might just tighten the dough resulting in a different shaped edge. If your dough has not yet had the absorption optimized for baking on a screen, just increasing the dough absorption might do the trick, and then there is the old edge forming, manipulating the dough during the opening process to leave a little more dough out on the edge could also work....it all depends.

Tom Lehmann/The Dough Doctor

4189

## [\*\*Dough Clinic / Re: Re-Balling for Oven Spring?\*\*](#)

Lifted74;

Your dough formula looks good so I don't think changes are necessary. After mixing the dough temperature should be between 75 and 80F, since I don't know how you are managing the dough I'll suggest taking the dough to the counter and scaling it into desired weight pieces, then forming into balls and lightly oiling the dough balls, drop the dough balls into individual plastic bags, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it into the fridge to ferment for 24 to 48-hours. To use the dough, remove from the fridge and allow it to warm to 50F at room temperature, then open the bag and invert it over a bowl of dusting flour or over a well dusted space on your counter top. As the dough ball falls from the bag it will invert the bag as it falls free. You are now ready to begin opening the dough by your preferred method. The dimension of the raised edge is greatly controlled by how you manipulate the dough during the opening process. Keep in mind though as was stated earlier that you will never achieve the same edge results baking on a screen as you do when baking on the oven deck due to the much slower heat transfer when using a screen, but to some extent you can get a higher and slightly more open crumb structure on the edge by carefully keeping your fingers back/away from the edge of the dough piece as you're opening it.

If you can provide some pictures of your efforts they would be helpful in allowing us to guide you to any changes needed.

Tom Lehmann/The Dough Doctor

4188

## [\*\*Pizza News / Re: Burger-Flipping Robot Could Mean The End Of Teen Employment\*\*](#)

We have had robotics in the food/baking industry for a good many years now and the number of them being used seems to be growing every year. I can speak first hand about a large bakery in Indiana that has their ENTIRE packaging area occupied by not a single human, it's all robotics. Even in the box store pizzeria commissaries robotics is commonly used to place dough balls into the plastic dough boxes, large commercial freezers are commonly operated by robotics. There really isn't much in the food industry that can't be done by robotics if the volume is great enough, just look at what has happened in the auto assembly industry with robotics. Robotics are now becoming much more miniaturized allowing even greater application in areas where we never considered it just a few years ago. I look at it like this, so, right now we think that a pizza made entirely by robotics isn't as good as one made by "Guido" in his pizzeria, that's true today, but what happens a few years down the road when the kids are exposed to and raised on pizzas manufactured using robotics? The bar will be set at a different level and to those individuals they may not be too bad, and in the mean time our friend Guido went out of business...for whatever reason. We don't have to like it, but it is a reality that we will need to face. Drone deliveries to our homes, driver less cars, computer screen menus and ordering are just the tip of the iceberg as they go hand in hand with the application of robotics in our everyday lives.

Tom Lehmann/The Dough Doctor  
4187

## [\*\*New Forum Members / Re: hello from Mi;½xico\*\*](#)

Welcome!

Can you tell us how hot your home oven will get? Also you have a stone for your oven? In a pinch un-glazed floor tile can be used as a pretty good hearth surface in a home oven if you don't already have something handy. As for the rest of the details on how to make N.Y. style pizza in your home oven, we're all here to help you enjoy some great pizzas right from your home kitchen. :)

Tom Lehmann/The Dough Doctor  
4186

## [\*\*Dough Clinic / Re: Sheeted dough management\*\*](#)

Mike;

Glad to hear of your success! :)

Once you see that you're not going to use the dough, either already opened or in the form of dough balls you can flatten the dough balls a bit by hand (no need to do anything with pre-opened skins) and place in the fridge/cooler for incorporation into your next batch of new dough. The amount to add should not exceed 15% of the total dough weight. This will be about 4 to 5-pounds for a dough based on 25-pounds of flour. Another great option is to open any dough balls into skins, or if you have thin crust skins already opened, stack them 5-high on a screen with a piece of parchment paper under each skin, wrap in a plastic bag or stretch wrap to prevent drying and store in the cooler overnight. On the following day, remove from the cooler as you need them (BUT NOT FOR MAKING PIZZAS) flatten the skins out a bit if necessary, brush with melted butter or butter oil, sprinkle with a cinnamon-sugar mixture (fill a shaker can about 1/2 full with cinnamon and 1/2 with granulated sugar, stir together to make uniform and sprinkle this over the buttered skin, dock the skin well and bake as you would your regular pizzas or a bit less (you will need to experiment with the baking time but temperature should be the same as you use for your pizzas) you want this to be baked to a very light brown color. As

soon as it comes out of the oven drizzle it with a simple powdered sugar-water icing and serve as a "thank you".

To make a powdered sugar-water icing just place about 16-ounces of powdered sugar in a bowl, add a VERY SMALL AMOUNT of warm water and stir, keep adding water VERY GRADUALLY until you get the icing to a very thick, just pourable consistency then transfer to a squeeze type condiment bottle for storage. No need to refrigerate as it keeps at room temperature for up to 3 or 4-days. If it gets cold it will thicken but all you need to do is to put it in a hot water bath for a few minutes to soften it up again. These are REALLY GOOD! They can be cut into wedges or party sliced for serving, or try cutting into strips and then cut the strips in half. I normally consider 1-skin to make two orders. If you want to "kick it up a notch" put some streusel topping on it before baking....now we're cookin'!!! :)

Tom Lehmann/The Dough Doctor  
4185

### **Dough Clinic / Re: Sheeted dough management**

Mike;

It is perfectly normal for an un-topped skin to pass through the threshold and turn into a "pita" during baking, unless it is baked as a par-baked crust using an oven temperature down around 400F.

If you want to make a par-baked crust for any reason just open the dough in your normal manner, dock it and apply about 1/2 of the normal portion of the sauce, then par-bake. When you make a pizza from the par-baked crust just add the remainder of sauce and dress to the order. Remember that a pizza made on a par-baked crust will bake faster than one baked on a raw skin.

I'm not exactly sure what you are asking in the second part of your question, could you please elaborate?

Tom Lehmann/The Dough Doctor  
4184

### **Dough Clinic / Re: What causes this?**

With such a small portion of the crust shown it is hard to say for sure, but from what I see it appears that the crust (par-baked) is not fully baked. Par-baked crust is fully baked to set the structure but not enough to create significant browning on it. If you can send me a couple more photos showing the entire top and bottom of the crust I might be able be a bit more specific.

Tom Lehmann/The Dough Doctor  
4183

### **Dough Clinic / Re: Dough not rising well after being in freezer (or fridge)...**

You bet!

Here is my dough formula:

Flour: 100%

Salt: 1.75%

Sugar: 2%

IDY: 0.375%

Oil: 2%

Water: 58% (75F)

Put water salt and sugar in water, no need to stir. Put IDY in just enough 95F water to make a slurry, stir and allow to hydrate for 10-minutes.

Add hydrated IDY slurry to the water, salt, sugar mixture, IMMEDIATELY add the flour and begin stirring as the mixture begins to cling together slowly add the oil

and continue working the dough until the oil is incorporated. You're done mixing. Allow the dough to rest for 15-minutes and then hand knead the dough a few times and scale to desired weight pieces and form each piece into a ball. Oil each dough ball and place into individual plastic food bags, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you now place it into the fridge. To use the dough on the following day, remove dough ball from fridge, allow to warm up until the dough reaches 60F, then turn the dough ball out of the bag allowing it to drop into a bowl of dusting flour, then begin opening the dough ball in your normal manner. The remainder of the dough balls can be kept refrigerated for up to 4-days. To use these dough balls, follow the same instructions BUT only allow the dough to warm to 50F before turning it out of the bag.

The dough balls can also be frozen but for not much more than maybe 10-days.

Tom Lehmann/The Dough Doctor

4182

### **Dough Clinic / Re: Fermentation Questions**

Alex;

Well, here goes. Mind you, these are my own personal views.

#1) There is a shift in the balance of acids produced between cold and warm fermentation temperatures which results in a flavor shift. In the end it is up to you to decide which flavor you want. Keep in mind that with warm fermentation there are also more changes to the gluten structure of the dough too which you will need to be aware of and address accordingly. Protease enzymes are the main culprit here as they are more active at the warmer temperatures.

#2) Yes, it adds another dimension of flavor to the crust.

#3) In the truest sense your dough size is not usually large enough to qualify as a bulk dough (bulk ferment). To achieve the benefits associated with bulk fermenting the dough you are going to need to have a minimum of at least 10-pounds of dough, 25 -pounds would be better. The benefits of bulk fermentation come from the heat of metabolism generated by the yeast during the bulk fermentation period. For many home pizza makers bulk fermentation is fermenting one, maybe two pounds of dough. That's a single dough ball in the world of fermentation so in my book it doesn't qualify as bulk fermentation...sorry.

#4) To me, this makes the least sense of all the methods. Why? Because when you RT ferment the dough becomes less dense and is a MUCH better insulator, then you ball it and put it into the fridge, good luck at cooling it down, and if you did manage to cool it down it will be hard/difficult/impossible to consistently replicate the cooling rate and amount of fermentation the dough actually receives because it is being cooled so slowly. Can it be done? Sure! Does it make good/great pizza?

Sure! Can you do it consistently? According to the people who contact me regularly the answer is no, and there lies the problem. Think of it this way, if the dough temperature is 5F different it may take a significantly longer or shorter time to get the rate of fermentation under control in the fridge, plus, don't forget that due to the heat of metabolism the dough is actually trying to warm up to the tune of about 1F per hour which makes cooling the dough just that much more difficult in a home refrigerator which is questionable at best when it comes to cooling dough.

#5) The benefit to balling the dough right after mixing is because at that point in time the dough is as dense as it is going to be (the denser the dough the easier it is to cool or freeze) because it conducts heat better than it would if it were allowed to ferment and become less dense). The fact that the dough can now be cooled more rapidly and consistently means that there is greater latitude to missing the desired finished dough temperature without causing a significant impact upon the rate of fermentation which controls the amount of fermentation the dough will receive in

any given period of time. This is also why one can hold the dough balls under refrigeration for a longer time when they are scaled, balled and placed into the cooler/fridge within 15 to 20-minutes after mixing.

As a student of the dough, you might want to see if your local library has a copy of Baking Science and Technology, by E.J. Pyler. This is an excellent resource book on all things related to baking. It was the "handbook" required by our Baking Science and Technology (BS&T) students when I worked at the American Institute of Baking (AIB). If your local library doesn't have it you can find it on Amazon, I stand to be corrected on this but I think the cost is about \$40.00 in hard cover.

Tom Lehmann/The Dough Doctor  
4181

### **Dough Clinic / Re: Low Diastatic Malt**

Actually I'm a fan of using malted flour for home baking but I'm not a big fan of adding it to the dough as an ingredient.

Tom Lehmann/The Dough Doctor  
4180

### **New Forum Members / Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above**

Actually, what you are describing is more of a thin crispy crust than a thin cracker type crust. To achieve the characteristics you have described I would begin my quest using any dough formula for a thin crispy or New York style crust and experiment with baking it at progressively higher temperatures. This will give you the bubbles you're looking for as well as the crispy bottom but it will retain a certain softness/chewiness. Wait! Didn't I just describe a New York style thin crust pizza? :) In any case, here's a dough formula that should get you started:

Flour: All Trumps 100%

Salt: 1.75%

IDY: 0.375% (variable depending upon your dough management procedure)

Oil: 2%

Sugar: 2%

Water: 60% (variable)

Tom Lehmann/The Dough Doctor

4179

### **New Forum Members / Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above**

A cracker type crust is made much like a long flake pie crust dough or a hand made biscuit dough meaning that it is just barely mixed resulting in a very "shaggy" dough (if you can call it "dough" at that point). Portion out what you will want to use for a single crust and by cupping your hands around the "dough" and a little patting, shape it into a puck, wrap in a piece of stretch wrap and ferment at room temperature for at least 6-hours or overnight in the fridge. That's the easy part, not get ready to "earn your stripes". If RT fermented, remove wrapping, flour the puck and using a pie/pastry pin (works better than a small rolling pin) begin rolling the puck to open it into a skin (about 8 to 9-ounces for a 12" skin). If the dough was CF, remove from the fridge and allow to warm to 60F then remove wrapper and begin opening using your pie/pastry pin. You will need to cut the skin to the desired diameter. This skin is opened 100% by sheeting. Use the pin correctly and DO NOT roll it off of the dough, instead roll it to the edge of the dough and change the direction. This is a lot of work, trust me, so just take your time. After the skin is

opened, dock it well and then place a cardboard circle or pizza screen over the dough and cut it to diameter.

Tom Lehmann/The Dough Doctor  
4178

**[Neapolitan Style / Re: A test using ConAgra Ultragrain for a Neapolitan bake](#)**

Con Agra's Ultra-grain is a whole wheat flour milled from select varieties of hard white wheat as opposed to hard red wheat which we are accustomed to seeing with whole-wheat flour. The U.G. flour is also milled to a smaller particle size than "regular" whole-wheat flour. Because it is milled from hard white wheat varieties the bran doesn't have the bitterness associated with the bran from hard red wheat varieties (the bitterness is due to the presence of tannin in the dark colored bran). The whole thrust behind this flour is to provide a more nutritious type of flour (as compared to white patent grade flours) due to its whole-wheat/whole-grain nature but without the objectionable flavor characteristics associated with whole-wheat flour. Due to the smaller bran particle size the dough also performs quite well for a whole-wheat flour. U.G. has been very successful in getting kids to eat baked products made with whole-wheat flour as it doesn't look too much different from white flour and the taste isn't all that bad either....many don't even know that they are eating a product made with whole-wheat flour. That's quite an accomplishment.

Tom Lehmann/The Dough Doctor

4177

**[Dough Clinic / Re: Sheeted dough management](#)**

Mike;

There are two answers to your question. Yes, you can pull already sheeted dough from the day before to use in making pizzas but then there is the "no" answer in that the sheeted dough from the day before will perform (rise) differently from dough that was just sheeted. If it were me, I'd just use it as add-back and incorporate it into my new/fresh dough.

Tom Lehmann/The Dough Doctor

4176

**[Dough Clinic / Re: Fermentation Questions](#)**

Peter;

Yep, done that myself any number of times. Just keep an eye on it so you don't end up freezing it. In a commercial setting you're better off just using it, maybe taking a day off of the refrigerated shelf life if it is too warm. The reason for this is because we have no idea of the rate of cooling, but one thing is for sure, it is faster than it is in the cooler. If we start making adjustments for missed dough temperature targets we are sending a message to the crew that it is OK if you miss the targeted finished dough temperature as you can just put the dough balls in the freezer for a period?? of time and all is good and nobody will be the wiser...it doesn't quite work that way, and then add in the probability that who ever was going to pull the dough out of the freezer got side tracked doing something else and the dough balls end up getting frozen. Just too many "what ifs" at the store level but perfectly OK at home.

Tom Lehmann/The Dough Doctor

4175

**[Newbie Topics / Re: Crust came out uneven](#)**

Without actually seeing what the pizza looks like it is difficult to say just what the problem might be but here are a few things to look at:

- 1) Dough Absorption too low (typically, 58 to 60% is a pretty good place to begin).
- 2) If you are opening the dough by hand you might want to try using a pie/pastry pin or rolling pin to get the dough shaped to the pan, then finish fitting the dough to the pan by hand.
- 3) Too much yeast in the dough formula.
- 4) Insufficient final proof time prior to par-baking.
- 5) Par-baking at too high of a temperature (400 to 425F) is a good starting point.
- 6) Try inverting the crust onto a pizza screen or cooling rack IMMEDIATELY upon depanning the crust. This will do wonders to flatten the top.
- 7) Over baking the crust. With par-baked crusts there is a very fine line between properly baked and over or under baked. If you see sunken or translucent spots in the finished crust after cooling this is an indication of insufficient baking.

Tom Lehmann/The Dough Doctor

4174

### [\*\*Dough Clinic / Re: Pizza shows horrible chewiness when cooled down\*\*](#)

The only type of crust that the characteristics which you have described are not common with is a thin, cracker type of crust. Some things that you can do that MIGHT minimize the toughening are as follows:

- 1) Do NOT place the pizza on a flat surface at any time, place it on a wire screen (pizza screen) or a cooling rack. If you need to place it on something for serving use a cardboard pizza circle, never metal, plastic or glass as this will worsen the problem by allowing moisture to be driven back into the crust resulting in toughness.
- 2) The toughness can be mitigated to some extent by increasing the fat content of the dough. An increase of up to 8% added fat can result in a more tender eating crust.
- 3) Always brush the dough skin very lightly with oil to create a moisture barrier between the sauce/toppings and the dough/crust prior to applying the sauce to the skin.
- 4) If you are using any semolina flour in the dough formulation delete it for a more tender crust after cooling.
- 5) Keep in mind that pizzas which are hot baked will always exhibit this issue more often than a pizza which is baked at a lower temperature for a longer time.

Tom Lehmann/The Dough Doctor

4173

### [\*\*Chitchat / Re: ServSafe and implications for home cooking\*\*](#)

Hey Nick;

You must be following the same guide as we are! We do EXACTLY THE SAME THING AS YOU DO! Spooky!!! :)

The only difference is that we pop the sponge in the microwave after each meal preparation and we use a cap full of bleach in our dish water.

We do all defrosting in a bowl of cold running water (just a trickle is all that's needed) or in the fridge as required. I've got a box of plastic gloves (not the latex kind) that I keep in the kitchen for those times when I'm making pizza using fish/seafood, and raw sausage.

Tom Lehmann/The Dough Doctor

4172

### [\*\*Dough Clinic / Re: What causes this?\*\*](#)

It still looks under baked to me. Are you using any oil or shortening in the pan? Is your pan dark colored? A Fish oven can have one of three different deck surfaces, open grid, composite, steel. Which deck surface do you have on your shelves?  
Tom Lehmann/The Dough Doctor  
4171

**[New Forum Members / Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above](#)**

If you feel adventuresome you might give this a try:  
Open a phyllo dough to the same diameter as your pizza skin. VERY LIGHTLY brush the phyllo dough with water, place the pizza skin on top of the phyllo dough and dock, lightly oil the pizza dough and dress then bake.  
We did work many years ago at AIB where we were looking at combining different doughs and dough formulations in this manner. We never tried phyllo dough but we did use puff pastry dough and got some interesting results. Some commercial pizzas are made in a similar manner, two different doughs are made and automatically layered one on top of the other, they are then docked (to lock them together) and sent on down the line to the finishing room where the skins are dressed using automated equipment.

Tom Lehmann/The Dough Doctor  
4170

**[Dough Clinic / Re: Anyone ever tried stretch and folds over multiple hours?](#)**

More gluten development resulted in a stronger dough which accounted for the "taller" dough balls and the improved gas retention of the dough resulted in the improved porosity. The greater resistance to opening (elasticity) was also due to the greater gluten development.

Tom Lehmann/The Dough Doctor  
4169

**[Dough Clinic / Re: too many bubbles in my stretched dough?](#)**

Your dough skin/pizza skin looks pretty good to me. If they (the bubbles) prove to be a problem, which I don't think they will, you can always run a dough docker around the portion of dough inside the raised edge.

Tom Lehmann/The Dough Doctor  
4168

**[Dough Clinic / Re: Difficult gassy dough](#)**

I agree that 83F is probably too warm for home baking considering that the dough will go into your home fridge, follow Parallei's advice and use colder water to achieve a finished dough temperature between 70 and 75F. The overly elastic characteristic is referred to as a "bucky" dough which is a sure sign characteristic of an over fermented dough.

Tom Lehmann/The Dough Doctor  
4167

**[Dough Clinic / Re: What causes this?](#)**

A dark colored pan will reflect heat away from it providing a somewhat poorer quality of bake to the crust in any given amount of time as compared to a dark colored pan. You might want to replace the pan with one having a dark colored anodized finish or you can also season the outside of your existing pan to achieve a darker color. You might also try using a little more oil in the pan too. The function of the oil is to breach any gaps between the dough and the bottom of the pan

during the baking process which helps the crust to bake better and in many cases also provides for a crispier finished crust.

Tom Lehmann/The Dough Doctor  
4166

### [\*\*Dough Clinic / Re: Fermentation Questions\*\*](#)

Joe;

I was referencing the rate of fermentation, not the actual dough consistency. The outer portion of the dough will cool to some extent during the refrigeration period (the core of the dough will be pretty much unchanged temperature wise) unless you're dealing with a pretty small dough. What you are seeing is the effect of a colder dough which is a stiffer dough and when we are dealing with high absorption doughs that added firmness due to the cooler temperature can make handling the dough much easier. You could probably achieve the same effect by placing the dough in the freezer for a short time prior to opening it.

Tom Lehmann/The Dough Doctor  
4165

### [\*\*Dough Clinic / Re: What causes this?\*\*](#)

Craig;

Aside from the obvious, the oil is used mostly to bridge any air gap between the dough and the pan surface where in that case the oil conducts heat much better than air which in turn results in a more evenly browned crust, additionally, if you have enough oil in the pan you can also achieve a fried effect upon the crust which increases the crispiness of the crust, but in this application oil works much better than shortening.

Tom Lehmann/The Dough Doctor  
4164

### [\*\*Dough Clinic / Re: No-knead Pizza Dough recipe calls for 8-24 counter rest. Need pizza in 5 hours\*\*](#)

And I'd suggest forgetting the honey unless you have some ulterior motive for adding it.

Tom Lehmann/The Dough Doctor  
4163

### [\*\*Dough Clinic / Re: Difficult gassy dough\*\*](#)

A "natural" starter will bring more of the lactic acid forming bacteria to the game than IDY so it will potentially give a softer, more relaxed dough as it becomes over fermented using a starter as opposed to IDY.

Tom Lehmann/The Dough Doctor  
4162

### [\*\*Newbie Topics / Re: Crust came out uneven\*\*](#)

The bottom of the crust looks like the dough could have used more mixing or fermentation to further relax the dough. The top would have flattened out much more if you had inverted the crust onto a cooling rack immediately after removing it from the oven #6 in my previous response.

Tom Lehmann/The Dough Doctor  
4161

### [\*\*Dough Clinic / Re: Difficult gassy dough\*\*](#)

A gassy, bubbly appearing dough is typically an indication of an over fermented

dough. When you try to open a dough ball into a skin with those characteristics present and it is overly elastic you know the dough is over fermented. If you were to allow the dough to continue fermenting it would eventually start to become extensible again but you would see the weakness in the dough as it would not stretch well (too extensible) and in all probability it would collapse under the weight of the topping ingredients unless baked in a very hot oven on the oven deck.  
Tom Lehmann/The Dough Doctor  
4160

### **Dough Clinic / Re: soft dough**

Two things jump out at me.

1) Use of A.T. and "00" flour which are significantly different flours.  
2) Failure to provide the quantity and temperature of the water in which the ADY is hydrated/activated in. Your directions seem to indicate that you are using all of your water to hydrate the yeast when in fact, only a small portion of the water is used to hydrate the yeast in (that water should be at a measured 100 to 105F) while the remainder of the water should be adjusted in temperature to provide a finished dough temperature off of the mixer at something between 70 and 75F. This temperature will be variable and could be as high as 85F depending upon your exact dough management procedure, environment, and dough formulation.  
Since you are indicating that your dough is soft but not dense enough I would guess that your dough absorption might be OK but your dough temperature is too high (hot) which will increase the rate of fermentation resulting in gassy, less dense dough.

I would also suggest that you move away from using a dough "recipe" based on volumetric portions to a "formula" based on ingredient weights. To do this you will need to have a low cost scale capable of weighing in gram weight units. This will provide you the scaling accuracy needed to achieve a consistent dough quality.

Tom Lehmann/The Dough Doctor

4159

### **Shop Talk / Re: Pizza boxes - innovative designs**

Nat;

I'm not sure that I fully understand your question of fitting a 20" pizza into a 10" box? Aside from folding or cutting it int quarters I'm not sure how in might be done. Could you please elaborate?

Tom Lehmann/The Dough Doctor

4158

### **Newbie Topics / Re: Newbie question about "pan" pizza.**

And, don't forget to use a dark colored pan and to put a pizza screen under the pan during baking to prevent excessive bottom color. Your baking temperature will probably fall between 450 and 500F.

Get yourself a deep-dish pan gripper and a flexible blade spatula to help get your pizza out of the pan after baking. Deep-dish pizzas are best cut using a rocker knife but if you don't have one a French/chef's knife will also work.

Tom Lehmann/The Dough Doctor

4157

### **Newbie Topics / Re: Pizzaiolo Training ?**

Are you planning to attend Pizza Expo next week? Great opportunity to rub shoulders with some of the worlds best. Tony G. will also be there too so it would be a good opportunity to actually talk to him about his class.

Tom Lehmann/The Dough Doctor  
4156

**Shop Talk / Re: Bringing a product to stores question**

Is it animal, vegetable or mineral?  
Cooked or not cooked?  
Frozen, refrigerated or RTU?

Making those little tables that go on top of the pizza to protect it from the box is one thing but a meat topping might be a totally different story so we really need more information.

I will offer this though, due to the Federal Food Security Laws very few people set up their own manufacturing plants anymore, most are manufactured under contract by some kind of co-packer.

Tom Lehmann/The Dough Doctor  
4155

**Shop Talk / Re: Bringing a product to stores question**

You might try Old World Spices and Seasonings in Kansas City or even Pizza Blends.

Tom Lehmann/The Dough Doctor  
4154

**Shop Talk / Re: Pizza boxes - innovative designs**

Aside from stacking four 10" pizza boxes one on top of another, I don't recall ever seeing a box with multiple shelves in it. I'm not even sure how it might be made.

Tom Lehmann/The Dough Doctor  
4153

**Chitchat / Re: Lehmann Way**

That's a first for me! I've never seen a road/street with the name "Lehmann" (even spelled with two n's) in it.

Thank you for sharing! :)

Tom Lehmann/The Dough Doctor  
4152

**Shop Talk / Re: Pizza boxes - innovative designs**

I've not seen that one here before but it is a very cool idea!

Tom Lehmann/The Dough Doctor  
4151

**Shop Talk / Re: Dough for cooking on screens in convection?**

If your oven id a dedicated oven just for baking pizzas, it sounds like it might be, I would suggest trying to wrap your hands around some oven decking material or in a pinch you can use commercial un-glazed floor tiles to create a solid baking deck to bake your pizzas on. I know you asked about using pizza screens so what I am proposing is baking your pizzas on the screen at 500F and then just as the pizza is finished baking, remove it from the screen to finish baking for about 30-seconds right on the deck surface. This will give you the best screen baked pizza possible if you are looking for crispiness.

To up the quality scale a little you might try drizzling a little EVOO over the top of the pizza immediately as it comes out of the oven, or at least brush the rim of the pizza with EVOO.

Tom Lehmann/The Dough Doctor

**Shop Talk / Re: Dough for cooking on screens in convection?**

Keep in mind that you're going to need a decent size mixer (how much dough/how many pizzas a day are we looking at making?), food bags (easier and lower cost than dough boxes) and refrigeration to store the dough in.

Dough Formula:

Flour: Pillsbury Bread flour will work well (available just about everywhere) 100%

Salt: 1.75%

Sugar: 2%

Oil: 2%

IDY: 0.4%

Water: 58% (variable) (70F)

Add water to mixing bowl, add salt and sugar, add flour and IDY, mix about 2-minutes at low speed, add the oil and mix 1-minutes at low speed, then mix 8-minutes at medium speed. Target finished dough temperature is 75F. Take dough DIRECTLY to the bench for scaling and balling, oil the dough balls and place into individual plastic food bags, twist open end to form pony tail and tuck it under the dough ball as you place it onto a sheet pan for storage in the cooler. Dough will be ready to use after 24-hours but it will be better after 36 to 48-hours. It will keep in the cooler for up to 3-days, maybe 4-days.

Remove dough from cooler, allow to warm TO 50 to 55F, invert the bag over a bowl of dusting flour allowing the dough ball to strip the bag inside out as it falls from the bag, open into skins by your preferred method, fit onto the screen, dress to the order.

Note: Add 1-ounce of shredded Parmesan cheese to the top of a 12-inch pizza for added dimension of the cheese flavor. If you are making 12-inch pizzas start out using 270-grams of dough for your dough balls then adjust accordingly to give you the crust thickness you're looking for.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

4149

**Dough Clinic / Re: Food Truck Dough Management System?**

I would apply my standard Dough Management Procedure but most food trucks are not going to have the space to accommodate it so I would begin with using individual food bags for the dough balls rather than dough boxes. If at all possible I would mix, scale bag and refrigerate the dough for 24 to 48-hours off site and load the cooler with dough balls on a daily basis or as needed. If possible, I would like to see the dough balls warm to 50F but again, that may not be possible in the confines of the food truck so I might be inclined to increase the dough absorption by about 2% over that which you would normally use and work with the dough directly out of the cooler/fridge. A couple of tools that you will want to have handy are a correct (flat tipped) dough docker and some kind of a bubble popper (a BBQ fork works well).

Tom Lehmann/The Dough Doctor

4148

**Chitchat / Re: Article: Effect of Music on Restaurant Business**

Speaking about music at a restaurant, several years ago my wife and I and two friends were in Topeka, Kansas and decided to stop at Red Lobster for lunch, we had been there previously so we knew their food was decent. We were seated but

soon discovered that we could not carry on a conversation due to the loud music and besides, it was "head banger" stuff so I personally was not overly impressed by their selection of music to dine by. At one point I asked if they could tone down the music a bit so we could have a conversation....no luck! Asked again when the food was delivered, again....no luck! We ate our meals and left, no dessert, no tip, except for my hand written complaint on our meal ticket about the type and volume of the music and their lack of response.

We have NEVER EATEN AT A RED LOBSTER SINCE THEN (that was about 7-years ago). As one would expect I was not very quiet about our less than ideal experience at Red Lobster and I found out from a good friend of mine in Topeka that they had implemented the type and volume of music to increase the table turns during the lunch hour, it seems that too many business people were coming in and occupying tables for what they thought was too long of a time. Go figure!!!

Tom Lehmann/The Dough Doctor

4147

### **Prep Equipment / Re: Got a mixer..Welbilt w20**

If you have not already done so, I'd suggest bolting the mixer to the cart. They have more than a tendency to walk off carts and bench tops.....I've seen it happen and it ain't pretty, and worse if someone tries to catch it. Also be VERY CAREFUL when moving it around, those mixers are all top heavy and it doesn't take much provocation to coax one into taking a dive off of a cart.

That's a good mixer, it should serve you well.

Tom Lehmann/The Dough Doctor

4146

### **Prep Equipment / Re: Got a mixer..Welbilt w20**

Just prior to me retiring we had a maintenance worker push a Hobart-A-200 mixer on a very similar cart as yours across the shop floor, one wheel dipped into the shallow recess in the floor where the floor drain was installed and over it went...Oops!

Tom Lehmann/The Dough Doctor

4145

### **Shop Talk / Re: Figuring capacity**

A Hobart A-200 (20-quart capacity mixer) is rated to mix 4 to 5-Kg (8.8 to 11-pounds) of pizza dough at 55% absorption. If you can share your dough absorption and scaling weight we can provide more in depth information.

Tom Lehmann/The Dough Doctor

4144

### **Shop Talk / Re: thin crust recipe for a conveyor oven**

Here is a pretty straight forward thin crust formula that has a proven track record in both deck and air impingement ovens. It can be baked on either pizza screens or power pans or right on the deck if using a deck oven.

Flour: 100% (flour with 11.5 to 12.5% protein content works best/this is considered to be a bread type flour)

Salt: 1.75%

Sugar: 2%

Yeast: IDY (0.375%) or ADY (0.5%) or CY (1%)

Water: 58% (65F/18C)

Oil: 2%

Add water to mixing bowl followed by salt and sugar, add flour and yeast, mix about 2-minutes in low speed, add the oil, mix 1-minute in low speed, then mix at medium speed for about 8-minutes or until the dough just takes on a smooth satiny appearance. Target finished dough temperature is 75 to 80F/24 to 27C.

Manage the dough by your normal dough management procedure or follow my Dough Management Procedure posted elsewhere on this web site. For scaling weight start at 9-ounces (255-grams) for a 12-inch diameter crust. As for baking time and temperature, as you did not provide specific information on your oven or the finger profile I can only provide a rough estimate as to time and temperature, set the temperature at 465F/240C and the time at 6-minutes for starters and adjust as necessary.

Note:

If you have access to a dough sheeter you can also make a thin crispy crust that is almost cracker like by reducing the dough absorption to something about 45% (this dough will be too stiff to open any other way except by using a sheeter), the dough can then be laid over a cutter pan and cut by rolling a rolling pin or pastry pin over the top of the pan allowing the trimmed dough to fall into the pan. The skin is then ready for docking and dressing to the order.

In all cases the pans or screens that you use will need to be well seasoned or dark in color to achieve a decent bake as well as to prevent the crust from sticking. You should also have a good docking wheel as thin crust skins usually need docking to control bubbling.

Tom Lehmann/The Dough Doctor  
4143

### **Shop Talk / Re: Helloo & Q on deck ovens!**

Mark;

Also look at the Dahlen ovens too as they're great electric ovens.

Sveba Dahlen <[www.sveba-dahlen.com](http://www.sveba-dahlen.com)>

Tom Lehmann/The Dough Doctor  
4142

### **Dough Clinic / Re: Thin crust**

Can you provide us with a bit more information on the type of thin crust you're looking for? Or if you don't know the type, what are the physical characteristics you're looking for in the crust?

Tom Lehmann/The Dough Doctor  
4141

### **Dough Clinic / Re: Thin crust**

Actually, you will probably get a crispier crust if you open the dough by hand or at least roll it out to something close to full diameter and then hand stretch it the rest of the way.

You are going to need a scale that will weigh in grams. These are available for around \$20.00 or a little less.

Flour: 100% (Pillsbury Bread flour) 500-grams.

Salt: 2% (10-grams)

Instant dry yeast/Bread Machine Yeast: 0.5% (2.5-grams)

Sugar: 2% (10-grams)

Oil: 2% (10-grams)

Water: 58%/70F (290-grams)

Procedure:

Put water in bowl, add salt and sugar, then add the flour and the yeast, mix until a dough begins to form, add the oil and continue mixing until the dough begins to take on a smooth appearance (I don't know if you will machine mix or hand mix). Check the temperature of the dough, you are looking for 75 to 80F. Scale the dough into 9-ounce pieces, form into balls, oil each dough ball, place into individual plastic bags (bread bags or food bags) don't use Zip Lok bags. Twist the open end of the bag to form a pony tail and tuck it under the dough ball as you now place it in the fridge. The dough will be ready to use after 24 or 48-hours (24-hours is the earliest but the crust will be better if allowed to remain in the fridge for 48-hours. To use the dough, remove from the fridge and allow to warm at room temperature until the dough reaches 50 to 55F, this will take about 90-minutes. Invert the bag over a bowl of flour allowing the dough ball to strip the bag inside out as it falls into the flour. Roll the dough around in the flour to ensure it is thoroughly floured, then begin opening the doug ball(s) into skins on a lightly floured counter top. These dough balls will make 12-inch pizzas. If you have a pizza or biscuit stone you can bake the pizzas directly on the stone (500F/allow oven to heat for at least 1-hour with the stone in a middle rack position). If you don't have a stone you can use a seasoned pizza screen or a dark colored (dark colored on the outside)shallow pizza pan. Very lightly oil the pan and fit the opened skin to the pan, dress with a about 3-ounces of sauce and 5 to 6-ounces of shredded mozzarella cheese, sprinkle with a little grated Parmesan cheese and bake until the bottom of the crust is nicely browned, drizzle on a little extra virgin olive oil as soon as the pizza comes out of the oven and enjoy. For herbs, use sliced or diced/crushed garlic and fresh basil leaves, or if you want, you can use the dried basil and oregano. If you don't have a pizza sauce you can use sliced fresh tomato (my personal favorite) or just buy a quality can of whole crushed tomato and use it just as it comes out of the can, you can experiment with the sauce later if you want to.

Tom Lehmann/The Dough Doctor  
4140

### **Shop Talk / Re: Figuring capacity**

I'd look into getting one of the smaller spiral design mixers. You can buy a new one for less than most used planetary mixers and you can mix doughs as little as 25% of the rated capacity, and they are about as close to bullet proof as you can get. We just recently had some good discussion on spiral mixers here just a few weeks ago. If you just gotta have a planetary mixer I'd suggest opting for a 40 or 60-quart capacity as this will give you room for growth and if you should want to sell it in the future you can sell a 60-quart mixer much easier than you can sell a smaller one.

Just my opinion.

Tom Lehmann/The Dough Doctor  
4139

### **New York Style / Re: Okay to Use Parchment?**

Sure, parchment paper works fine, a lot of folks use it for two reasons, 1) Makes peeling the pizza into the oven a snap. 2) No mess in the oven.

Tom Lehmann/The Dough Doctor  
4138

### **Dough Clinic / Re: Tony's master recipe w/starter and some questions**

DB1:

If you are getting too much color in your deck oven this might be an indication of too much sugar (malt) in the dough formula. What temperature are you baking at?

Have you confirmed the baking temperature of the oven deck using an infrared thermometer?

The key to getting that VERY OPEN crumb structure is a high absorption dough and a hot oven. However, you made mention of putting the pizzas in a box for DELCO, and that presents a bit of a problem since the very actions needed to achieve the sought after crust characteristics are in opposition to what it takes to improve the DELCO characteristics of a pizza. A long slow bake will provide the best DELCO characteristics, not a fast hot bake, truth be known, the air impingement ovens are the best when it comes to making DELCO pizzas due to their excellent moisture management baking properties. If you need to improve the holding properties of your pizzas while in the box there isn't very much that can be done since steaming a pizza post bake has never resulted in anything good coming to the pizza. To make sure you are doing everything possible to help your pizza survive the "box" here are some of the more effective tools used in the industry right now.

- 1) Bake your pizzas as long as possible.
- 2) Do not try to achieve an overly thin crust.
- 3) Allow pizzas to steam-off for a few seconds prior to cutting and boxing.
- 4) Use ripple sheet, Dri-Pie, Pizza Savor mats under the pizza to hold it off of the box allowing the bottom of the pizza to breathe.
- 5) Use a heavier weight cardboard box to prevent steam from condensing on the inside of the box.
- 6) Make sure your boxes have steam vents built into them.
- 7) This sounds silly, but make sure those steam vents are being opened.

As an experiment you might want to try a dough with no added sugar in conjunction with a malted flour, this approach has allowed us to get the longest bake possible which contributes to achieving a crispier crust up front while at the same time ridding the pizza of some of the excess moisture from the top of the pizza. In my experience the pizzas which hold up best in a DELCO environment are the thin crispy or thin cracker types, this is why we see this type of pizza commonly used in the pizza buffet chain stores.

Tom Lehmann/The Dough Doctor

4137

### **Dough Clinic / Re: Tony's master recipe w/starter and some questions**

DB1;

Are you comparing granulated sugar (sucrose) to dry or liquid malt?

As for making the best pizza possible, I have to say this to you: That is not a decision for you to make, let your customers make that decision, they're the ones who will be paying for it. I don't say this to be mean or anything but it is a mistake that many operators make, especially new/newer operators. I've done blind preference testing many times and some times the results are rather surprising.

Tom Lehmann/The Dough Doctor

4136

### **Dough Clinic / Re: Dough handling problem...**

The amount of yeast used will have little if any impact since this is a temperature issue. I assume you are already using a thermometer and what you are saying is that it takes 2 to 4-hours for the dough to warm enough (50 to 55F) to be easily opened into skins for immediate use. Actually, 2 to 2.5-hours is about an average time for the dough to warm to this temperature so you're not too far off base where you're presently at, so let's approach it from the stand point of "how can I use my

dough right out of the cooler?" The easiest way is to simply increase the dough absorption to a point where the dough can be opened with only normal effort right out of the cooler, and then all you need to do is to allow the opened skin rest in a warm area (on a heated shelf is perfect) for just a couple of minutes. Once you have the dough opened into a skin it will warm very rapidly. Just keep in mind that now you will be locked into using the dough right out of the cooler. This is how we do it in shops with a very limited space or in pizza trailers.

Tom Lehmann/The Dough Doctor

4135

### **General Pizza Making / Re: Getting the Crust Right?**

Duke;

I do it every so often and what I do is to place one pizza two rack positions down from the uppermost position and the other pizza one position up from the lowest rack position and then as indicated, I swap the position of the pizzas about half way through the baking process. They're not exactly the same but they're close enough for table fare. If you should find that one pizza needs a touch more time than the other, move it to the upper position and allow to continue baking while you're serving up the first pizza, this is usually enough time to finish that second pizza.

Tom Lehmann/The Dough Doctor

4134

### **New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

The whole idea is to get the entire outside surface of the dough ball floured, as you pluck it out of the flour most of it will fall off, if it doesn't just pat it a couple of times and the rest will fall off, then as you open the dough ball into a skin any excess flour that might still be adhering to the dough will come off, you could accomplish the same thing by very carefully sprinkling flour onto the dough ball but this is a LOT FASTER and it looks a lot more professional too.

Tom Lehmann/The Dough Doctor

4133

### **Dough Clinic / Re: Dough handling problem...**

After increasing the absorption the dough will exhibit more oven spring when placed in the oven to bake which will probably mitigate what you have seen when trying to bake the colder dough which you presently have.

But if you insist, and want to go with the added expense, a great proofer is the Econo Proofer from Belshaw Brothers, in Washington State. <[www.belshaw.com](http://www.belshaw.com)> This proofer is different from others in that it has multiple doors rather than one full length door. This feature prevents the proofer from significant temperature and humidity changes due to opening the door. The foot print is about 32 X 38-inches, about 6' tall and 110V. and it's on wheels so it's pretty handy to use.

Tom Lehmann/The Dough Doctor

4132

### **New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

My dusting flour is the same as I use for my peel dust, equal parts of fine corn meal, semolina flour and regular flour. Never had a problem with it. The only thing that sticks is what needs to stick, the rest just falls right off as I'm opening the dough ball (I use the bench stretch method for opening the dough as it is less messy in the kitchen, but when working in a pizzeria I like to hand toss).

Tom Lehmann/The Dough Doctor  
4131

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

I might also add that if you cold proof the dough in a container that was not left open and allowed to breather for the first couple of hours in the fridge, or plastic bagged the dough ball may be quite wet when you open the container, if that's the case I'd suggest letting the dough dry out a bit before turning it out into the dusting/bench flour or it will pick up flour like a wet sponge and it won't come off either.

Tom Lehmann/The Dough Doctor  
4130

**Dough Clinic / Re: What are parameters that promote gluten relaxation or overly soft dough?**

Blue eyes;

You are absolutely correct, all of which you mentioned will contribute to a soft dough...in addition to the increased dough absorption.

High absorption doughs are not usually handled like a "normal" absorption dough, instead they are handled using a plastic scraper, they are then folded and stretched (call it kneading if you wish) a couple of times prior to opening into a skin. As was mentioned, this folding and shaping of the dough (re-ball) has a strengthening effect upon the dough. If you find that your dough is not rising it might be a case where the yeast is depleted due to excessive fermentation, or if you see yeast activity in the dough but not as much as expected/desired you might need to add more yeast to the dough.

Tom Lehmann/The Dough Doctor

By the way, Pizza Expo this year was one of the best ever! Biggest news is from the yeast manufacturers. There are two new yeasts in the offing for the baking/pizza industry. One is a yeast that does not ferment maltose (this means that you can control the amount of fermentation by adjusting the amount of sugar (like sucrose) that you add to the dough. The other is a yeast that STOPS fermenting, not just slows in fermentation rate, but STOPS at temperatures below 45F. This is a bombshell! It might rewrite (I'm already planning to do it) dough management as we know it. Just think, you could have a dough last for weeks, not days in the cooler, and then when you take it out and allow it to warm back up again to above 45F the yeast resumes fermenting again!!! Pretty COOL! I've been asked to do some research on this so I hope to be able to report in greater detail early this summer.

Tom Lehmann/The Dough Doctor  
4129

**Dough Clinic / Re: Help with my dough!!**

I'm wondering if you're not possibly trying to compare apples to oranges here. The dough that you almost always see being used in a "professional" shop is quite different from the one that you are using. The dough absorption is optimized to give decent handling properties and oven spring while also being capable of retaining its shape in the dough boxes. This is important for two reasons to the pizzeria. 1) It allows for a higher dough ball count in each dough box. 2) It prevents the dough balls from touching in the dough box which can result in misshapen dough balls as well as difficulty in removing the dough balls for the box. The cell

structure that you see on the bottom of your dough pieces is entirely normal for any dough. As for oiling the bottom of the trays, this is something that we really don't recommend in a pizzeria since it adds to the lateral spread of the dough balls and it also allows the dough balls to skate around in the dough box so if the box is ever tipped in handling (that could never happen....right? :) ) all of the dough balls are found huddled at one end of the box when opened for use. Oops! At home it's OK but you still get the spread of the dough balls. How do you get the dough out of the box without oil? A plastic scraper is used to remove each dough ball, and because of the lower absorption (than what you are using) the dough ball retains its shape while being scooped out of the box.

As for the bubbles, the dough looks to be very dense to me, for whatever reason, and any gas that is formed has to go someplace and since the gas is buoyant in the dough it rises upwards where you see it collected under the uppermost skin on the dough as a large bubble.

In the end, the proof of the pudding is in the eating, did the dough perform well in making pizza? Tony's procedure is based on what is called a remixed straight dough procedure where the dough is mixed, fermented, remixed, panned, proofed in the pan, dressed and baked, so unless you are seeing bubbles like this forming on the dough as it is proofing in the pan I wouldn't be concerned about it.

Tom Lehmann/The Dough Doctor

4128

### **Dough Clinic / Re: Help with my dough!!**

By dense I mean that the dough doesn't look "light and airy". In reading through the dough making procedure I thought I read where it said to place the dough back into the mixer at one point. Placing the dough back into the mixer after a fermentation period is what constitutes a remixed straight dough.

If you are looking for a dough formula more like that which is used by your local pizzeria try this one for starters:

Flour (Pillsbury Bread Flour) 100%

Salt: 1.75%

Sugar: 2% (variable) You can delete it if the wish.

Olive oil: 2%

IDY: 0.4%

Water: (65F) 58%

Put water in mixing bowl, add salt and sugar, add flour, add IDY and mix just until you don't see any dry flour, then add the oil and mix until the dough has a smooth, satiny appearance (better to error on under mixing than over mixing).

Check the temperature of the finished dough, you are looking for something around 75 to 80F.

Take the dough directly to the bench for scaling and balling.

Place dough balls into non-oiled dough trays, then wipe the top of the dough balls with a little oil (doesn't need to be olive oil).

Place OPEN trays of dough in the fridge for 3-hours, then cover to prevent drying. An alternate method is to completely oil each dough ball and place into individual plastic food bags (recycled bread bags work well too (DO NOT use Ziplok bags)).

Twist the open end of the bag into a pony tail and tuck it under the dough ball as you place it into the fridge.

Dough will be ready to use after 24-hours but is best after 48-hours, will keep in the fridge for 3 or more days.

To use boxed dough, remove from fridge about 2-hours prior to use to allow the dough to warm to 50 to 55F, remove dough from box using a hard plastic scraper,

place in some dusting flour and open into skins by your preferred method. If using individual plastic bags remove from the fridge about 90-minutes prior to use (again check the dough temperature as you are looking for 50 to 55F so the time may vary).

Invert the bag over a floured surface or bowl of dusting flour allowing the dough ball to invert the bag as it falls out, pat off excess dusting flour and begin opening the dough ball into a skin.

Need help converting from bakers percent to weight measures? We have resources to help with that here too.

Tom Lehmann/The Dough Doctor  
4127

### **Neapolitan Style / Re: "Emergency" nearly-politan dough?**

With regard to yeast level the rule for an emergency dough is to double your normal amount of yeast. As for finished dough temperature, increase it by 10F. and you should be ready to roll in about 3 to 4-hours.

Tom Lehmann/The Dough Doctor  
4126

### **Cracker Style / Re: Cracker Crust - stone vs cutter pan?**

Actually, there is no reason why you can't bake a pizza in a pan or on a disk in an oven with broken stones, it's when you try to bake a pizza DIRECTLY on the deck with a damaged deck that the real fun begins as the dough can stick in the cracks or those same cracks will impede the ability of your peel to get under the crust to spin, move or remove the pizza from the oven. I once had a Bakers Pride deck oven with a crack right across the middle of the stone (composite decking material) it was always a pain as the peel would constantly get hung up on it so one fine day I took a hand held grinder and flattened the crack out by grinding off the high side of the crack, problem solved and we never had any problems with it after that.

Tom Lehmann/The Dough Doctor  
4125

### **Dough Clinic / Re: Help with my dough!!**

Does Tony G. have any restaurants/pizzerias in Toronto? :)

Tom Lehmann/The Dough Doctor  
4124

### **Cracker Style / Re: Cracker Crust - stone vs cutter pan?**

Once I ground the crack down so both sides were even we could bake right on the deck or use screens without any difficulty.

Tom Lehmann/The Dough Doctor  
4123

### **Chitchat / Re: Possible contribution to the "Pizzeria Smell"**

Pizza boxes just like paper will absorb aromas from any environment in which they are stored. I'm betting that those boxes spent some time at a pizzeria before ending up at that warehouse. Many years ago, back when we used to use those things called pans and paper (they really did exist, you can look it up) I had one of my suppliers comment to me that he could actually smell my letters and that they smelled like pizza. Your clothes will do exactly the same thing, the dog wouldn't let me alone when I got home from the shop.

Tom Lehmann/The Dough Doctor  
4122

### **Sicilian Style / Re: How will this work...**

Fit the dough to the pan, allow it to proof for about 45-minutes, then go back to it again and make sure the dough is still fitting the pan, especially in the corners, if it isn't now's the time to push the dough back into the corners or where ever necessary to get a good pan fit. Allow the dough to proof for 60-to 75-minutes or longer (can's say for sure as I don't know your dough formulation, dough temperature or room temperature). After the dough has proofed, lightly brush with olive oil, scatter on some pieces of sliced fresh garlic, and a fresh basil leaves that have been rolled and sliced forming strips, apply sauce of your choosing or better yet, slices of fresh tomato, then add shredded mozzarella cheese and some shredded Parmesan cheese and bake at about 450F (500F at the very hottest). Should make one great pizza. :)

Tom Lehmann/The Dough Doctor  
4121

### **General Pizza Making / Re: Increased hydration without the slop**

Agreed, possibly a stronger flour (bread type flour with at least 12% protein content is suggested) and combined with an autolyse process might help. Dough temperature and dough management procedure are also important considerations, but the bottom line still remains, more water (higher dough absorption = softer dough) no getting around it.

Tom Lehmann/The Dough Doctor  
4120

### **General Pizza Making / Re: Edge Stretching**

If you open a skin only from the center you stand a greater probability of getting the center portion too thin and when you lay the skin flat there will almost always be wrinkles in the skin and since the skin is under a certain amount of tension there will usually be more shrinkage during baking than there would be if the edge was opened (stretched) too.

Tom Lehmann/The Dough Doctor  
4119

### **Sicilian Style / Re: How will this work...**

Sounds like you're on track to enjoying some good pizza today! Don't forget to let some of that shredded Parmesan fall onto the edge of the pizza too, the toasted Parmesan cheese will add both visual eye appeal as well as a great flavor to the crust portion.

Tom Lehmann/The Dough Doctor  
4118

### **Shop Talk / Re: Helloo & Q on deck ovens!**

We have done a number of studies looking at both gas and electric ovens in both deck and air impingement configurations. Due to the dry heat in the electric ovens the baking time will always be longer than in the gas counterpart, and it is absolutely correct that when a load is put on a deck oven the gas one will out perform its electric cousin. This is not true with the air impingement ovens as they are not load responsive by their design, they just take longer to bake the same pizza. As for deck thickness, pizzas are baked from the bottom up and a thicker deck typically holds more latent heat than a thinner deck so it doesn't cool off as rapidly, many times allowing multiple pizzas to be baked in the same approximate area on the deck before any change in bake is noticed. Thin decks are notorious for

cooling off quickly and for the most part, the electric elements just can't put enough heat back into the deck before you see a change in the bake. As for spinning or rotating the pizzas, I have never seen a deck oven with a door that did not require the pizzas to be spun or moved on the deck.

Tom Lehmann/The Dough Doctor  
4117

**Sicilian Style / Re: How will this work...**

Lookin' good! :) :) :).  
Tom Lehmann/The Dough Doctor  
4116

**Dough Clinic / Re: Questions on two ovens**

Considering the very limited specifications provided on the Italiforni oven I'm inclined to go with the B.P. oven. We had a double stack for use in our pizza seminar one year, they worked well for baking all of our pizzas but were not suited to the application at hand which was geared to commercial/pizzeria pizza production. Definitely go with the stone deck as opposed to the steel deck option. I might change my mind if there were more specifications on the Italiforni but for now, with the information at hand, this would be my choice. Keep in mind that both ovens are quite good and you probably wouldn't go wrong with either. It is interesting to note that the B.P. oven door opens upward so you could place it anywhere on a suitable counter top while the Italiforni oven (doesn't say) but appears to open downward so you would need to place it on some type of stand or on the front edge of a counter top.

Tom Lehmann/The Dough Doctor  
4115

**Sicilian Style / Re: How will this work...**

Ya got the makin's for your pizza, add some fresh tomato slices and cheese and pop that baby in the oven!

Tom Lehmann/The Dough Doctor  
4114

**Sicilian Style / Re: How will this work...**

The only problem that I can see is that I didn't get an invitation to the pizza party! Oh, I see, you wanted to eat it all by yourself...can't blame you, I'd have done the same thing! :).

Now that you have a good base line to work from you can experiment with par-baking the crust with only about 1/2 of the sauce, then add the rest of the sauce and dress to the order and place back into the oven to finish baking.

Can you make as good of a pizza at home as you can get at your local pizzeria? Without question!

If the gum line persists with your single baked pizza try increasing the yeast level just slightly, if that doesn't do the trick reduce the amount of sauce by 25%. I've written on this subject a number of times and all I can say is that there are a number of things which can cause a gum line and only when you discover the REAL cause and make the necessary correction will it completely go away.

Once again, GREAT PIZZA!

Tom Lehmann/The Dough Doctor  
4113

**Neapolitan Style / Re: "Emergency" nearly-politan dough?**

Not too shabby for an emergency dough.

Tom Lehmann/The Dough Doctor

4112

**Dough Clinic / Re: Wet Unworkable Dough**

No, I said "Once it's time to use the dough remove it from the fridge and allow it to warm to a minimum temperature of 50F".

This normally takes from 1.5 to as many as 3-hours depending upon the room temperature and size of the dough ball.

Tom Lehmann/The Dough Doctor

4111

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

The thing that makes rice flour such a good peel dust is that it is so S-L-O-W to hydrate. Did you ever try cooking the stuff?

Tom Lehmann/The Dough Doctor

4110

**Dough Clinic / Re: Fresh Yeast Recipe**

B.J.:

It is advised not to freeze compressed yeast (CY) as it is not intended to be frozen.

The freezing process will inflict damage to the yeast cells resulting in poor to inconsistent performance. Your best bet is to buy some instant dry yeast (IDY).

There are many formulas posted showing the use of IDY. You can get it at your local supermarket where it is marketed as bread machine yeast.

In a "Neo" type dough sugar is an optional ingredient. All it will do is to promote crust color development. As for salt, I'd suggest going with 1.75 to 2%.

Here is my formula:

Flour (All Trumps) or any strong bread type flour, (Pillsbury Bread Flour) from your local supermarket works well.

Salt: 1.75%

Sugar: (optional) 2%

IDY: 0.375%

Olive oil: 2%

Tom Lehmann/The Dough Doctor

4109

**Dough Clinic / Re: Fresh Yeast Recipe**

Typical use levels will be about 25% less, no need to pre-hydrate/activate, and longer shelf life (unopened packages have a 1-year shelf life), and greater/improved consistency in performance.

Tom Lehmann/The Dough Doctor

4108

**Dough Clinic / Re: Fresh Yeast Recipe**

I see that you are also using Caputo flour, unless you are baking your pizzas north of 750F most would generally agree that you're just wasting your money.

Tom Lehmann/The Dough Doctor

4107

**Dough Clinic / Re: dough management**

The 10-Cm height boxes should work well for your application.

Tom Lehmann/The Dough Doctor

4106

### **Off-Topic Foods / Re: Preferred method of storing bread**

There has been a huge amount of research done on "bread staling" and all of it shows that bread stales faster at temperatures between roughly 60F and 20F. If you are making croutons this is the temperature that you want to hold your bread at prior to cubing. If you don't mind eating stale bread and are only concerned with mold growth refrigeration or freezing of the bread is the way to go. Many restaurants buy par-baked dinner or hard rolls and finish them off just prior to serving. The par-baked rolls are actually fully baked but not to final color so they still stale under refrigerated conditions as well as during the freezing and thawing/slacking process but they are returned to a palatable condition again by the reheating process so as long as they are served hot or warm they aren't too awfully bad, but once they cool they are actually much worse than they were prior to the final baking. Does this sound familiar? Think last Thanksgiving when we all enjoyed the American Thanksgiving favorite, "brown and serve rolls", everyone takes one the first time they are passed around the table but no one ever asks for seconds so the dog gets what's left in the basket and even the dog doesn't eat them, instead he just bury's them in the back yard, probably the best place for them.

If you want to keep your bread the freshest possible, place it into a close fitting plastic bag and just keep it at room temperature or in a warm place in the 70 to 90F range. Since bread is essentially sterile with reference to mold, when it first comes out of the oven any mold that grown on the bread will be due to post baking contamination. To reduce the level of this contamination place the depanned loaf with a clean cotton towel over a cooling screen and then cover the loaf with another clean towel, when cooled to about 100 to 105F place into a clean plastic bag for storage. With reasonable care it will last for about 4-days before you see any mold growth. It takes about 4-days for mold spores to vegetate and it's in the vegetative state that we see the mold growing on the surface of the bread. Which brings up one last point, it is best to not slice the bread if you are planning to store it as the process of slicing the bread drags mold spores from the surface into the moist crumb portion which provides an even better growth conditions for the mold. Why doesn't store bought bread get moldy? Store bought/commercial bread is made with mold inhibiting agents such as calcium propionate or potassium sorbate as well as a final bread pH/acidity adjusted to 5.2 or lower. If you make a sourdough bread that is sufficiently acid/sour you might have noticed that it doesn't mold very fast at all, this is due to the acidity of the bread which by itself is a pretty good mold inhibitor. Raisin bread is another example of a bread that doesn't mold very rapidly, this is due to the high level of tartaric acid in the raisins which effectively inhibits mold growth. Raisin juice concentrate is occasionally used as a mold inhibiting agent in some types of breads because of this, but the color and flavor contribution of the RJC must be compatible with the flavor and color profile of the finished bread.

Tom Lehmann/The Dough Doctor

4105

### **Off-Topic Foods / Re: Preferred method of storing bread**

Bread staling is not a function of moisture loss, instead it is a function of retrogradation (crystallizing) of the wheat starch. Potato starch/flour has been used in the same way for over 100-years where the potatoes are peeled, cooked and

mashed and then added to the dough. The potato starch holds a tremendous amount of water and increases the moisture content of the baked bread too, additionally, unlike pre-gelatinizing a portion of the wheat starch, the potato starch set-up to form a much softer gel than wheat starch so in this manner it performs as a bread softener but not as an anti-staling agent. With bread staling there is a decided firming of the crumb structure, a loss of flavor and a change in mouth feel (mastication properties). Things which have a marginal impact upon bread staling are mono-diglycerides, DATEM, sodium stearoyl lactylate (SSL) but the greatest impact on bread staling has been accomplished through the addition of enzymatic anti-staling agents such as maltogenic enzyme preparations which hydrolyze starch over time to provide a softer bread out beyond 7-days. In the baking industry this is a key ingredient for ESL (extended shelf life) breads and rolls allowing commercially produced breads to have a shelf life of 10 to 14-days on average.

Tom Lehmann/The Dough Doctor

4104

### **Dough Clinic / Re: dough management**

Nope, procedure just says to take the dough directly from the mixer to the bench/counter top for scaling and balling, no additional handling required. Don't forget to cross-stack.

Tom Lehmann/The Dough Doctor

4103

### **New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

That's why we have oven rakes and brooms, to help remove debris and flour from the deck. Sometimes when a shop is really busy it's hard to take a minute to clean the deck, but as you observed, there is a price to pay.

Tom Lehmann/The Dough Doctor

4102

### **Neapolitan Style / Re: dough alternatives no flour**

Have you Googled "gluten free flour alternative" I know that there are a lot of them out there but I also know that in many cases rice flour is also included in the formulation so you might need to do a little questioning before you buy one.

Tom Lehmann/The Dough Doctor

4101

### **Neapolitan Style / Re: dough alternatives no flour**

I picked up some information on cauliflower crusts while at Pizza Expo. The ingredient statement looks like it might work for you. For more information contact <[www.cauliflower.net](http://www.cauliflower.net)> or <[foodservice@caulipower.net](mailto:foodservice@caulipower.net)>.

When going with a non wheat flour based crust forget about going for a type/style of crust just focus on finding a decent crust to put under the toppings.

Tom Lehmann/The Dough Doctor

4100

### **New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

JPB:

A short time ago I got to thinking about why I was raising so much discussion when I made mention of things that happen during bulk fermentation, then it hit me! What most on this board are referring to as bulk fermentation is in reality (to me at

least) almost the same as fermenting a dough ball. When my mind thinks "bulk" fermentation it is visualizing a minimum of 10-pounds of dough to as much as 1,000-pounds or more (now that's bulk fermentation) while most of us here are visualizing probably only a couple of pounds of dough at the most, to me that is essentially a single dough ball since the small size means that it responds to outside influences more like a single dough ball than a bulk dough mass. Now to answer your question, If you are bulk fermenting your dough in the cooler/fridge I think you will achieve more consistent dough performance by leaving the lid off for at least two hours. The reason for the more consistent performance has to do with the dough having a greater tolerance for variation in the finished/mixed dough temperature when the lid is off of the fermentation container for a period of time in the fridge. The length of time that the lid is left off of the container will need to be experimentally determined but as a rough guide if the finished dough temperature is in the 70 to 75F range the time will probably be between 1.5 and 2-hours and if the temperature is in the 80F range it will probably be in the 2.5 to 3-hour range. While there is no absolute when it comes to finished dough temperature most pizza and bread type doughs seem to perform best when the finished dough temperature is between 78 and 82F. As I've said before though, consistency is more important than the actual temperature itself. I'd rather have a dough come off of the mixer consistently at 73F than 73F one time and 80F the next time. You can change your dough management procedure to accommodate just about any finished dough temperature but you can't accommodate inconsistencies in temperature. By leaving the lid off of the fermentation container for a period of time in the cooler/fridge we have modified our dough management procedure to accommodate slight/minor changes/inconsistencies in the finished dough temperature, when faced with major inconsistencies in the finished dough temperature (more than 5F) you will have to accept the final outcome as it is since there isn't a whole lot that we can do to accommodate that kind of change. To be fair though, for some, they might not see all that much of a change or inconsistency in dough performance with extreme swings in finished dough temperature, the reason for this is attributed to one of two things, 1) They don't care about the change (pizza is pizza, as long as it tastes good I'm not too concerned). There is nothing wrong with this view, many home pizza makers have it, and once in a while I have it too. 2) Their dough management procedure might be such that it either doesn't show the effects of more or less fermentation or the finished pizza is of a type that isn't impacted very much by temperature/fermentation variations, examples of this might be a thin cracker or thin crispy type of crust.

Tom Lehmann/The Dough Doctor  
4099

### [\*\*Dough Clinic / Re: Avoid soggy and chewy dough due to hot bag\*\*](#)

What you are experiencing is completely normal for a pizza which has been placed in an insulated bag for 30-minutes.

Tom Lehmann/The Dough Doctor  
4098

### [\*\*Dough Ingredients / Re: The confusion surrounding the term "semolina"\*\*](#)

Rolls;

The good news though, is that here in the U.S. "semolina" refers to stream of coarse flour taken when milling durum wheat. While not as widely available there is also a "semolina" stream that can be removed when milling hard red or winter wheat varieties too, but the primary use for these for making pasta from "hard wheat" not durum wheat. The difference is primarily in color with the hard wheat

pasta being darker (somewhat gray) in color and the finished pasta is not as firm textured....not very appetizing for the purists but it is cheaper to buy as hard wheat is more readily available and at a lower cost. I used to work with the fellow who developed the method for extracting a semolina flour stream from conventional hard wheat mills.

Tom Lehmann/The Dough Doctor  
4097

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

JPB;

I should have added that whenever you leave the lid off in the fridge you should LIGHTLY oil the top of the dough to prevent any dry crust from forming (thanks for calling it to my attention), it might form a leathery crust but it won't be a dry one and that is what really matters. I have a soft bristle paint brush that I use occasionally to remove excess dusting flour when it exhibits a stubborn streak and doesn't want to fall off on its own. In pizzerias we use what is called a "bench brush" Same thing but in a horizontal format and passes muster by the food safety people.

You just want to make sure it has LONG,SOFT bristles so they just sweep over the dough removing excess dusting flour without digging into the dough.

Tom Lehmann/The Dough Doctor  
4096

**Off-Topic Foods / Re: Preferred method of storing bread**

Hummm? They'd make great bags for putting my dough ball it too. I'm going to have to pick up a few the next time we go shopping.

Thanks for the tip!

Tom Lehmann/The Dough Doctor  
4095

**Dough Clinic / Re: Avoid soggy and chewy dough due to hot bag**

Not unless you bake it on the delivery run. There have been any number of attempts to improve the present situation but to date all have failed.

There have been electrically heated bags which effectively allow for the delivery of a hotter soggy pizza. Then there are the heated disks (magnetic resonance is used to heat the disks) which are placed into a special pocket in the bag, again, a hotter soggy pizza. Heating is not the solution, instead the solution lies in a way to get the steam and moisture laden air AWAY from the pizza. I've said this before, and I'll say it again, WHY NOT

4094

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

Who's laughing at you now? :)

Spot on! That even beats my soft paint brush...Do you think Best Buy would have them?

Tom Lehmann/The Dough Doctor  
4093

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

That's better yet!

Next time I'm in town I'm going to stop in at D.T. and see if they have any.  
Tom Lehmann/The Dough Doctor  
4092

### **Dough Ingredients / Re: attempt to find the right flour**

Try to find a patent grade flour milled from hard red spring wheat having a protein content of approximately 12.5% and a falling number value of approximately 235. This should get you in the ball park.

Tom Lehmann/The Dough Doctor  
4091

### **Dough Ingredients / Re: attempt to find the right flour**

At 12.7% protein content I'm betting that it will work just fine. I don't put much, if any, faith in the Alveograph when it comes to hard wheat flours. Soft wheat flours yes, but not hard wheat flours.

Tom Lehmann/The Dough Doctor  
4090

### **Dough Clinic / Re: What is your doughball production rate?**

Brad;  
Sure do.

Since it is imperative that we get the dough from the mixer into the cooler within a 20-minute window of time we looked at the length of time it would take for two people to completely process (scale, ball, box, oil, and place in the cooler) a dough based on 50-pounds of flour (approximately 82.5-pounds of dough). We used a 12-ounce dough ball as an average scaling weight. We found that we could completely process the dough in an average time of 17-minutes resulting in an average processing rate of 110 dough balls in 17-minutes or roughly 6.5 dough balls per minute for the two of us. We also did this with a single person but we used the AM Dough Rounder and Catch Table to round the dough balls and we found that one person could accomplish the same thing in just 22-minutes using the dough rounder. We used to demonstrate both procedures to the students of our annual pizza seminar just to prove to them that it really can be done, mind you, this is not something that we did every day either, for the most part we only did it during the pizza seminar so we were not as "fine tuned" as we might have been if we did it regularly. In one of my sessions at Pizza Expo this year I discussed this very topic and how to do it. If you go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> I have some videos which show the dough rounding technique used. For scaling we just cut the bulk dough into strips trying to keep them uniform in dimension then the dough is cut into the lengths necessary to provide the correct weight (weight becomes a function of length). We made a game out of this with our students where they vied to see who could cut the greatest number of dough pieces weighing 12-ounces without the need to add or subtract dough from the cut piece. My personal best was 8-dough pieces and my average was between 4 and 5.

Tom Lehmann/The Dough Doctor  
4089

### **Dough Clinic / Re: Dough timing**

Fred;  
Assuming you are planning to make a thin crust pizza.  
I have no idea of your dough formula so here's mine.  
Flour: (strong bread flour) 100%  
Salt: 2%

IDY: 0.5%  
Sugar: 1%  
Oil: 2%  
Water: 62% (65F)

Use delayed oil mixing method if using a dough mixer.

Take the dough directly from mixer to scaling and balling. Oil the dough balls and place into individual plastic bags, twist the open end to form a pony tail and tuck it under the dough ball as you place it in the fridge.

Leave the dough in the fridge until you come home, remove the dough from the fridge immediately upon your arrival so it can begin to warm while you're getting things ready and allowing the oven to pre-heat. Turn the dough ball(s) out of the bag onto a floured surface, and begin opening the dough ball into a skin by your preferred method, dock the skin and dress to the order, bake and enjoy!

Tom Lehmann/The Dough Doctor  
4088

### **New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

Yes, just be sure to wipe the top of the dough with a little oil to prevent the formation of a crust. It may form a soft but pliable skin and that's fine (that's what the oil is supposed to do). This will add more consistence to your dough as it will not be as influenced by the room temperature which can/will vary.

Tom Lehmann/The Dough Doctor  
4087

### **Dough Clinic / Re: Dough timing**

The formula is given in bakers percent.

- 1) Decide how much flour you want to use (by weight).
- 2) Using your calculator: enter the flour weight then press "X" followed by the ingredient percent that you want the weight for, then press the "%" key and read the ingredient weight. The ingredient weight will be in the same weight units that the flour weight was expressed in.

EXAMPLE: You want to use 16-ounces of flour. What is the weight of the salt at 2%? 16 X 2 (press the "%" key) and read 0.32-ounce in the display window.

If you want to work this in grams: 454 X 2 (press the "%" key) and read 9.08-grams in the display window.

Do this for each ingredient and you have the weights for each ingredient.

Dough balls go in the "fridge".

Tom Lehmann/The Dough Doctor  
4086

### **Off-Topic Foods / Re: Preferred method of storing bread**

Peter;  
Ron Wirtz used to be our V.P. of Information Resource for a number of years at AIB.  
Small world.  
Tom Lehmann/The Dough Doctor  
4085

### **Off-Topic Foods / Re: Preferred method of storing bread**

Peter;  
Wow! That's a pretty dear price to pay for a book. In my opinion, Baking Science

and Technology by E.J. Pyler is as good/informative and a LOT cheaper to boot.  
Tom Lehmann/The Dough Doctor  
4084

### **Dough Clinic / Re: Dough timing**

Better find a way to get them covered or they'll get crusty. How about some Walmart bags? Cover the entire tray with a large plastic bag, ya gotta get'm covered.

Tom Lehmann/The Dough Doctor  
4083

### **Dough Clinic / Re: Avoid soggy and chewy dough due to hot bag**

I never finished my last response due to an errant key stroke.

Why not make a bag with a moisture controlling insert like Gore Tex, this material is silver colored on the side facing the heat and moisture so it will effectively reflect the heat back into the bag while allowing steam/moisture to escape from the bag. One of the issues we have to contend with is the fact that once a pizza drops below 140F it is no longer considered to be safe to eat so at that point in time the delivery is terminated. Research that we did a number of years ago indicates that a single boxed pizza in a common insulated bag is good for about 35-minutes before the temperature drops below 140F while two pizzas in a double bag are good for about 45-minutes so temperature isn't the issue, it's moisture.

An insulated bag is nothing more than a glorified sauna for the pizza as there is no provision for the steam to escape from the bag, and if you leave the bag open to ventilate it you also lose the heat so your delivery time is drastically reduced, this is where I've thought about the Gore Tex and its ability to ventilate steam/moisture while retaining heat...just one of my crazy thoughts.

Right now your best bet is to allow the pizza to steam off for a few seconds before cutting and boxing it, then use a plastic mat or ripple sheet under the pizza to hold it off of the bottom of the box allowing the bottom of the pizza to breathe a little. Use a heavy weight corrugated box to prevent the possibility of any condensation from forming in the box. Make sure the box has ventilation holes in it. Make sure the ventilation holes are opened when building the box, keep your insulated bag closed to retain heat unless you want to deliver a cold soggy pizza.

That's about the best you can hope for at the present time.

Tom Lehmann/The Dough Doctor  
4082

### **Dough Clinic / Re: What is your doughball production rate?**

How the dough ball is rounded can have a significant influence on how the dough retains its shape if you're using multiple dough balls in a dough box and it can also have an influence in how the dough ball opens into a skin, truth be known, if two different people were to round the same dough these differences will be present. When it comes to dough rounding the rule is to be CONSISTENT, CONSISTENT, CONSISTENT, and in this regard the dough rounders are as consistent or even more so than humans (hand rounding). This means that you don't want to have a mixed bag of dough balls that are both hand rounded and machine rounded. All machine or all hand is the recommended way to go for greatest dough consistency.

Tom Lehmann/The Dough Doctor  
4081

### **Dough Clinic / Re: Dough timing**

I agree with Hermit, nice looking tray of dough balls. Let us know how they work

for you and by all means show off your finished pizzas!

Tom Lehmann/The Dough Doctor

4080

### **Dough Clinic / Re: dough management**

The "magic" temperature range that you are looking for is between 36 and 40F/2.2 and 4.4C.

Anything warmer than 40F/4.4C will allow the dough to continue fermenting (at a very slow rate but still fermenting). Also, remember that it is not just the yeast that you are trying to slow down, it's also the accompanying enzymatic activity.

Tom Lehmann/The Dough Doctor

4079

### **Dough Clinic / Re: Dough timing**

Not bad looking at all!

Tom Lehmann/The Dough Doctor

4078

### **Dough Clinic / Re: Keeping fresh basil and rocket leaves**

In the fridge, be careful that you don't let it even think about getting down to 32F. I lost a bunch of it that was last summer so I set our fridge temperature a little higher. I just stuff it into a clean plastic bag and secure it with a twist tie and store in in the vegetable drawer. It keeps for several days.

Tom Lehmann/The Dough Doctor

4077

### **Dough Clinic / Re: Yeasty beastly question**

I see two potential issues here. 1) Your conversion from ADY to CY is incorrect, it should be only twice as much CY as ADY not three times, so this means that your yeast level is at least 33% greater than you figured. 2) You are covering the dough (lidding the containers) as soon as you put them into the reach in cooler which as you say, is not operating at its coldest as there is considerable use of the cooler during the night so what is happening is that you are protecting the dough from being cooled in an environment which is not at a temperature best suited to efficient/consistent cooling of the dough. Add to that the fact that you did not provide the critical finished dough temperature which if it varies by only 4F can/will have a dramatic affect upon the rate of fermentation. The doctor's orders are:

- 1) Adjust the yeast level as explained above.
- 2) If #1 above does not improve the situation leave the lid off of some of the containers for at least 3-hours and then apply the lids. Be sure to LIGHTLY oil the top of the dough for those containers which you will be leaving the lid off of. Let me know how the dough feels/looks in the morning.

Note:

You will most likely need to adjust the time that the containers are unlidded (cross-stacked) to find what time is correct for your specific set of conditions.

Tom Lehmann/The Dough Doctor

4076

### **Dough Clinic / Re: Freezing dough balls:**

For home freezing of your dough I think you will get the best end result by taking the dough directly from the mixer to the bench/counter top, scaling and balling, then setting the dough balls aside to relax for a few minutes (10 to 20-minutes)

Using a rolling pin flatten the dough balls into "pucks" about two inches or so in thickness, lightly oil the pucks and place on a cookies sheet (anything flat will do) and place into the freezer for about 3-hours, then remove from the freezer and place into individual plastic bags or wrap in stretch wrap and IMMEDIATELY place back into the freezer. The dough pucks will keep for up to 10 to 15-days in the freezer. To use the frozen pucks, remove from the freezer, unwrap and place into lightly oiled container (cover the container) to slack-out/thaw overnight in the fridge, then the dough has fully thawed bring the dough out of the fridge and allow to warm at room temperature until the dough reaches 65 to 70F, then place it back into the fridge to cold ferment for not more than 2-days, turn the dough out of the container onto a floured surface and open into skins by your preferred method. We have used this method for over 20-years with great success.

Tom Lehmann/The Dough Doctor  
4075

### **General Pizza Making / Re: Wood surface for preparing pizzas**

And then some!

It's by far the best surface I've ever made pizzas or bread on. The best way to periodically clean it is to use a metal blade bench scraper, be sure the blade is squared (sharpened perpendicular to the sides)and the ends are slightly rounded. NEVER SHARPEN WITH A TAPERED EDGE AS IT WILL DESTROY THE WOOD in short order. Hold the scraper at about a 40 to 45 degree angle and push it across the wood top, the squared edge of the blade will scrape off any material without gouging the wood surface (hence its name "bench scraper". Be sure to regularly reseal it with a generous coat of mineral oil and it will last forever.

Tom Lehmann/The Dough Doctor  
4074

### **Dough Clinic / Re: Freezing dough balls:**

Peter;

Just home. In a commercial frozen dough operation the procedure would be very similar with the exception that blast freezing (mechanical: -25 to -35F or cryogenic: -45 to -60F) would be employed and then the dough would be held in a storage freezer at -10 to -15F for up to 20-weeks. However, the slackening-out and cold fermentation part are the same. There was one commercial pizza chain (Pizza Magia) that used the process as I've described in my response BUT they only held the dough for a maximum of 10-days. Static freezing (0 to -15F) does not afford the luxury of a 20-week frozen shelf life.

Tom Lehmann/The Dough Doctor  
4073

### **Dough Clinic / Re: Forgot to put dough in the refrigerator--- is it ruined?**

If it were me, I'd develop a burning appetite for pizza, open the dough into a skin(s), dress it and bake it and enjoy it, them make a note to myself to remember to put the dough in the fridge the next time I make dough.

The problem is that the dough has already seen plenty of fermentation and putting it in the fridge will not stop the fermentation for quite some time so it will be fermented even more, thus ruining the dough if it has not already been ruined.

Who knows? You might really like it!

Tom Lehmann/The Dough Doctor  
4072

## [\*\*Shop Talk / Re: Finding eager Employees\*\*](#)

The problem is rampant here in Kansas too. What do you mean I will be expected to work for five days a week? I go out with my bro's three nights a week and that would interfere with my social life! Do you mean I've got to work to get paid??? What a rip-off! Mind you, we are looking for both line workers as well as managers.....nearly impossible to find these days. If you do find a good fit, don't ask about coming in to cover an absent employee (get paid time and a half) it ain't gonna happen. It will interfere with their "social" life.

When I was actively interviewing applicants for positions at AIB one of the most commonly asked questions was "How long will it be before I make Vice President? One even went so far as to query how long it would take for him to make President!!! Heck I was only hiring lab techs!

Go figure.

When I had my shop back in the 60's people used to come to me asking for a job that they could work at and get paid for, I fear those days are gone. :(

Tom Lehmann/The Dough Doctor  
4071

## [\*\*New Forum Members / Re: Looking to make the perfect pizza, always looking.\*\*](#)

Greg;

Welcome!

I hope you're planning to roll up your sleeves and start tossing some dusting flour around.

Remember, the best pizza dough recipe (formula) will be the one that produces the pizza that you like the most, so you will need to experiment with making dough from existing formulas as well as modifying those formulas to get exactly what you like but in the mean time be prepared to eat a lot of pizza, that's the excuse I have used for years and it has worked well for me :).

Tom Lehmann/The Dough Doctor  
4070

## [\*\*New Forum Members / Re: Pizza shop in Japan\*\*](#)

What can you tell us about your background? Any work history in food service? Do you have any prior pizza experience? Any idea at this time as to what kind/type of pizza(s) you might want to make? What can you tell us about the restaurant concept? Many of us here have or have had stores so you have a potential treasure trove of information available to you here. In addition to Pizzamaking.com there is also the PMQ (Pizza Marketing Quarterly) Think Tank and Recipe Bank at <[www.pmq.com](http://www.pmq.com)> where you can get assistance from other store operators/owners. PMQ also has a connection with China that might be of interest to you in finding supplies, they also have a presence in the American Pavilion in one of the larger food shows in China. Query Steve Green at PMQ about details on this show if you are so interested.

Welcome to Pizzamaking.com,  
Tom Lehmann/The Dough Doctor  
4069

## [\*\*Dough Clinic / Re: Freezing dough balls:\*\*](#)

Their procedure pretty much follows what we have used with the exception of putting the dough back into the cooler and expecting it to cool down and retard fermentation within a reasonable period of time. They might be working on the assumption that the added fermentation the dough receives after being placed

back into the cooler brings the total fermentation to some predetermined, desirable fermentation level, however, bringing the dough balls from the freezer, and allowing them to slack-out in the cooler and then placing them at room temperature until the dough balls double or triple in size would result in a dough that is in itself an excellent insulator which would greatly hinder cooling of the dough ball resulting in even more dough expansion....how many dough balls are placed into a dough box??? The original procedure that we developed calls for just leaving the dough balls out at room temperature until they reach 65 to 70F and then placing them back into the cooler where they will now expand to about double, or a little more by the time they are ready to use. Are you sure you got the "straight and skinny" on leaving them out of the cooler until they doubled to tripled? That just doesn't sound right to me.

Tom Lehmann/The Dough Doctor  
4068

#### **Dough Clinic / Re: Freezing dough balls:**

Freezing the dough is not done for convenience, instead it is done to extend the useful life of the dough from days to weeks or months as is the case with commercially frozen dough. There is a commercially frozen type of dough that is called pre-proofed frozen dough. This type of dough is different in that the product is fully formed, proofed and then frozen (think Freschetta frozen pizzas) but in order to make this type of frozen dough the product has to be frozen cryogenically at temperatures of -60F or lower. Even commercial mechanical blast freezing at -35F won't work in this application.

Tom Lehmann/The Dough Doctor  
4067

#### **Dough Clinic / Re: Need a low-rising dough**

Actually, what you are referring to is a "stuffed" pizza. Very common in Chicago and surrounding area. Edwardo's is the pizzeria that put it on the map as they were possibly one of the first pizzerias to really commercialize this type of pizza. That top crust is nothing more than the bottom crust sheeted very thin. After putting the top dough skin in place and crimping it to the inside of the pan (crimping it to the bottom dough) roll over the top of the pan with a rolling pin to crimp cut the excess dough away from the pan, then cut or tear a couple steam vents into the thin top skin and par-bake just until the top crust develops a sandy color, remove from the oven and apply toppings and place back into the oven to finish baking.

Tom Lehmann/The Dough Doctor  
4066

#### **Dough Clinic / Re: Avoid soggy and chewy dough due to hot bag**

They might work if you have enough of them and if they will absorb the moisture from the air before it can soften the crust (very questionable) as it doesn't take very long for the crust to soften.

Tom Lehmann/The Dough Doctor  
4065

#### **Shop Talk / Re: Garland Air Deck Oven**

I used one for a couple of years. Think of it as a manually operated air impingement oven. They will do anything any other air impingement oven will do with the added bonus of infinite control over baking time.

Like any other air impingement oven you will need to use some type of baking platform with this type of oven.

Tom Lehmann/The Dough Doctor  
4064

**[Dough Clinic / Re: Streching cheese effect after delivery](#)**

Do you have any kind of softer white cheese available to you? White cheddar cheese is commonly used to make mozzarella cheese softer. You might experiment with different types of cheese at a 50% replacement for the mozzarella. Once you find one that provides the desired softness you can adjust the substitution level as necessary to get the desired melt and stretch.

Tom Lehmann/The Dough Doctor  
4063

**[Dough Clinic / Re: Need a low-rising dough](#)**

I see how it differs from a Chicago stuffed pizza with the fully baked crust being added during the building of the pizza.

To control the rise of your dough I suggest two things that you can do. One is to reduce the yeast by 50% and the other is to reduce the amount of water being added to the dough. For this type of crust I'd suggest starting at 50% absorption and going up from there if necessary. I don't know how much 4-cups of YOUR flour weigh so I can't be any more specific. I stand to be corrected on this but if I remember correctly, 1-cup of flour??? weighs in at around 4.75-ounces so  $4.75 \times 4 = 19$ -ounces X 50% = 9.5-ounces.

Tom Lehmann/The Dough Doctor  
4062

**[Dough Ingredients / Re: Has anyone ever tried to make Neapolitan pizza in a WFO with any of the Bob Mill](#)**

In most cases you're going to find that the protein content is too low and they may have been milled from soft wheat varieties rather than hard wheat varieties so the gluten forming proteins will not be as strong either. My advice is to stay with a good bread quality flour.

Tom Lehmann/The Dough Doctor  
4061

**[Dough Ingredients / Re: The confusion surrounding the term "semolina"](#)**

The major difference between durum flour and regular, patent or straight grade wheat flours is in the gluten forming proteins. In durum flour the gluten that is formed has a very tight matrix and is not soft and extensible as wheat flour gluten. This is one of the reasons why pasta has its unique dough properties and retains them through the cooking process.

Tom Lehmann/The Dough Doctor  
4060

**[Stones/tiles/steel, Pans & Accessories / Re: baking steel in poland ?](#)**

A good pizza stone should work well for him but if a steel deck is in his future I'd see if I can get one cut at a local metal fabricator (welding shop). It would probably be cheaper than getting one shipped to him. As for thickness, I'd go for anything from 6.5mm on up to 12mm.

4059

**[Stones/tiles/steel, Pans & Accessories / Re: baking steel in poland ?](#)**

Mine is just plain old carbon steel (3/8-inch thick) that I got at our local welding shop. A piece of cast iron plate would be great but I've not come across any, pretty

hard to find, at least around here. Be sure to season it well to keep it from rusting.  
Tom Lehmann/The Dough Doctor  
4058

### [\*\*General Pizza Making / Re: Pastry style dough/Jioio's pizza\*\*](#)

Zorboz;

You say it's missing something, are you talking about the crust or the whole pizza?  
The \$64,000.00 question is..... what is it missing?

Tom Lehmann/The Dough Doctor  
4057

### [\*\*Forum Info / Re: Flour VWG protein calculator\*\*](#)

Just as a "general knowledge" for vital wheat gluten (VWG) for every 1% that you add to the flour you will increase the protein content of that flour by 0.6% and for each 1% VWG added you will need to increase the dough absorption by 1.75%.  
The easiest way to do the calculation is to ask yourself how much you want to increase the protein content of your flour by, then divide that number by 0.6, this will give you the percent (bakers percent) of VWG that will need to be added to give your flour the desired new protein level. Then multiply the percent gluten added by 1.75 to calculate how much additional water (increase in dough absorption) will be needed to compensate for the drying effect of the VWG.  
ALWAYS DRY BLEND THE VWG INTO THE FLOUR.

Tom Lehmann/The Dough Doctor  
4056

### [\*\*General Pizza Making / Re: Pastry style dough/Jioio's pizza\*\*](#)

Use the lightest colored honey you can find. The best one for your application would be "water white" the lightest grade of honey. It will provide all the sweetness but without the characteristic honey flavor. Lacking that, see if you can find high fructose corn syrup (HFCS) it is essentially the same thing but a LOT cheaper. I've found HFCS at our local supermarket from time to time. Sucrose (table sugar) has a sweetness rating of 100 while fructose has a relative sweetness rating of 110. You can get the same sweetness from sucrose as you can from honey or HFCS but you will need to use 10% more.

Tom Lehmann/The Dough Doctor  
4055

### [\*\*Off-Topic Foods / Re: Dehydrator\*\*](#)

We do LOTS of apples, peaches, tomatoes and venison jerky. We started years ago using the oven and then went on to a round one and then to one of the stacking types with square trays. Over time all have failed so a few years back we bit the bullet and bought a "commercial" one from Cabela's. We really flog it during apple harvest when making dried apple slices and again during deer season (I normally process one of my deer into jerky just to keep my sons and grand children well stocked. We really like the increased capacity and shorter drying time and so far it is holding up quite well.

Tom Lehmann/The Dough Doctor  
4054

### [\*\*Dough Clinic / Re: Single dough ball...\*\*](#)

In one word, no. The dough management procedure would still remain the same if you hope to get similar results. As for reducing your dough size to 1/3 of what it presently is, I can't say for sure as I don't know what the total dough weight is

right now, but if it's only around 16-ounces you had best have an accurate electronic scale that weighs to a fraction of a gram, or better yet, a laboratory balance or your scaling errors will make getting consistent results all but impossible.

Tom Lehmann/The Dough Doctor  
4053

**Dough Clinic / Re: Single dough ball...**

You can freeze the dough in your home freezer for 10 to 15-days without any problem. Make the dough and make a pizza from one of the dough balls, freeze the other two, the next week slack-out (thaw) one of the dough balls and make another pizza, then on the following week slack-out the third dough ball and make a pizza, now we've got you down to pizza one day a week rather than 3-days in a row :).

Tom Lehmann/The Dough Doctor  
4052

**Dough Clinic / Re: Using fresh yeast for the first time, have a question**

Kuhne;

The recommended/preferred method to add fresh yeast (compressed yeast) CY is to simply crumble it up and add it just as it is into the flour. Just don't let it come into direct contact with the salt or sugar. If you are hand mixing your dough you may find it easier to incorporate the CY by first suspending it in the dough water. No special precautions are necessary, just add the CY to the water and whisk until completely suspended then proceed in making your dough in your normal manner. Don't forget to use the correct conversion for CY from IDY (about 2.5 times as much CY as you were using IDY) or if you want to go from CY to IDY use 40% as much IDY as CY.

Tom Lehmann/The Dough Doctor  
4051

**American Style / Re: Why is this happening to the bottom of my Pan Pizza?**

Just for "smiles and grins" try using a rolling pin to open the dough just a little larger in diameter than your pan, then carefully place the dough into the pan. This might help with a dough that is rather gassy.

Tom Lehmann/The Dough Doctor  
4050

**Shop Talk / Re: Mixing large quantities by hand**

100 dough balls at what weight each?

The Hobart A-200 (20-quart) mixers are 110V. There might be a small spiral dough mixer around 25-quart capacity that would serve you better.

Tom Lehmann/The Dough Doctor  
4049

**Dough Clinic / Re: Non extensible dough problems**

Not enough fermentation time but could be exacerbated by a finished dough temperature that is too cold....what was your finished dough temperature? You IDY level is also quite high at 1.2% (a more typical level is 0.25 to 0.5%). Are you baking at 750+ F? If not you might try changing over to a strong bread type flour such as Pillsbury Bread Machine Flour, available from most supermarkets (this is especially true as you are not using any sugar in your dough formula. With a long RT fermentation period I would suggest adding 2% sugar to the formula to help support a vigorous fermentation rate.

Tom Lehmann/The Dough Doctor  
4048

**[Dough Clinic / Re: Non extensible dough problems](#)**

Your dough absorption is at 60%. How does the dough feel after mixing? Try to drop your baking temperature to around 800F. What oven are you using? What is your present baking time? If you can send a picture of the dough after mixing it might help us in assessing what the problem might be due to. If you are planning to use a short RT fermentation time such as 6-hours I would suggest increasing the finished dough temperature to something in the 80 to 85F range for a faster fermentation rate.

How are you adding the IDY to the dough? This can impact the fermentation rate too.

Tom Lehmann/The Dough Doctor  
4047

**[American Style / Re: Why is this happening to the bottom of my Pan Pizza?](#)**

Actually, butter flavored popcorn oil is different from other types of butter flavored oils. The butter flavoring is compounded to release at only slightly elevated temperature (like that of popcorn just after popping) and once released, it dissipates rapidly, this is why when you get to the bottom of the box the popped corn is wet and soggy but not buttery as it used to be. Why not just make your own? Buy some butter, allow it to set at room temperature for about 30-days, this will ripen the flavor (make it stronger) then melt the butter gently in a double boiler and add just enough of your preferred oil to retain the pour-able characteristics when it cools back down to refrigerated temperature, store at refrigerated temperature to prevent further flavor change, now you have made your own butter flavored oil. If you use shortening rather than butter there is no need to age the shortening and you only need to add enough oil to keep it liquid at room temperature, you've now made your own liquid bread shortening. Liquid bread shortening is stored at room temperature.

Tom Lehmann/The Dough Doctor  
4046

**[New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)**

My advice is to leave the lid off for the first two hours in the fridge and then leave it on for the duration of time in the fridge. Leave the lid on during the tempering period too, failure to do so can result in a crusted dough. I say oil the top of the dough ball when you place it in the cooler as this will prevent any crusting during the "cross-stack" period (un-lidded time in the fridge). The moisture dripping in the container is due to condensation collecting on the lid due to a warm dough and a cold container so the moisture released from the dough travels upwards to the lid which is cold and causes the moisture to condense out which you see as water in the container. Aside from making for a sticky dough it can also result in wet spots in the dough where the water vaporizes during baking resulting in bubbling of the dough. Excess dusting flour adhesion can also be a problem.

The main reason for leaving the lid off though is to allow for consistent cooling of the dough ball and minimize the affects of variations in finished dough temperature on the dough fermentation rate.

Tom Lehmann/The Dough Doctor  
4045

## [\*\*Shop Talk / Re: Mixing large quantities by hand\*\*](#)

Just make sure you get the reverse spiral dough arm with your Hobart mixer. You DO NOT want a "J" hook.

It looks like you will be mixing about 44-pounds of dough a day. How do you plan on fermenting it in such a tight space?

Tom Lehmann/The Dough Doctor  
4044

## [\*\*Dough Clinic / Re: Pizza Size\*\*](#)

Pre-bake. Different dough formulas, management procedures, forming technique/method, types/styles will all influence the amount of bake shrink a pizza exhibits. If we measured the diameter post bake everybody would be using a different size pan, screen, disk or hand forming to a different size all to make the same size pizza in the end. When calculating thickness factor/dough loading again we use pre-bake diameter.

Tom Lehmann/The Dough Doctor  
4043

## [\*\*Dough Clinic / Re: Non extensible dough problems\*\*](#)

I see a an extensively under mixed dough. I also don't see any starter in your dough formula? As you are machine mixing the dough I would suggest going with a longer mixing time to achieve more gluten development. Seldom can you follow a dough formula precisely step by step in a different environment and get the same end results. Even with mixers, you can easily see as much as a 10 to 15% variance in mixing time between two mixers of the same make and model. Also note that Craig mentions using 62.5% absorption which figures out at 312.5-grams for your 500-grams of flour weight. If you are using the same mixer as Craig is remember that dough development in any planetary mixer is influenced by the amount of dough in the mixing bowl. Then too, in Craig's formula he says not to use less than 2.5% salt (12.5-grams per 500-grams of flour weight).

I think mixing your dough a bit longer and allowing it to rest at room temperature for 30 to 60-minutes immediately after mixing will make a world of difference.

Just my observations

Tom Lehmann/The Dough Doctor  
4042

## [\*\*Shop Talk / Re: Mixing large quantities by hand\*\*](#)

That mixer shows a reverse spiral dough arm, that's a good thing, now the bad news, it has the old style safety cage over the bowl, trust me, it's a pain in the arse. Workable, but still a royal pain. The silly thing keeps falling off and it doesn't just snap right back on either. With time you'll come to hate it as much as everyone else. You can't over ride it either, if you do and someone gets hurt, well.....you don't want to go there.

The safety cage is not a deal breaker, you just need to know about it right up front so you can practice putting it back on before putting it into use.

Tom Lehmann/The Dough Doctor  
4041

## [\*\*Dough Clinic / Re: Yeasty beastly question\*\*](#)

Mike;

I DO NOT recommend putting the dough into the freezer to fast/super cool it as this will only chill the outer portion of the dough. Instead, use the plastic bag procedure discussed a number of times here. With that procedure you just bag the

dough balls, place them in the fridge and forget about them until the next day, then remove from the fridge, allow to warm to 50 to 55F, turn the dough out of the bag and you're good to go.

Tom Lehmann/The Dough Doctor  
4040

### **Other Types / Re: Fried Dough**

An emergency type dough is your best bet for a relatively decent pizza in short order but you're still looking at around 2.5-hours from mixing bowl to table. It is possible to make a fried pizza dough (think Celeste) in about an hour from mixing bowl to table. You will not have any option as to the type of crust that you are going to make as it will be just a "fried crust". Take any pizza dough formula, adjust the dough absorption to give a nice supple but not sticky dough in the mixing bowl (normally around 62% but this will vary with flour and formulation). Adjust the water temperature to give you a dough between 85 and 90F (about 95F water). The yeast level should be doubled. Mix to a smooth dough, immediately scale and ball, lightly oil the dough balls and set aside to proof for 30-minutes but not more than 45-minutes, roll the dough out using a rolling pin or open it by hand (NOTE: Don't open the dough ball into a skin larger than what you are going to fry it in/frying pan). Once the dough is opened set it aside to proof for about 15-minutes (a pizza screen works well for this). Fry the dough in a frying pan with a good amount of oil (345 to 365F). Fry on one side and watch for it to begin bubbling then flip it over to fry on the other side until lightly brown in color, turn it once again to get the desired color and place onto towel to drain. While still hot place onto a screen and dress the pizza as desired, place back into 475F oven to finish baking. We did these all the time when fried crusts were all the rage. They're hard to get by the "food police" these days.

Tom Lehmann/The Dough Doctor  
4039

### **Shop Talk / Re: Mixing large quantities by hand**

I don't know the exact year that OSHA mandated the safety cage but I think it was in the mid 80's. If you can find a pre-safety cage mixer go for it! The safety cage was so hated that they had to up-grade it on the new Legacy series making it MUCH MORE USER FRIENDLY, and that was touted as a selling point for the Legacy mixers. Since just about every restaurant has an A-200 or A-200-S (S = stir feature) they're pretty common at restaurant sales and on the internet.

Tom Lehmann/The Dough Doctor  
4038

### **Dough Clinic / Re: Non extensible dough problems**

Almost impossible to over mix a dough (referencing gluten development) with any of the home mixers and flat out impossible to do it by hand mixing. Biochemical gluten development is by far the best way to achieve gluten development. If the picture is of your dough being stretched, the dough is just pulling apart and tearing due to insufficient gluten development.

Tom Lehmann/The Dough Doctor  
4037

### **Dough Clinic / Re: Need a low-rising dough**

No, do not increase the oil when decreasing the dough absorption, let fermentation take care of softening the dough for you. If you are worried, start out at 55% and come down from there if necessary.

Tom Lehmann/The Dough Doctor  
4036

**Dough Clinic / Re: Non extensible dough problems**

Looks about right, nice and "mellow" (soft and extensible/doesn't look to be sticky at all).

Tom Lehmann/The Dough Doctor  
4035

**Neapolitan Style / Re: Something wrong with dough**

Are you using the same Caputo flour that Craig used?

Tom Lehmann/The Dough Doctor  
4034

**Neapolitan Style / Re: Something wrong with dough**

I agree with Craig, the dough looks just fine to me. It has a nice smooth appearance and the stickiness that you see is completely normal. If you use a plastic scraper to remove the dough from the bowl and place it onto a very lightly floured surface it will handle just fine.

Tom Lehmann/The Dough Doctor  
4033

**Dough Clinic / Re: Need a low-rising dough**

Thanks Pat.

I don't deal with volumetric portions very much anymore so I never remember the conversion weights, and when converting a recipe to a formula I always portion first and then weigh those portions, it's the most accurate way since we all portion differently.

Tom Lehmann/The Dough Doctor  
4032

**New York Style / Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...**

Don't worry about the oil, the amount you are adding to the dough balls will be but a small fraction of a percent. In your case the dough boxes make perfect sense, and your dish washer will have a new gained respect for you. Look at the WRH dough boxes at [www.wrh.net](http://www.wrh.net). or Paul Bartley at <pbartley@wrh.net> you might ask him if they have and seconds that they cal sell to you at a discount. Their seconds are only color blems. They have different colors so you can identify the day of the week dough was made. Or you can use a grease pencil to write the production date on each dough box. Be sure to get a couple of scrapers to remove the dough from the box as well as a box scraper which will greatly ease box cleaning.

Tom Lehmann/The Dough Doctor  
4031

**Dough Clinic / Re: How to Keep the dough ready to use (room temperature) as long as we can?**

It all depends upon your "room" temperature. If it is under 75F/24C it can be used over a 3 to 3.5-hour period of time but if the temperature is higher plan to use the dough within 90-minutes.

If the dough is getting dry and crusty just wipe the entire dough ball or dough surface with a very light application of oil and drape a piece of plastic sheeting over the dough. Any over proofed/over fermented dough can either be made into

other products such as garlic knots, breadsticks, or open the dough into skins, brush it edge to edge with melted butter and then sprinkle with a cinnamon-sugar mixture and bake just enough to brown the crust, then make a simple icing made by mixing powdered/confectioners sugar with a SMALL amount of warm water just until a thick paste like consistency is achieved, store this in a plastic squeeze type condiment bottle and drizzle some of the icing over the top of the pizza to make an excellent dessert pizza. The other option is to add it back to your new/fresh dough at a level not to exceed 15% of the fresh dough weight.

Tom Lehmann/The Dough Doctor  
4030

### **General Pizza Making / Re: more extensible, flexible dough?**

There are no rules for manipulating or balancing a GF dough formula since there are literally hundreds if not thousands of different approaches to making GF dough, but dense, heavy, tough, chewy are all adjectives associated with GF crusts. We worked on this for two years and finally considered it to be a wasted effort. When I was working with some of the major GF players helping to develop some of their products we found that to change any of the physical characteristics of the dough, batter or finished product we had to go back and completely reformulate the product. How difficult is this? One bread product that I developed was considered to be pretty good, then one fine day the manufacturer of the soy flour that I was using ceased production of that specific product and we soon found out that the formula would not work with any other soy flour, we had to go back and reformulate the entire product all over again, not an easy task as there is no GF technology to work with.

Tom Lehmann/The Dough Doctor  
4029

### **Other Types / Re: Fried Dough**

Better get a donut fryer with a submersion screen.

Tom Lehmann/The Dough Doctor  
4028

### **Off-Topic Foods / Re: Survey: Salting pasta cooking water**

When cooking commercial pasta I just cup my hand and pour what looks to be the right amount of salt into my palm, then into the pasta water. That's about as scientific as I get when making pasta at home but when I'm in a restaurant where things are a bit different I always go with 1% of the water weight but I don't weigh the water in this case, I just go by 2# in a quart or 2.2# in a liter. Never been disappointed.

Tom Lehmann/The Dough Doctor  
4027

### **Dough Clinic / Re: Not quite sure why this works**

I seriously doubt that the yeast was doing much, if anything for you after the 2nd 12-hours at RT as there would not be sufficient nutrient for the yeast to feed upon for that long so I'm guessing that you also had some wild yeast and quite possibly some bacterial fermentation going on too (this would account for the improved flavor you got). You might experiment using a "running sponge", this is where you make a sponge using all of the yeast and 55% absorption, then adjust the water temperature to give you the same finished dough temperature you got before, set the mixed sponge aside to ferment at room temperature for 24-hours, then use 1/2 of the sponge to make your new dough without any added yeast. Build the running

sponge back to full size by adding more flour and water as well as 1/2 of the yeast. Allow this to RT ferment for 24-hours and then split in half, placing into individual plastic bags and place into the fridge. To use the sponge again, remove both bags and allow to RT ferment for 12-hours, use one bag to make your new dough, remove the other sponge from its bag and rebuild to its full size as described above. You will most likely need to experiment with finished dough temps as well as RT fermentation times to see if you can get something close to replicating the flavor profile. Keep in mind that it is not unusual RT ferment for several days to develop some flavors, but once you've got the flavor profile to where you find it acceptable you can go with 24-hours at RT after replenishing/rebuilding the running sponge. This may sound somewhat similar to a sourdough starter but you develop a different micro-flora in the sponge than you do in a liquid ferment. We used to use these all the time when making rye breads when I worked in a small German retail bakery.

Tom Lehmann/The Dough Doctor  
4026

### **General Pizza Making / Re: more extensible, flexible dough?**

The general rule for GF is if you don't like what you have try something different from someone else.

The only thing many (not all) GF formulas have in common is that they usually contain some type of gum as a gluten substitute, this is because gums act as a film former and cohesive agent much like gluten does but that's about as far as the similarity goes.

Tom Lehmann/The Dough Doctor  
4025

### **Dough Clinic / Re: Not quite sure why this works**

Start out using the sponge at 50% of the flour weight (just like an ingredient). Use your normal dough formula (minus the yeast). Think of it this way, make your normal dough, add 50% sponge, incorporate the sponge into the dough. Depending upon a number of factors such as dough temperature, room temperature, flour strength, and actual dough formulation you might need to adjust the final dough absorption as well as the amount of running sponge added. Manage the dough in your normal manner.

Tom Lehmann/The Dough Doctor  
4024

### **Dough Clinic / Re: How to avoid burnt flour inside the oven**

And if you don't want to clean your oven regularly (that's how you prevent the condition described) you can always resort to baking on a screen, disk or pan. :-D  
Tom Lehmann/The Dough Doctor  
4023

### **Dough Clinic / Re: Not quite sure why this works**

A couple of things you're not taking into consideration.

The gluten forming proteins will be significantly damaged as a result of the long RT fermentation so the sponge will no longer act like a 55% absorption sponge, it will be a lot softer and weaker. This is why we don't take the flour in the sponge into account and reduce it from the dough formulation.

Because of the variability within the sponge due to variations in finished sponge temperature and room temperature we have never had good luck in adjusting the dough to a fixed weight (you need to use "true %" not bakers percent to do this),

You can try it if you want to but reproduce-ability is less than spectacular. To convert your formula to true % just take your formula in bakers% and calculate the ingredient weights, add up the total for ALL ingredient weights, then divide the weight of each ingredient by the sum of the formula ingredient weights. This has now put your formula into true %. One last step to take: Decide what you want your TOTAL dough weight to be. Enter the total dough weight in your calculator and press "X" then enter the ingredient percent that you want the new weight for and then press the "%" key and read the new ingredient weight in the display window. By the way, after you have converted your formula to true % do a final check on your math: Add up the total percentages and they should give you a sum of 100 or VERY close to 100, if it doesn't, you did something wrong.

Tom Lehmann/The Dough Doctor  
4022

### [\*\*New Forum Members / Re: New member from Slovenia\*\*](#)

Welcome!

There is a wealth of pizza expertise here ready to help you.  
I was in your country a number of years ago making a series of presentation to your flour millers.  
I don't know if it is available in your domestic market or not, but your commercial bread flour is quite good and well suited to making pizza.  
Tom Lehmann/The Dough Doctor  
4021

### [\*\*Dough Clinic / Re: Not quite sure why this works\*\*](#)

Actually, the sponge, in this case, is more like a sourdough starter than a "sponge" so the refrigerated temperature will effectively control (not stop) any further enzymatic and bacterial activity so it should last a week without any feeding or indefinitely if you re-freshen it every week. You're in uncharted territory as we used to use it and re-freshen it twice a week when we made our rye breads.

Tom Lehmann/The Dough Doctor  
4020

### [\*\*New Forum Members / Re: New member from Slovenia\*\*](#)

I don't remember anymore, but it was about 3-years after Czechoslovakia broke up. I was traveling extensively throughout all of Europe and the Middle East at that time. I would have to go back and check my old records but I think I was there for McDonalds at the time reviewing and discussing their flour needs. Like I said...it's been some time ago.

Tom Lehmann/The Dough Doctor  
4019

### [\*\*Newbie Topics / Re: topping movement?\*\*](#)

The edge of the pizza is the first part to bake due to exposure to heat from three dimensions, top, bottom and the side where as the center of the pizza is only being baked from the bottom (not from the top due to the protective sauce, cheese and toppings). As a result of this the toppings tend to flow inward towards the center of the pizza. We used to instruct our students to build the pizza like a volcano, low in the center and higher out towards the edges (in reference to toppings). As the pizza bakes the toppings will flow towards the center. Since every dough is somewhat different in how it responds in the oven you may need to experiment a little to see what the ideal topping placement is for YOUR pizza. This issue is mostly associated with the thicker dimension thin crust type pizzas baked in a deck

oven. Air impingement ovens do not show this characteristic due to the intense airflow to the top of the pizza holding everything in place BUT when a bubble forms in the dough the cheese and toppings WILL slide off of the bubble in any type of oven. In a pizzeria the common response is to pop the bubble and rearrange the toppings on the top of the pizza as it comes out of the oven.

Tom Lehmann/The Dough Doctor  
4018

### [\*\*Newbie Topics / Re: topping movement?\*\*](#)

Toppings are applied thinner in the middle and heavier towards the edge.  
Tom Lehmann/The Dough Doctor  
4017

### [\*\*New Forum Members / Re: Cheers from the Chicago Burbs\*\*](#)

Are you a north sider, south sider or west sider?  
I'm a very X south sider.  
Tom Lehmann/The Dough Doctor  
4016

### [\*\*General Pizza Making / Re: The best way to go about Thin Crust?\*\*](#)

Can a pizzeria be successful without a dough sheeter? Is Domino's successful? Is Papa John's successful? Those are probably the most visible chains that don't use a dough sheeter.

Keep in mind that hand tossing/slapping/bench stretching all produce crusts with somewhat similar characteristics while pressing (hot or cold) produces different crust characteristics while sheeting the dough forms yet another characteristic, and then there are the hybrid methods where the dough is partially sheeted and finished off by hand tossing (this method, done correctly produces crust characteristics similar to those of a hand opened dough. It really isn't a matter of which method should I use but rather which method will give me the finished crust characteristics that I want.

Life is complex enough in an independently owned/operated pizzeria so I like to use the same dough for all of my pizzas, just change the dough weights for the different sizes, use less dough for thin crust skins and more dough weight for thick crust/deep-dish pan style pizzas (and allow for an hour or more of pan proofing). Then too, the style of pizza that you want to make may/will dictate the method you use to open the dough into skins, for example, a New York style pizza will require that you hand open the dough to achieve the desired crust characteristics while a thin cracker or thin crispy will dictate that you use a dough sheeter to open the dough into skins.

The first thing that you do is to decide upon what type/kind of pizza you want to make and then build your equipment package around that with the major considerations being dough management, how the dough will be opened into skins, and what oven will work best to produce the pizza in question. To stir the pot a little let's add in your store concept, DELCO will most likely run the best using an air impingement oven while casual dining will probably be better served using a stone hearth or deck oven.

Lastly, to your last question; ABSOLUTELY!!! there are many independents opening all of their dough by hand and they wouldn't have it any other way. Is it right for everyone? No, see above discussion.

Tom Lehmann/The Dough Doctor  
4015

## [\*\*New Forum Members / Re: Cheers from the Chicago Burbs\*\*](#)

Define "far burbs" please. I'm a south sider (Tinley Park, 175th St.)  
Tom Lehmann/The Dough Doctor  
4014

## [\*\*General Pizza Making / Re: The best way to go about Thin Crust?\*\*](#)

The dough press is a good and valuable piece of equipment BUT only in the right application, if it doesn't make the pizza you want, it will serve better duty as a boat anchor, the same thing can be said for a dough sheeter, it all depends upon what characteristics you are looking for in the finished crust and physical properties of your dough (some are so soft that they cannot be sheeted while others are so stiff that they cannot be pressed). First you decide what characteristics you want and then you build around that. If you are having problems with your hands you might want to give extra consideration to a crust that is 100% formed using a hot press. If you don't mind a flat edge just about any hot press will work for you but if you want a raised edge your only option that I'm aware of is the Lil Torro hot press from A-M Manufacturing but you will need to have a separate die head for each diameter pizza that you make due to the raised edge feature. Even then you will need to decide what type of raised edge you want on your pizzas as they will need to know this when making your die heads.

Tom Lehmann/The Dough Doctor  
4013

## [\*\*General Pizza Making / Re: The best way to go about Thin Crust?\*\*](#)

It sounds like you want to be another Pizza Hut which isn't a bad thing unless there is one close by, that being the case you will not win over any P.H. customers. I don't know what is available in terms of pizza where you are planning to have your store but it sounds like a lot of what is available right now is made from pre-made crusts which makes being different kinda hard. It's the "kinda different" part that will put you on the map. So, for pizza type I'm assuming that you are wanting to target P.H., actually early P.H. wasn't a bad pizza at all. What do you have in mind for your store concept? That will be an important thing to know for your oven selection.

Tom Lehmann/The Dough Doctor  
4012

## [\*\*Dough Clinic / Re: Some advice please.\*\*](#)

45F would be considered as marginal for CF but if you limit the CF time to something less than 48-hours you should be OK.

Send some pics showing the same dough balls after 24, 36 and 48-hours in the cooler.

The use of oil in a pressed dough will certainly help the dough flow out under the pressure of the press head but it really won't address any snap-back/shrinkage /dough memory after pressing. For that you will need to add some dead yeast (RS-190) or PZ-44. Either one will effectively address the dough memory issues experienced with press forming the dough skins.

Tom Lehmann/The Dough Doctor  
4011

## [\*\*Dough Clinic / Re: Some advice please.\*\*](#)

That's about what I was expecting at 45F. I seriously doubt that they would make it to 48-hours.

Make some pizzas from the dough and let us know what you think.  
Tom Lehmann/The Dough Doctor

**General Pizza Making / Re: The best way to go about Thin Crust?**

R.C.

Are there any independents in your area? Remember that the big box chains are a poor indicator of what your local population REALLY wants in a pizza. They all operate on the theory of "make it and they will come" and they can't make any changes so they're locked into the corporate pizza image. The independents, on the other hand, know they cannot compete with these big box chains on a pricing basis so they compete differently, by providing a different product from that the big box competition sells.....what the local consumers are looking for. You say that you want to make the best pizza, best by who's determination? Certainly not mine or yours, that determination must be left up to your local customers, your job is to try to identify what the local independents already know about your local consumers preferences and then build upon that. Open with a limited menu and do "specials" to improve sales on your slowest night of the week. Let me define "specials". These are not discounted items. We never discount our pizzas, if we do our customers will lose perception of value of our pizzas, you know the old story: Hey! you sold that same pizza as a two for one last week! Why should I pay full price now? Or, you will be in to "specials" shopper's boat where you get those calls asking "what is your special today and how much is it?". By "special I mean that on the slowest night of the week you might offer a type of pizza that you otherwise do not offer...for example deep-dish. Some times we do special toppings, like a seafood pizza, even a multi-grain crust, or a Margarita pizza made with upscale ingredients on an "artisan" crust. These are all priced at or above our regular pizzas, but they are all "SPECIAL" too. You can do this to improve sales on the slow night of the week but more importantly it is used to give some insight as to what your customers are REALLY looking for in a pizza. Once you identify likely candidates you can move them to your regular menu and keep fishing with different pizzas on your "special" night. If you find yourself in a situation where you just have to do "specials" in a more traditional sense, again don't discount but instead "bundle". Keep the pizza at its regular price and add something else for free or at a discount price. This can be as simple as an order of bread sticks or garlic knots (your cost about \$0.30) or a 10" dessert pizza (your cost about \$0.50) How do you do this? Take a 10" skin, brush with melted butter or butter flavored oil, sprinkle with a cinnamon-sugar mixture, bake, drizzle with powdered sugar-water icing (powdered sugar + water to make a thick paste, store in a squeeze type condiment bottle and drizzle over the hot pizza) cut and serve. If you're customers want a little more in their dessert pizza add chopped pecans, streusel and some apple slices or other fruit pieces, drizzle with icing and serve or up-sell it by offering it a la mode. Dare to be different! :)

Tom Lehmann/The Dough Doctor  
4009

**Dough Clinic / Re: Some advice please.**

At 0.5% IDY your yeast level is on the high side even for CF at 38 to 40F. At 0.375% IDY you can expect to get very good dough performance out to 3 possibly 4-days. Your high yeast level combined with the high CF temperature would account for the results you are getting with your dough. Yes, I would think that a reduction in yeast level would be of benefit in this case. I say "in this case" because you are already at a high level, now if you were down at say, 0.2% I would probably say that I don't recommend a further reduction in yeast level, while this will address the dough issue there is a distinct probability that there would not be sufficient yeast

to provide the desired oven spring characteristics, especially in the center section of the skin covered by the toppings, this would result in a thin center section with poor baking properties, less than desired crispiness and most likely the development of that old "dreaded gum line".

Your pizzas are looking quite good, I hope you are enjoying them :)

The best part of experimenting with pizza is the standing excuse to eat pizza at every opportunity.....all in the name of science or pizza development, which ever excuse works best for you. :-D

Tom Lehmann/The Dough Doctor  
4008

### [\*\*Dough Clinic / Re: Difference in bottom browning\*\*](#)

Without knowing your dough formula or at least the ingredients it is hard to say anything for sure, but I'm guessing the sugar might have been deleted.

Tom Lehmann/The Dough Doctor  
4007

### [\*\*Dough Clinic / Re: Difference in bottom browning\*\*](#)

An excessive amount of shortening flakes would give you the fried effect as they will melt out with the oven heat and since they are distributed throughout the dough those near the surface will impart a fried effect. We see this when we make pastries using the blitz dough method.

Normally you need to get up to something in the 6 to 8% range to see this. A lot of the bake to rise/oven rising pizzas being

sold today contain yeast for flavor and dough conditioning, encapsulated leavening for oven spring and fat flakes to create the desired open cell structure.

Tom Lehmann/The Dough Doctor  
4006

### [\*\*Dough Clinic / Re: Forgot to put dough in the refrigerator--- is it ruined?\*\*](#)

No, the dough does not absolutely have to go directly from the mixer to the fridge, it all depends upon the management procedure that you are using. The fermentation of the dough develops flavor in the finished crust as well as lightness and tenderness and to a great extent it will also be responsible for helping to develop the desired crispiness in the finished crust too. During fermentation acids (formed as a result of fermentation) as well as enzymes contained in the yeast attack the gluten forming proteins in the flour making them weaker as well as hydrolizing them (that's the role of proteolytic enzymes) or breaking them down into their basic amino acids (protein building blocks). These attacks on the protein are what helps to develop some of the gluten (biochemical gluten development) but when left to go unchecked (too much of a good thing never turns out to be very good) it will weaken the protein to the point where the dough becomes overly extensible, maybe stringy, wet or sticky and then it will no longer be capable of supporting the weight of the topping ingredients during baking resulting in collapse of the dough which in turn results in an inability to bake the crust properly, and a tough, rubbery eating finished crust. If the dough is only moderately over fermented it may not collapse but the finished crust may take on an acid or sour taste due to the excessive acid formation. This excessive acid formation also works to inhibit crust color development at the same time.

Tom Lehmann/The Dough Doctor  
4005

### [\*\*Dough Clinic / Re: How to Keep the dough ready to use \(room temperature\)\*\*](#)

## [as long as we can?](#)

As long as the dough is allowed to remain at a temperature which supports yeast fermentation (40F to 125F) it will continue to ferment which in short time will break down the dough making it overly extensible and sticky to work with and it will no longer support the weight of the toppings during baking resulting in the dough collapsing. If your dough is becoming dry and crusty just wipe it with a little oil and cover it with something, like an inverted bowl for a single dough ball or a sheet of plastic for several dough balls, then try to keep it at the LOWEST temperature possible to retard the rate of fermentation. Properly done this can allow you to hold the dough for up to 4 or 5-days (in the fridge of course), but at room temperature, assuming 60F as the lowest practical room temperature you might be able to coax the dough out to 5 or 6-hours IF you mix the dough as cold as possible which will be about 60F. At this point you could re-ball the dough re-oil the dough balls and cover them again to extend the time by maybe another 2 or 3-hours depending upon the room temperature. If the room temperature is at 80F or above the most you will be able to hold the dough will be about 4-hours then you will have to use it or re-ball it. Once re-balled at that temperature you're probably going to need to use it pretty soon. All of this depends upon your dough formulation and your flour strength so without knowing what the dough formulation is and what the flour strength is all of this is pretty meaningless. But you do get an idea of the progression of the dough if left to ferment at room temperature.

Tom Lehmann/The Dough Doctor  
4004

## [Hearth Ovens / Re: initial wood oven questions](#)

An optical fireplace at that. All the heat will go right up the chimney.  
Tom Lehmann/The Dough Doctor  
4003

## [General Pizza Making / Re: Do I increment yeast just like any other ingredient?](#)

If you add up all of the bakers percent of your dough formula and divide it by 100 you can then take any amount of dough that you want to make and divide it by this number to get the amount of flour needed to make the desired amount of dough, once you know the amount of flour it is a simple procedure to calculate the amount of each ingredient (yeast included) to make that amount of dough. Since we are dealing with a "formula" which is a mathematical equation the number/amounts will always be correct if you didn't make any errors in your math.

Example: Flour 100%, Salt 2%, Oil 2%, IDY 0.4%, Water: 62%

Add up all of the percentages: 166.4%

Divide by 100: 1.664

New dough weight: 2,000-grams.

Amount of flour needed to make 2,000 - grams of dough: 2,000 divided by 1.664 = 1201.923-grams (call it 1202-grams).

Now you can calculate the new ingredient weights based on the new flour weight.

Flour: 100% = 1202-grams

Salt: 1202 X 2 (press the percent key) 24.01-grams.

Oil: 1202 X 2 (press the percent key) 24.01-grams.

IDY: 1202 X 0.4 (press the percent key) 4.808-grams.

Water: 1202 X 62 (press the percent key) 745.24-grams

To check your math add up the total ingredient weights and you should get 2,000-

grams or something very close (variances due to rounding): 1202 + 24.01 + 24.01 + 4.808 + 745.24 = 2,000.68-grams.

Tom Lehmann/The Dough Doctor  
4002

**Dough Clinic / Re: Difference in bottom browning**

What is your normal level of hard fat flakes?

Tom Lehmann/The Dough Doctor  
4001

**Dough Clinic / Re: How to improve my dough.**

Peter;

Pictures of your dough after 24-hours bulk fermentation and 24-hours after balling would help but lacking that for now I'm guessing that your problem is due to insufficient yeast or the yeast may have depleted all of its nutrient supply.

Test this by making a dough with 2% added sugar or a little diastatic malt to see if the yeast is more active and softens/mellows the gluten making for a more extensible dough, if that doesn't work try increasing the yeast to 0.5% (10-grams). I'm assuming your yeast is CY (compressed yeast?).

Tom Lehmann/The Dough Doctor  
4000

**Dough Clinic / Re: How to improve my dough.**

The bag label indicates that you are using a form of IDY (instant dry yeast) so your yeast level should be OK as you have shown it in your dough formulation. My suspicion is that the yeast is running out of nutrient so adding 2% sugar or some diastatic malt would be high on my list of things to look at.

Can you provide any pics of the dough after 24-hours bulk fermentation and again 24-hours after balling? The reason I ask this is because if the dough is being over fermented it will become bucky and lack extensibility in which case steps will need to be taken to reduce dough fermentation. By seeing what the dough looks like after the two fermentation periods I may be able to make a determination if this is the case or not.

Tom Lehmann/The Dough Doctor  
3999

**Dough Clinic / Re: Degassing during slow bulk fermentation**

The purpose of "punching" the dough/sponge is four-fold, 1) It prevents a crust from forming on the surface of the dough. 2) Since the outer portion of the dough/sponge is cooler than the inside fermentation is progressing more slowly on the outer portion of the dough/sponge mass so there is more yeast nutrient left in this portion, when the dough/sponge is punched this nutrient rich portion is brought into the center of the mass where it helps to feed the yeast. 3) The center of the dough mass is always warmer than the outer portions, when the dough is punched this cooler outer portion is mixed into the warmer center portion resulting in greater temperature uniformity throughout the dough mass which helps to regulate the rate of fermentation. 4) The punching action stretches the dough as does the rising of the dough which contributes to gluten development. The size or quantity of gas bubbles have nothing to do with it, but if you talk to some people they might add a fifth reason for punching the dough/sponge, and that is to help keep it in the fermentation container.

Tom Lehmann/The Dough Doctor  
3998

## **Dough Clinic / Re: freezing dough**

The best way to freeze your dough is to get it into the freezer as soon as possible after mixing, failing at that your next best bet is to portion it, and then roughly shape it into a circle about 1" thick, place it onto an oiled aluminum foil pie plate and freeze it uncovered for about 2-hours, then wrap in stretch wrap and it should keep reasonably well for a week or so.

Tom Lehmann/The Dough Doctor

3997

## **Shop Talk / Re: Parbake or Not**

Are you trying to bake your pizzas on the deck? Can't do that with your par-baked crusts but you might have a better chance of success using a pizza screen under your pizzas. This will hold the pizzas up off of the deck allowing the top of the pizza to get done without charring the bottom of the crust. If you can get your oven up to 800F and still want to bake on the deck you have a pretty decent chance to go with a raw dough pizza rather than a par-baked crust pizza. So, yes, you can go with a raw dough pizza if you want to. You will need to have a wood prep-peel and a metal blade oven peel for peeling the pizzas in and out of the oven and an oven rake/broom for cleaning the oven deck of charred debris. There will be a difference between the two types of pizza, those made using a par-baked crust are usually super crispy and retain their crispiness very well while those made using a raw dough skin are crispy at first after baking but with time become significantly softer and less crispy, but you can make so many different types of pizzas using a raw dough skin, and you will find that your crusts will probably have a better flavor and texture (if you do your part) than a par-baked crust.

Tom Lehmann/The Dough Doctor

3996

## **Dough Clinic / Re: How to improve my dough.**

The dough balls as shown above look fine, maybe even a little under fermented so things are good at this point, let's see what they look like at the next stage of fermentation.

Tom Lehmann/The Dough Doctor

3995

## **Shop Talk / Re: Parbake or Not**

Depending upon the type of dough and pizza you're making it can be as fast as 2.5 to 3-minutes on raw dough. Why may I ask are you trying to bake your pizzas so fast?

Tom Lehmann/The Dough Doctor

3994

## **Shop Talk / Re: Parbake or Not**

Ralanyo;

If you want to bake your pizzas on a par-baked shell/crust remember that the crust is already fully baked but the toppings still need to be baked so in this case the pizza needs to be baked from the top down not the bottom up as you would when using a raw dough skin for making your pizza. Since you have independent temperature controls for the top and bottom heat set the bottom temperature at 450F and place the pizza on a screen then set the top temperature at 600F and benchmark from there. Depending upon the formulation and amount of bake on your par-baked shells/crusts you may need to make further adjustments to the top

and/or bottom temperature to achieve the bake you are looking for.

Tom Lehmann/The Dough Doctor

3993

### **Dough Clinic / Re: Need basic dough recipe for deck oven**

Here is my basic pizza dough formula that I have regularly used for over 35-years now. It is suitable for making both thin crusts and thick/deep-dish style pizzas by just increasing the dough weight appropriately. When managed correctly it will keep for up to four days in the cooler but is at its best between 36 and 48-hours.

Flour: Strong bread type flour (12 to 12.8% protein content)

Salt: 1.75%

Sugar: 2%

Oil: 2%

IDY: 0.375%

Water: 62%

Use delayed oil addition mixing method for best dough consistency.

Tom Lehmann/The Dough Doctor

3992

### **Dough Clinic / Re: How to improve my dough.**

Shahab;

EVOO in my opinion is a waste of money when added TO the dough, instead, if you want to use olive oil IN the dough use pomace oil or any lower grade olive oil or even a blended oil works fine, then if you want the olive oil flavor add a sprinkling of EVOO on top of the pizza as soon as it comes out of the oven. The heat of the pizza will "pop" the aroma of the EVOO and your customers will love it.

There is no relationship between the type of yeast used and the optimum cold fermentation period. The optimum CF period is instead dictated by the amount of yeast used, strength of the flour, amount of salt used, amount of sugar used, the finished dough temperature and if the dough is allowed to remain at room temperature for more than a total of 20-minutes after mixing.

Tom Lehmann/The Dough Doctor

3991

### **Shop Talk / Re: Parbake or Not**

If you are going to use full or half sheets (which ever fits into your oven) you will need to use sheet pans. The problem is that normal sheet pans have a STRONG TENDENCY to warp/boat making baking in a deck oven all but impossible. To get around this there is a type of pan referred to as a souffle pan. This is a steel construction pan with sharp, creased corners which dramatically helps with the pan warping problem. These are the type of pans that a smaller bakery might use to make a souffle sheet for use in making jelly rolls. If you cannot find any in your area contact Lloyd Pans <[lloydspans.com](http://lloydspans.com)> or Paul Tiffany <[ptiffany@lloydspans.com](mailto:ptiffany@lloydspans.com)>. Note: Lloyd Pans also have a rectangular shaped flat screen that is perforated which might work very well in your application.

Tom Lehmann/The Dough Doctor

3990

### **Dough Clinic / Re: How to improve my dough.**

Peter;

This is the old "milk ploy" consumers believe that milk is good/healthy so bakers use it at 2% to 2.5% so it shows up a little higher in the ingredient listing. At this

level it has essentially no function except to make a consumer feel better about buying their product. The use of EVOO can be replaced in a dough using a lower cost olive oil, but then in most applications independent operators are not required to post ingredient labeling or calorie counts for their pizzas so I think it might be something of a moot issue unless you are one of the big box chains fighting for every piece of the market you can get. Then again, if advertising is important one can always advertise that "We use nothing but the finest grade, imported, extra virgin olive oil on all of our pizzas" Until you get into declared ingredient statements that can be a perfectly true statement regarding a pizza to which you added the olive oil post bake even though another oil might have been used in the dough.

Tom Lehmann/The Dough Doctor  
3989

**Dough Clinic / Re: How to improve my dough.**

Peter;

You are wise much beyond your years. Trying to control a chain made of franchised stores is akin to herding scared cats. :)

Tom Lehmann/The Dough Doctor  
3988

**Dough Clinic / Re: Frozen dough ball management**

Here's the procedure for using frozen dough balls.

- 1) Remove from freezer, lightly oil the dough balls and place into dough boxes in the fridge/cooler.
- 2) On the following morning round the dough pieces into balls, place into dough boxes again, lightly oil just the top of the dough balls and cover the boxes, allow to remain at room temperature for 1-hour.
- 3) Un-lid the dough boxes and cross-stack in the cooler for 90-minutes, then down-stack the boxes and lid the top box.
- 4) Allow the dough balls to cold ferment for a minimum of 18-hours in the cooler before using.
- 5) To use the dough just remove the number of dough boxes that you think you will need to use during the next 3-hours after you begin opening the dough balls into skins.
- 6) When you remove the dough boxes from the cooler be sure to allow the dough balls to warm in the covered box until the dough balls reach 50F. This will take about 90-minutes, once you begin opening the dough balls (when they reach 50F) the dough balls in the box will remain good to use for the next 3-hours. Any dough balls not used within this period of time should be opened and placed on screens and stored in a wire tree rack in the cooler. Leave the rack uncovered for about 30-minutes then cover by slipping a bag over the rack. There pre-opened skins will remain good to use throughout the day. At the end of the day any unused dough balls should be converted to another product, like dessert pizza, bread sticks, or garlic knots. Simple Dessert Pizza: Open dough skin, brush with melted butter, sprinkle with a cinnamon-sugar mixture, add a few chopped pecans (optional) or some streusel (available from your food distributor) and bake as you do your regular pizzas. When cool, wrap and set aside at room temperature for use on the following day (remember, we're using left over dough). On the following day, remove from wrapper, cut into slices, reheat in the oven to serve, drizzle with a simple powdered sugar-water icing (store it in a plastic squeeze type condiment bottle) and serve plain or with a scoop of ice cream, and maybe a little topping syrup over the ice cream. Great way to make a huge profit from your dough that

you were going to toss out.

Any dough in the boxes remaining in the cooler which were not removed during the day will keep until the following day.

Tom Lehmann/The Dough Doctor  
3987

### **Chicago Style / Re: South Side Thin Crust..**

As an ex-Chicagoan please allow me to weigh in on this conversation. We left Chicago in 1975. Up to that time there were few "outsiders" making pizzas in Chicago/Chicago area, beginning in about 1976 or 1978 there was an influx of "new" pizzerias offering different types of thin crust pizzas which were different from those which we were raised on (Ed and Joe's in Tinley Park, or Ken and Dick's and Beggar's in Oak Forest). Beggar's has now evolved into a regional chain on the south side/south suburbs. Add to that the fact that was an influx of new people into Chicago suburbs who for the most part (my personal opinion) didn't have a clue as to what Chicago style pizzas were all about.....What?! Wait 30-minutes or more for a pizza??!!! Ya gotta be kidding! As new pizzerias opened they found ways to make their pizzas in much less time but many of the unique qualities of the original Chicago pizza were lost. I still have family living there so I have a chance to try some of the old established pizzerias in business for for 20-years (you have to make that 50-years minimum to be "original" in my books, or your pizzas have to measure up to those standards to quality for me. Point is, yes, pizza has changes, just like it has everywhere and there are always those old traditionalists who seek out the old classics for the memories associated with them not necessarily because they're the best pizza ever. This is true in New York City as much as it is in Chicago and other cities I'm sure. A "new norm" is slowly being established. This is why I respect Tony G. in his efforts to preserve at least one type/style of pizza, maybe we need to do something along the same lines to preserve the original DNA of other unique types of pizza such as New York, New Haven, Chicago, St. Louis, to name but a few before they are lost to evolution. Hummmm...How about a Jurassic Pizza Park School? We can always dream.

Tom Lehmann/The Dough Doctor  
3986

### **Dough Clinic / Re: Frozen dough ball management**

Remove a dough ball from the box, open it to the desired size, dress it to the order and bake. Repeat for each order.

For dough balls that are at the end of the three hour use limit you can open them to full size and place onto screens (not pans) for refrigerated storage for use later in the day. Or if you want, just open the dough balls to about 3/4 of their full diameter and place onto the screens for refrigerated storage, then complete opening the dough to full diameter to fill an order.

Tom Lehmann/The Dough Doctor  
3985

### **Dough Clinic / Re: How to improve my dough.**

The dough balls are still looking good, but I don't like to see the flour on them as it can result in problems with crust texture later on, instead, this is why I recommend oiling the top of the dough balls after placing into the box. besides, the oil will help the dough balls separate easier when you start removing them from the box.

Tom Lehmann/The Dough Doctor  
3984

## **Dough Clinic / Re: How to Keep the dough ready to use (room temperature) as long as we can?**

When I was in China, Korea, Taiwan, and the Philippines I found the following to be helpful:

- 1) Use the highest protein flour you can get.
- 2) Keep your yeast level slightly on the low side for the type of pizza you're making.
- 3) Adjust the salt level to 2.5% go to 3% only if you dare to.
- 4) Keep the finished/mixed dough temperature in the 70 to 75F range.
- 5) When balling the dough ball it tight.
- 6) Keep the dough away from drafts.
- 7) Immediately after mixing scale and ball the dough then place into plastic dough boxes, lightly oil the top of the dough balls and cover the dough box(es).

Assuming that this dough will NOT go into the cooler/fridge it should keep for about 3-hours, possibly a little more. Once the dough becomes too gassy to use you can re-ball it, place it back into the dough box, lightly oil the tops of the dough balls and wait for the dough to loosen up sufficiently for use in making more pizzas. Another approach that has proven successful is to turn all of your dough into par-baked crusts/shells as soon as the dough can be worked. By doing this you can use a pretty straight forward, standard pizza dough formulation without any of the above adjustments. The par-baked crusts can be stored at room temperature for up to 3-days.

Tom Lehmann/The Dough Doctor  
3983

## **Off-Topic Foods / Re: Krispy Kreme Donut Recipe**

I used to teach donut production at one time as well as serving as technical adviser to Mr. Donut back in the early 70's. A big part of the Krispy Kreme donut is that it is made by a different process than most donuts are (except for high speed commercially made donuts). They make their donuts using a pressure extruder which imparts the unique tight crumb structure and is also responsible for the tender eating characteristics. For making a KK wanna be at home a good procedure is as follows:

Mix until the dough forms a smooth ball in the mixer. DO NO OVER MIX.

Target finished dough temperature: 75 to 80F.

Immediately after mixing form the dough into a rectangular loaf shape.

Lightly flour the surface of the dough and drape with a piece of plastic to prevent drying.

Allow the dough to ferment for 45 to 60-minutes.

Roll the dough out to approximately 1/2-inch in thickness and cut using a hand donut cutter.

Place cut (snapped) donuts onto a frying screen or a flour dusted canvas towel and allow to proof at 80 to 85F for about 45-minutes (you will need to experiment as you will probably be doing this at room temperature).

Transfer the proofed donuts to a donut fryer (345 to 350F) KK donuts only, regular donuts are fried at 360 to 365F.

Fry donuts on one side until lightly browned then flip and fry the other side until lightly browned, flip once more and remove from fryer.

Place fried donuts on a drip screen and allow to cool for just a couple of minutes (NOT MORE THAN THAT), then ice the donuts using a powdered sugar-water icing to which 1% vegetable oil is added and 2% glucose (corn syrup) has been added.

The icing is made using hot water and should be kept warm during use. The best way to ice/glaze the donuts is by dropping the donuts into the glaze and then

turning them over, carefully remove from the glaze so as not to tear the donut apart, place the glazed donut onto a wood doll rod (3/8-inch diameter) suspended over a sheet pan to catch the dripping glaze. Allow the donuts to remain on the rod until dry to the touch (about 15-minutes).

NOTE: If the glaze is too thick it will be so heavy so as to actually pull the donuts off of the wood doll rod or it will be too thick on the donut. This being the case thin the icing ONLY with a simple syrup made by boiling two parts sugar and one part water until it comes clear, use hot to thin the glaze. The glaze will thicken as it cools so DO NOT keep adding simple syrup to thin it out, instead, warm the glaze and it will return back to the desired consistency....if you keep thinning the glaze it will never dry properly making for a wet, sticky donut.

I hope this helps.

Tom Lehmann/The Dough Doctor  
3982

### **Dough Clinic / Re: Is it my imagination, or?**

JPB;

No, you are not imagining things. Bread/crust flavor is developed through denaturing of proteins during the baking process and the longer and slower the bake the more proteins are denatured. Fast baking at high temperatures only denatures proteins on more of the outer portion of the crust, not all the way through. This is a well known and documented fact. When I worked in commercial bread production back in the early 60's we made two different breads from the same dough formula, one was just a run if the mill, open top, white pan bread with a baking time of 17-minutes at 440F while the other one was identified as an old fashion loaf, the only difference was that the old fashion loaf (sold at a premium price) was baked at 430F for 23-minutes (5-minutes longer), yes there indeed was a difference in overall flavor between the two loaves.

Tom Lehmann/The Dough Doctor  
3981

### **Dough Clinic / Re: Is it my imagination, or?**

Caramelization is only a part of the flavor equation.

It is a very complicated thing...fermentation, acids, protease attack on the flour proteins, etc. all serve to degrade the proteins which are further degraded to a greater or lesser extent by the baking process.

Tom Lehmann/The Dough Doctor  
3980

### **Dough Clinic / Re: Need basic dough recipe for deck oven**

I have to agree with Parallei, the two dough formulas are worlds apart different. Mine was not formulated to compete head on with a sour dough formula. Instead, it is a bullet proof dough formula for making a variety of different types of pizzas in both deck and air impingement ovens while providing a very good, usable dough out to 3-days with the option of going to as much as 5-days with a slight lowering of the finished dough temperature and good dough management practices....you said you wanted a good basic recipe and you got a good, basic "formula that ranks right up there with Dave Ostrander's (Big Dave) "Old Faithful" dough formula which he successfully used for many years in his restaurant with deck ovens. Keep in mind that different dough formulas serve different purposes.

Tom Lehmann/The Dough Doctor  
3979

## [\*\*Dough Clinic / Re: Need basic dough recipe for deck oven\*\*](#)

If all things were equal and both doughs were managed the same I would guess that the use of the sour dough starter helped to acidify the dough for possibly slightly better yeast action (yeast likes an acid environment) it may have also provided more extensibility to the dough as an effect of the acid working to "mellow" the gluten and then there is the slightly higher dough absorption which all work to provide a softer dough that would exhibit more oven spring during the first few critical seconds of baking.

Tom Lehmann/The Dough Doctor  
3978

## [\*\*Dough Clinic / Re: Need basic dough recipe for deck oven\*\*](#)

Q.J.

A good test for you to try would be to increase the total dough absorption of the dough formula which I provided. If you increase it to something like 65% I think you will find that the dough may exhibit more oven spring.

Also keep in mind that as I've stated before, that formula can be used after 24-hours CF but it is not in its sweet spot until after 48 to 72-hours CF.

The problem that we have found with any dough formula is that when you increase the dough absorption sufficiently to maximize oven spring and create an open crumb structure the dough becomes too soft to be held for 3 or more days in the cooler in dough boxes as the dough balls will flow together as the dough continues to softens due to fermentation. Like any dough formula, it is subject to modification to give the desired characteristics and work with the dough management procedure being used and to a certain extent even the oven.

Tom Lehmann/The Dough Doctor  
3977

## [\*\*Chicago Style / Re: South Side Thin Crust..\*\*](#)

The Chicago style thin crust dough formula that we used to use was as follows:

Flour: (Ceresota) 100%

Salt: 2%

CY: 1%

Sugar: 1%

Water: 48% (variable) (65F)

Procedure:

Put water in mixing bowl, add salt and sugar.

Add flour.

Add CY (crumbled)

Mix at low speed for about 15-minutes or until the dough forms a uniform dough ball in the bowl.

Allow the dough to bulk ferment for 6-hours.

Cut a piece of dough from the bulk dough (about 9-ounces for a 12-inch crust).

Sheet the dough out to approximately 1/8-inch in thickness. This dough must be sheeted.

Trim or fit the dough to wood pizza peel.

Dress to the order.

Bake in a deck oven at 450 to 475F until the edges of the pizza develop a medium dark brown color.

Use a party cut for this pizza.

Note: This pizza will ONLY be crisp around the four edges (do you remember that as a kid? That's why the edges were the first to go.) the rest of the slices will be

more like wet pasta but good none the less. We used to fold the center slices in half to eat them as they were too limp to pick up just about any other way. And remember to use RAW sausage with lots of fennel.

3976

### [\*\*Chicago Style / Re: South Side Thin Crust..\*\*](#)

You have to remember that in Chicago the old "traditional" thin crust pizzas are baked in reel type ovens which would be akin to baking on a 1/4-inch thick composite (Transite) deck in the middle of a home oven (no strong bottom heat at all). When baked in a traditional deck oven the baking times are considerably shorter due to the heat being applied to the deck as the pizzas are being baked.

Tom Lehmann/The Dough Doctor

3975

### [\*\*Off-Topic Foods / Re: Krispy Kreme Donut Recipe\*\*](#)

If I remember correctly the KK donuts are very light in weight, I'm thinking around 1.25 or 1.5-ounces. Since you have access to KK just weigh one of the donuts after removing most of the glaze. Fried donuts weigh the same after frying as they did when they went into the fryer. As for the texture/softness, they used to use potato flour in their dough formula to help keep them soft but with the advent of all the new enzymatic softeners available today it wouldn't surprise me at all if they had one in their formula.

What put KK on the map as for donuts is the fact that they were consumed fresh and hot and people were infatuated with watching their automated production line making the donuts....day old KK donuts???? Yeast raised donuts are toooooo goooood when eaten fresh and hot! :)

Tom Lehmann/The Dough Doctor

3974

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Seasoning steel\*\*](#)

I just use canola oil, wipe it on in a thin layer on one side and bake it at 425F for about 30-minutes, remove from the oven and repeat on the other side. Repeat this a couple of times and you're good to go. DO NOT SOAK YOUR SEASONED STEEL IN WATER... EVER! The seasoning will begin to peel off. As you continue to use the steel it will continue to darken, this is what you want it to do as it will bake better as it darkens.

Tom Lehmann/The Dough Doctor

3973

### [\*\*Dough Clinic / Re: Not sure if my dough is over fermented\*\*](#)

Allow me to add my two cents worth.

Caputo flour and low deck/baking temperature don't usually play together very well unless you're adding sugar or malt to your dough formula which I don't think you're doing as you are baking at high temps. Second, the amount of "old dough" in a restaurant is typically limited to not more than 15% of the total dough weight. I don't know how this works with your dough weight. The idea at the restaurant level is to utilize any unused dough while NOT impacting the new dough in any way. To use more than 15% of the total dough weight will result in the old dough impacting the new dough in some way which will be determined by the dough formulation, age of the old dough and dough management procedure being used with the new dough. Old dough which is incorporated into new dough at a pizzeria will either be dough that was brought out of the cooler but was not used (think 4-hours RF) or at the end of the 3-day CF shelf life, again, it may have up to about 4-hours RF. As you

can see, there can be a lot of variation in the old dough, hence the need to control it, plus you can't afford to be changing the flavor of the crust. For home use I always tell people to just experiment to find a fermentation scheme that works well for you and then divide the dough into whatever size pieces you want to add to your new dough and freeze. They will keep in good condition for up to 2-weeks. To use just remove a piece of dough from the freezer, slack it out in the fridge overnight and place it at room temperature until it begins to show signs of proofing/life, it can then be added to your new dough anytime within the following 3-hours, or if you place it back into the fridge it will keep until the following day then when you use it just allow it to warm to about 60F before adding it to the new dough.

Tom Lehmann/The Dough Doctor  
3972

### [\*\*Newbie Topics / Re: Why is crust bubbling a bad thing?\*\*](#)

Aside from rearranging the toppings on your pizza the larger bubbles can also result in unwanted or excessive char on the crust.

Tom Lehmann/The Dough Doctor  
3971

### [\*\*Dough Clinic / Re: AMERICAN STYLE PIZZA - doubts\*\*](#)

Marvin;

I have a couple of questions to ask.

What is the temperature of the water that you put the ADY into?

When you say "wait 5-minutes" I'm assuming the mixer is running as I don't see any other dough mixing taking place.

What is the finished/mixed dough temperature?

You make your dough balls, what do you put them in?

Do you cover the container your dough balls are in right away or do you leave them open for a period of time, if so, how long?

After the dough has been in the fridge for 24-hours do you allow it to warm to 55 to 60F/12.7 to 15.5C before opening the dough balls into skins?

What method do you use to open the dough balls into skins?

Now for baking:

We need to know more about how you are baking your pizzas.

What is your baking platform (pan, screen, disk, or on the deck/stone)?

What is your baking temperature?

How long do you pre-heat your oven?

If you are using a stone or steel plate in your oven how thick is it and where is it positioned in your oven?

I know, lots of questions, but we really need to know more about how you're making your pizzas to fully answer your questions.

Tom Lehmann/The Dough Doctor  
3970

### [\*\*Shop Talk / Re: Which oven makes a better pizza.. Deck oven or the conveyor belt oven\*\*](#)

I wrote a very detailed article on selecting the right oven for your specific application in PMQ Magazine that you might want to look up.

Additionally, your store concept needs to be considered when selecting your oven. For example, if your claim to fame is that we put more toppings on our pizzas than our competition and we plan on doing a land office business in DELCO a deck oven probably should not be on your short list of ovens to buy. Instead, an air

impingement oven will do a MUCH better job of moisture management on your pizzas which is vitally important in the DELCO side of the operation.

As for ability to bake a great pizza, air impingement ovens do have that capability but the quality has to be built into the dough and assembly of the pizza. You can't just toss something together and place it into an oven which is pre-programmed to bake in a very specific manner and expect it to come out of the oven as a first class pizza.....GIGO to be sure.

Any of the new generation air impingement ovens are much better than the older ones (see my article on new generation air impingement ovens in PMQ Magazine (archives). If you go to the PMQ Think Tank you will find that a lot of stores are now going with the EDGE OVENS and they are quite happy with the results they are getting. When we used to do the Ohio Restaurant Show (NAPIC Show), we demonstrated how to get a hearth baked characteristic from an air impingement oven. The basics are:

- 1) No sugar, milk or eggs in the dough.
- 2) Set the oven temperature at about 500F (this will vary as some ovens work better at 490F while others need to go to 510F).
- 3) Set the baking time/conveyor speed at 4.5-minutes.
- 4) You MUST use the Lloyd Pans Hearth Bake Disk to achieve the desired bake. These disks were designed specifically for this one application.
- 5) Adjust the baking time as needed to achieve the desired crust color characteristics.
- 6) NOTE: When baking at these high temperatures you MAY need to modify your top finger profile to get the desired top bake characteristics. This is easily done and at no additional cost when purchasing a NEW oven as the manufacturer will provide complete oven set-up including finger profiling to bake YOUR specific pizzas.

Air impingement ovens have received a bad rap over the years due to the number of used ovens on the market, and from what I've seen, many are not properly profiled to bake the pizza in question. Here is an example: A good number of years ago I was communicating with a fellow at the PMQ Think Tank about his oven problems and inability to bake a decent pizza. We went through all the usual exercises but to no avail. So I questioned him again about his "new" oven and why he accepted it if it didn't bake HIS pizzas. Turns out his "new" oven wasn't "new" after all, it was just new to him, he bought it from some equipment supplier as a "pizza" oven, so it should bake his pizzas....right? Well, I got the serial number from the oven and called a friend of mine at the manufacturer and asked for a history of the oven. As it turned out, the oven was built for Red Lobster with a proprietary finger profile designed for baking fish, etc. NOT PIZZA! There in lies the rub, while all air impingement ovens may look like "pizza ovens" they may be configured to bake anything from pies, cookies, dog biscuits, buns and pastries, and on the outside they all look alike but when it comes to baking pizza, they sure don't bake like a pizza oven. Moral of the story, if you're buying a USED air impingement oven know how the top and bottom fingers work, know what a typical profile for pizza is in the oven you're looking at (they change with oven size, manufacturer and whether it's gas or electric) and know what finger profile is in the oven you're looking at, when pricing the oven remember that you will most likely need to change out one or more of the top fingers to get the bake you want on YOUR pizzas and as an after purchase modification each finger will cost you on average about \$100.00 each so be sure to take that into consideration in the cost of the oven.

## [\*\*Dough Clinic / Re: High rising, fast falling and selling for big bucks\*\*](#)

I've not seen that specific pizza before but it looks a lot like one we used to make in our 2-inch deep pans (round as we didn't have square pans of the proper depth). We used to make them as you would a Detroit style pizza, allowing the dough to rise to about 1.5-inches in the pan before dressing and baking (425F for 18-minutes) (will vary with your dough formula). Most of our students didn't go for it as they always commented that there was just too much crust. Sorta like bread with a side of pizza.

Tom Lehmann/The Dough Doctor  
3968

## [\*\*Dough Clinic / Re: High rising, fast falling and selling for big bucks\*\*](#)

We used to make ours using 24-hour cold fermented dough. The formula for the dough included 55% absorption, 0.75% IDY, and the flour that we used was GM Remarkable (about 13.5% protein content). I don't remember the dough weight that we used but I think we combined two of our 12-ounce dough pieces and used a 14-inch round 2-inch deep, deep-dish pan (dough loading = 0.15686 ounces per square inch of calculated pan surface area). We used a Belshaw Brothers Econo-Proofer set at 90F with 75% R.H. to proof the dough in the pan. We typically proofed the dough to about 3/4 of the pan depth before finger pressing the center of the dough down leaving the edge untouched. The dough was then dressed and baked at 425F in our Blodgett deck oven.

Tom Lehmann/The Dough Doctor  
3967

## [\*\*Shop Talk / Re: Which oven makes a better pizza.. Deck oven or the conveyor belt oven\*\*](#)

Advantages of a deck oven:

Infinite baking time (not controlled by a conveyor speed).

Capable of making a myriad of different types of pizzas and other foods (air impingement ovens tend to be more dedicated).

Has a "certain ambiance" (watching someone peel pizzas into and out of the oven). Can be had with a fake log and fire in the oven to look like a wood fired oven for additional ambiance.

Can be had with baking capability of up to 900F.

Baking id done right on the deck or screens can be used as an option.

For deep-dish you will need to place a screen under the pan to prevent burning the bottom of the pan pizza.

Pizza goes in raw and comes out only when YOU take it out (this can be good or bad).

Biggest drawbacks:

You will need a FULL TIME oven tender.(a REAL fun job!/ NOT!)

Need to spin and rotate pizzas during baking.

Need to have 1.5 times the depth of the oven as free space in front of the oven for the oven tender to work in.

More labor intensive.

Generally not as energy efficient.

Larger foot print.

Less production capacity than an air impingement oven.

Not well suited to heavily topped pizzas.

May require a larger hood.

This is why your store concept typically dictates the type of oven you will use.  
Tom Lehmann/The Dough Doctor  
3966

### **Cracker Style / Re: Cracker Crust Baking Temperature ?**

Depending upon the specific type of cracker crust we have used either 425 or 450F.  
3965

### **Cracker Style / Re: Cracker Crust Baking Temperature ?**

Randy;  
That method does a fantastic job of giving you a crust that is crispy all the way through, and best of all, it does a good job of retaining the crisp.

Tom Lehmann/The Dough Doctor  
3964

### **Detroit Style / Re: Detroit cooking question**

Moving your pizza to a higher position in the oven will help to balance the top and bottom heat.

Tom Lehmann/The Dough Doctor  
3963

### **Dough Clinic / Re: diastatic malt and rising time**

ING:  
Diastatic malt provides amylase to the dough which converts damaged starch in the flour to maltose (sugar) which is utilized by the yeast as a nutrient. Since there is a limited amount of damaged starch available for conversion diastatic malt is not a good candidate for providing sugar for long term fermentation, that job is best done through the addition of sugar such as sucrose, honey, corn sugar, or non-diastatic malt powder. When using diastatic malt it is common to utilize finished dough temperatures in the mid 70F to 80F range.

Tom Lehmann/The Dough Doctor  
3962

### **Dough Clinic / Re: Dough rising**

Scott;  
Two potential issues come to mind; 1) The finished dough temperature is too high.  
2) Your yeast level is too high.

Tom Lehmann/The Dough Doctor  
3961

### **Newbie Topics / Re: When to add oil during mix**

Matt;  
The time to add the oil is JUST AS SOON AS YOU DON'T SEE ANY DRY FLOUR IN THE BOTTOM OF THE MIXING BOWL, then just pour it in at a steady rate as the mixer is running on low speed. It should only take about 15-seconds or so to get all of the oil added, once it's added continue mixing at low speed for an additional minute then mix at medium speed until a smooth dough appearance is achieved. The delayed oil addition mixing method is more important when using high levels of oil than when using low levels of oil. The reason for this is because if added in the traditional way (with the water) the oil floats to the top of the water, right where the flour is and the oil is absorbed into a portion of the flour. Oil and flour will make a great "rue" for making gravy but it does not allow for gluten development in that portion of the flour which has absorbed any of the oil leading

to significant inconsistencies in your dough. It is our opinion that this is what has started the incorrect notion that the outside weather affects the amount of water added to the dough (dough absorption).

Shortening, butter, margarine can all be added directly to the dough without using a delayed addition method of mixing.

Tom Lehmann/The Dough Doctor  
3960

### **Dough Clinic / Re: Adding Oil Late - Problems**

You don't say what your problems are but if you are getting clumps of discolored material worked into the dough this is due to adding the oil too soon resulting in oil being absorbed into a portion of the flour and then being incorporated into the dough mass. The other problems occurs when the oil is added too late in the mixing stage, in this case the dough is already quite cohesive and the oil just lubricates the mixing bowl resulting in the dough just riding around inside the bowl attached to the agitator and not getting any mixing action. If you are not adding the water to your mixing bowl as the first ingredient this can cause some problems in that the dough is so slow to clean off of the bowl that by the time all of the flour is hydrates there is a good deal of mixing energy put into the dough already, making the dough too cohesive to add the oil.

Tom Lehmann/The Dough Doctor  
3959

### **Commercial Ovens / Re: commercial gas pizza oven recommendation ?**

Since you are planning to bake both pizza and flat breads you might want to consider one of the gas ovens capable of reaching 800 to 900F.

Tom Lehmann/The Dough Doctor  
3958

### **Dough Clinic / Re: Bulk fermenting vs Proofing**

If you were to "bulk" ferment for, let's say, 24-hours and then subdivide the dough into desired weight pieces, open the dough pieces into skins and make your pizzas right away you would probably have a problem getting anything resembling a round pizza, but that isn't necessarily a bad thing...who ever said pizza had to be round? There are a lot of "free form" pizzas being made these days. If you were to form those dough pieces into balls and then try to open them into skins you would most likely find that it is difficult or even bordering on the impossible to get a skin with a uniform thickness and without excessive dough memory/snap back. The way we address this is to allow the dough balls to "ferment" for a period of time which allows the dough to relax making opening it into skins a much less challenging proposition. With that said, why even "bulk" ferment? While in commercial practice there is a decided difference between bulk fermentation and fermenting individual dough balls, in a home setting there is little, if any real difference. The dough weight/size that we are typically looking at in a home setting is in many cases no larger than the actual dough ball weight in a commercial setting (I just returned from working on a project where we were using 28-ounces for the individual dough ball weight). If we were to bulk ferment the dough the weight of the dough would have been just under 100-pounds. The fermentation dynamics are very different between 100-pounds and 28-ounces to be sure.

My own personal preference is to mix the dough and then subdivide it into desired weight pieces and ferment those individual pieces for whatever length of time I wish to use and that can be at either refrigerated temperature or at room temperature. I just find it a lot easier that way.

When discussing "proofing" and "fermentation" there is an accepted description for each. Fermentation is to allow the yeast and bacteria to leaven the dough, condition the gluten, and develop flavors in preparation for baking. Proofing, on the other hand is to allow for aeration of the dough through yeast and bacterial fermentation just prior to baking. Fermentation can proceed for any number of hours or days while proofing is seldom more than 2-hours, or so. The one exception to this is when we are making a 100% sourdough. In this case the proofing phase may take anywhere from a few hours to as long as 12-hours. This is due to the much slower fermenting properties of the sourdough as opposed to using yeast as the leavening agent.

Tom Lehmann/The Dough Doctor  
3957

**[Dough Clinic / Re: help needed with making pizza using an electric Oven](#)**

Salman;

I think you meant to say 800F not 800C (almost 1,500F). Since electric heating is a dry heat as opposed to gas where water is a by-product of combustion electric heating will always produce a dryer finished product than gas (all things equal). You don't say at what temperature you're baking your pizzas at, but a lower temperature and possibly 2% sugar (16-ounces) might help you reduce the baking time to retain more moisture in the crust. Going to a slightly thicker crust will also help. Not knowing how soft you want the crust to be you could also experiment with adding some mashed potato flakes to the dough. Start with 2.5% dry, mashed potato flakes then add sufficient additional water to re-hydrate the potato flakes. This has been used by bakers to produce softer bread for well over 100-years. If you find that the crust color is too dark when adding potato flakes reduce the sugar accordingly.

Tom Lehmann/The Dough Doctor  
3956

**[Newbie Topics / Re: re-ballng dough leads to massive air pocket?](#)**

CP;

The dough that is shown in the container appears to be over fermented. What is your finished/mixed dough temperature? Dough that is warmer than usual will accelerate fermentation leading to an over fermented dough condition. Do you lid/cover the containers immediately or do you leave them uncovered for a few hours in the fridge before covering? This practice can significantly accentuate any slight increase in finished dough temperature. This is why we suggest leaving the lid off for the first 2 to 3-hours in the fridge. Simple matter to check the operating temperature of your new fridge, ideally, you want it operating in the 36 to 38F range.

Hope this helps.

Tom Lehmann/The Dough Doctor  
3955

**[Pizza News / Re: Teaching Inmates in the Art and Craft of Pizza Making](#)**

Peter;

A good number of years ago I had a contract with different states which required me to make presentations and provide training to inmates in state penitentiaries (ten in total). The topics covered were bread and pastry and pizza baking. The idea was to provide the inmates with a skill set that they could use after their release. Very few bakeries or pizzerias require that their employees be bonded. It's a great idea, I wish there was more of it.

Tom Lehmann/The Dough Doctor  
3954

**[Sauce Ingredients / Re: Which dry spices are worth and which are not?](#)**

Most of the time my personal preference is for using fresh herbs whenever possible. There just isn't any comparison between dried basil and oregano and the fresh/green leaf counterpart. Ditto for garlic too...fresh every time possible. One year between houses we had to live in an apartment without any garden space but we always grew potted basil and oregano in the south facing window.

Tom Lehmann/The Dough Doctor  
3953

**[Newbie Topics / Re: re-ballng dough leads to massive air pocket?](#)**

90F is a temperature where a lot of weird things start going on with dough as you can get bacterial fermentation in addition to yeast fermentation, additionally, 0.75% ADY I think, is on the high side. The highest I ever go with ADY when making pizza dough is 0.5%, so you probably want to think about dialing it back to maybe 0.25% and bench mark from that for further adjustments. Glad to hear that you're leaving the lid off for the initial cool-down period.

Tom Lehmann/The Dough Doctor  
3952

**[Dough Clinic / Re: PRE-cooked pizzas for delivery?](#)**

Davtar;

My advice would be to make your pizzas using par-baked shells. To make the shells just open your dough into skins, apply about 1/2 of the normal amount of sauce and bake until the crust just begins to brown (do not over bake) then store at room temperature until needed to fill an order. To use just add the rest of the sauce, cheese and desired toppings and finish off in a hot oven. If using a deck over you will need to do the final bake on a screen but you can par-bake right on the deck. Total turn around time is about 5-minutes or a little less.

As for putting cheese on the par-baked crusts here in the U.S. it is not allowed due to food safety concerns, and if we do put cheese on the par-bakes we need to refrigerate the par-baked shells which defeats the whole purpose as it results in a longer bake time to finish the pizzas before sending them out.

Tom Lehmann/The Dough Doctor  
3951

**[Dough Clinic / Re: PRE-cooked pizzas for delivery?](#)**

You might be trying to par-bake your pizzas at too high a temperature. Ideally, you should par-bake your pizzas at 425 to 450F/218 to 232C. Trying to par-bake at higher temperatures will always result in bubbling. The process makes a great pizza that is better suited to delivery than most fresh made pizzas, and the finished pizza is crispy too.

We do this procedure commercially at a local pizzeria, AJ's New York Pizzeria here in Manhattan, Kansas (we have been doing this for nearly 10-years now and very successfully too as Adam is getting ready to open another store in just a couple of days). If you would like to know more about this store please go to their web site at <[www.ajsnypizza.com](http://www.ajsnypizza.com)>

Tom Lehmann/The Dough Doctor  
3950

**[Dough Clinic / Re: How to calculate Hydratation with Oil/Sugar](#)**

The percent (%) in bakers percent of any ingredient is found by dividing the weight of the ingredient by the weight of the TOTAL WHEAT FLOUR and multiplying by 100.

In your example you have 100-grams of flour and 70-grams of water so 70 divided by 100 = 0.7 X 100 = 70% total dough absorption.

Tom Lehmann/The Dough Doctor  
3949

**[Stones/tiles/steel, Pans & Accessories / Re: Infra red gun and Peel](#)**

IR non-contact thermometer \$12.00 at Menards or \$40.00 at Home Depot. Metal blade peel for peeling the pizzas out of the oven and a short handle wood peel for use as a prep-peel and peeling the dressed skins into the oven. Ace Hardware has a 12" short handle wood peel for about \$25.00 but you can buy from the internet for about \$5.00 less. There was also some pretty good discussion on wood peels a short time ago.

Tom Lehmann/The Dough Doctor  
3948

**[Dough Clinic / Re: PRE-cooked pizzas for delivery?](#)**

We just keep all of our par-baked pizza shells on an open rack near the oven (uncovered), and we discard any that are unused at the end of the day but if you place them on a wire tree rack at the end of the day and slip a plastic bag over the rack to prevent drying they can be saved for up to 3-days at room temperature. Typically, no special changes need to be made to the dough formulation but with that said, it all depends upon the dough formulation that you are using.

Tom Lehmann/The Dough Doctor  
3947

**[General Pizza Making / Re: Pizza was invented in NYC by Italian American immigrants not Italy](#)**

I seriously doubt that anyone had an 18-inch pizza prior to it coming to the U.S. Like spaghetti, as any Italian will tell you, in Italy they could live for a week on the portion of pasta that we, Americans, eat for a single serving. Roman soldiers were divided into 4-man squads, each person in the squad would gather any edibles during his days travel and at night they would make a rudimentary flat bread with each man contributing the toppings on the bread, it was then scored for four equal pieces and placed on the cooking stone in the center of their fire ring, some have likened this to an early predecessor of pizza too but think about it for a minute, what those soldiers were gathering along the way were various fruits, nuts and berries, then you put fruit and nuts into a bread and put a cross on top of it with icing you have something that more closely resembles the modern day hot cross bun than pizza.

That's my two cents worth.  
Tom Lehmann/The Dough Doctor  
3946

**[Chitchat / Re: Home made dough box](#)**

Up until fairly recently (1960's) commercial cracker doughs were fermented in wood dough troughs. When they were required by law to stop using the wooden troughs it was found that the flavor of the crackers had changed....what had happened?

After a little investigation it was discovered that the wood had become impregnated with bacteria (a type of lacto-bacillus) lactic acid forming bacteria

common to sourdough production, which in turn resulted in a higher level of lactic acid in the dough which impacted the finished cracker flavor. As a result of the cracker sponges being fermented in a steel trough it was necessary for the bakers to add a lactic acid culture to the sponges to replicate the flavor previously had when fermenting in the wooden dough troughs. Point is, don't wash your dough box, just scrape it out and with time you might be rewarded with the development of a unique flavor in your baked pizza crusts, or anything else made from the dough fermented in your wooden dough box. In case you're wondering, cracker sponges were fermented for 18 to 28-hours, but now since they are adding the live cultures to the dough that time has been reduced to something in the 4 to 6-hours range.

Tom Lehmann/The Dough Doctor  
3945

**[General Pizza Making / Re: Pizza was invented in NYC by Italian American immigrants not Italy](#)**

I didn't say they invented it, I just said they ate it, and for the pasta I was commenting on portion size, not who invented it. There are very few, if any foods that haven't been passed around the world in one way or another, some cultures found something that they liked and embraced it while others shunned it. Sorta like Vegemite and Lutefish.

Tom Lehmann/The Dough Doctor  
3944

**[General Pizza Making / Re: Pizza was invented in NYC by Italian American immigrants not Italy](#)**

I run into that all the time when developing pizzas for a new pizzeria operation. We make a great Neo. Classical pizza and no one likes it, then we make a Domino's wanna be and it sells like gang busters. It all has to do with perception. One man's garbage is another man's fine dining. I've always said that regardless of what one might think of the pizza being served, the measure of a successful pizzeria is the fact that they are successfully selling their product and enough people think enough of it to keep them in business...who are we to say that they have a crappy pizza? It may not suit our specific tastes and that's what keeps the pizzeria down the street open, etc., etc., etc.

Tom Lehmann/The Dough Doctor  
3943

**[Shop Talk / Re: Doyon DL18P for Sheeting Thin Crust... need advice](#)**

Being perfectly honest with you, I'm personally not thrilled over the design of the sheeter for use in making pizza skins. Take a look at the Somerset Dough Sheeter #CDR-2000.

Remember that you will need to turn the dough piece 90-degrees between the first and second pass. The design I'm referencing here is much more user friendly in allowing you to do that. The price that I'm currently seeing for this sheeter is \$3,680.00 new.

Tom Lehmann/The Dough Doctor  
3942

**[Shop Talk / Re: Doyon DL18P for Sheeting Thin Crust... need advice](#)**

You don't have the catch tray with the Doyon in question so it really does make handling and feeding the dough more difficult. The Doyon is actually set up to do straight grain sheeting with no turn while the Somerset sheeter referenced transfers the sheeted dough (first pass) onto a catch tray allowing the operator to

easily turn it and add more flour if necessary before passing it through the second set of sheeting rolls. It's not unusual to pass the dough back through the second set of sheeting rolls a second time to get a reasonably round skin. This is easily done as the skin can be laid on the catch tray and carefully fed back into the sheeting rolls.

Tom Lehmann/The Dough Doctor  
3941

**Dough Clinic / Re: New to my spiral mixer, also solution to harder water than I am used to.**

Different mixer, different flour, different shop....so what has changed? :-D  
The difference in water hardness between 1-grain and 7-grains is essentially nothing, considering you need to have 35-grains or more before the water is considered to be hard water, so for now let's rule the water out.  
Then there is the mixer, your mixing times should be similar between a 60-quart or larger Hobart planetary mixer and a spiral mixer, BUT you didn't provide any information on the dough size or capacity of your new spiral so I can't say anything definitive.

And then there is the flour, unlike hockey pucks (all the same) flour is more than somewhat variable, especially when changing brands. All A.P. flour is NOT created the same, some is more like a pastry flour while others are more like a bread type flour. Since there is no defined purpose for A.P. flour, unlike bread flour, pastry flour, cake flour, cookie flour, etc. it can be designed in whatever way the miller wants the flour to be designed....this is a fault with using A.P. flour, as there is little or no continuity between different brands of A.P. flour.

If the dough just feels stiffer than normal to you you might end up being lucky and just needing to add more water to the dough (yes, water is variable too). If you cannot replicate your old dough by adjusting the dough absorption you will most likely need to bring in a different type or brand of flour to experiment with.

I hope this help.

Tom Lehmann/The Dough Doctor  
3940

**Shop Talk / Re: Doyon DL18P for Sheeting Thin Crust... need advice**

Thin cracker doughs are typically made using 45% +/- dough absorption, sometimes even less. The dough in the video has a higher absorption than that. In the end though buy what you are most comfortable with but keep in mind that you will probably need to tweak the dough (absorption and fermentation time) a bit to get it to run smoothly through any sheeter. Cracker type doughs are notorious for requiring multiple passes through the final sheeting roll.

Tom Lehmann/The Dough Doctor  
3939

**Shop Talk / Re: Dough Trays vs. Plastic Baggies???**

Some pizzerias put their dough balls on 18 X 29 aluminum sheet pans and then cover each sheet pan with its own large bag, place it into a rolling pan rack and place in the cooler. Some others place the individual dough balls into their own individual plastic (Food Bags), twist the open end into a pony tail and tuck it under the dough ball as it is placed onto a sheet pan and taken to the cooler (no further covering is needed in this case). Still others like to place the dough balls onto the sheet pans and then cover the entire rack with a rack bag or better yet a plastic rack cover (you can buy them ready made or it is usually cheaper to have them made for you at a local upholstery shop), the front is made as a flap which is

secured with tabs of Velcro.

None of these will typically require any open exposure to the air in the cooler (like cross-stacking). If a dough box is used it is almost mandatory in a pizzeria that you cross-stack the dough boxes for a minimum of two hours before covering the boxes for storage.

I am not aware of anyone that does not cover the dough balls, pans or racks to prevent excessive drying for the time the dough balls will be in the cooler, this is especially critical in a commercial establishment where there will be significant traffic in and out of the cooler at the same time the dough is being stored in the cooler.

Tom Lehmann/The Dough Doctor  
3938

**General Pizza Making / Re: Pizza was invented in NYC by Italian American immigrants not Italy**

Craig;

NOW THAT I CAN BELIEVE!!! :-D :-D :-D

They also brought with them pies: Moon pies!

Candy: Mars Bars!

Cars: Saturn

And they left behind a silly looking dog....Pluto!

OK, I'm out...no more left that I can think of.

Pizza is just too good to have been invented by an earthling.

:-D :-D :-D :-D :-D :-D

Tom Lehmann/The Dough Doctor  
3937

**Dough Clinic / Re: PRE-cooked pizzas for delivery?**

Can you provide pictures of the par-baked crust as well as your dough formula?

Thanks,

Tom Lehmann/The Dough Doctor  
3936

**Dough Clinic / Re: PRE-cooked pizzas for delivery?**

Davtar;

That crust looks awfully good!

Can you send a photo of the bubbles you are experiencing? Also, how much yeast are you using and what type of yeast is it?

If you are not already doing so you might try docking the skin prior to baking as this is the accepted way of controlling bubbling of the crust during baking. Since you want to have the well raised edge just dock the center portion of the skin.

You're making good progress.

Tom Lehmann/The Dough Doctor  
3935

**Prep Equipment / Re: What size container for proving dough**

Matt;

Use a container that is about 3 times the volume of your dough ball. Or you can always go the route of plastic bagging your dough balls (this has been discussed a number of times here).

Tom Lehmann/The Dough Doctor  
3934

## [Shop Talk / Re: New Pizza Store "needing gelp with thinish pizza base"](#)

Reno;

Your last stipulation is a game changer. To achieve the characteristics and a decent flavor profile for your finished crust it will need to have at least some fermentation. Even an emergency dough requires upwards of 2-hours fermentation time before it is ready to use. Do you have walk-in coolers in your stores? If you don't have provision for dough boxes you can use sheet pans and bags to cover the pans of dough balls or a cover to enclose the entire rack, this would allow you to make the dough, scale and ball it and then allow it to cold ferment for 18 to 24-hours (minimum) or 72 to 96-hours maximum) before use. While we normally recommend that the dough be removed from the cooler and allowed to warm to 50F/10C prior to being opened into skins it can be formulated so as to allow the dough to be worked directly from the cooler if necessary. By this method there is little chance of ever running out of dough and there should be no lost dough at the end of the day. The process that you have proposed will require that you be mixing dough continually through the day and any dough not used withing the very short window of time that the dough is ready to use will need to be disposed of or made into a different product.

Tom Lehmann/The Dough Doctor  
3933

## [Shop Talk / Re: Hi Guys New Pizza Store "needing gelp with thinish pizza base"](#)

Pizza crust like bread isn't necessarily the best when made from "fresh" made dough, in that regard it is somewhat like beer, wine, bourbon and other fine liquors....they're better when aged, but then again, it is all what your customers have come to expect flavor wise. But I can say this, if you want to be able to compete with any of the larger chains, especially those like Pizza Hut and Domino's you will need to get some fermentation on your dough for flavor. It is my expert opinion that you can make your dough either once a day or every other day and still deliver a great and possibly better tasting product to your customers without the need to discard and dough while still working the dough right out of the cooler. Your premix package (350-grams weight) containing salt, sugar and IYD (AKA "goodie bag") will most likely be made up of the following amounts based on the addition of 10-kg. of flour:

Salt: 200-grams  
Sugar:100-grams  
IDY: 50-grams.

These amounts are based on the assumption that there has not been any filler added to the "goodie" bag/ingredient packet.

If you are trying to replicate the packet this might be a good starting point and then see if the dough made from this mix performs similarly to one made with the commercial premix packet.

Tom Lehmann/The Dough Doctor  
3932

## [Shop Talk / Re: Hi Guys New Pizza Store "needing help with thinish pizza base"](#)

The cracking which you describe is due to dough that is either too dry or too tight. Let's increase the yeast amount in the packet to 100-grams (a 50-gram increase) and reduce the salt to 150-grams. This will put the salt level in your dough formula

at 1.5% and the yeast level at 1% IDY. The increase in yeast level will promote more fermentation within a given period of time resulting in a softer, more extensible dough which should open without cracking.

By far the most common reason for bubbling and blistering of the crust during baking is taking a cold dough skin directly from the cooler, dressing it and baking. When he is experiencing the problem tell him to pull a few skins out of the cooler and allow them to warm AT room temperature for 30-minutes before he dresses and bakes the skins....let's see if that addresses the problem.

Tom Lehmann/The Dough Doctor  
3931

### **Dough Clinic / Re: Adding Oil Late - Problems**

It sounds like you have wwwaaayyy too much oil in your container. How to get the right amount of oil in your container? Using a piece of paper towel, wet a small portion of the towel with oil and then wipe the container with the paper towel, if you can see a shine on the container you have enough oil.....you really don't need much oil at all.

Tom Lehmann/The Dough Doctor  
3930

### **Shop Talk / Re: Doyon DL18P for Sheeting Thin Crust... need advice**

When a rolling pin or pastry pin is used to open the dough it is done using multiple passes of the pin over the dough which in reality is quite gentle on the dough but a mechanical sheeter will accomplish the same thing in just 1, 2 or 3-passes which is MUCH more aggressive and tears the internal structure of the dough apart. In the world of BIG commercial sheeters there is a type of sheeting line called "stress free" which employs a satellite dough reduction station consisting of many smaller rollers which are specifically designed to contact the dough in such a way so as to emulate hand rolling of the dough. The biggest issue is when the sheeter is used to fully open the dough skin, in this case quite a bit of de-gassing of the dough takes place resulting in a very different finished crust appearance and texture. A number of years ago we developed a procedure for those operators who are "toss challenged" or who employ high school and/or college kids to work on the bench opening the dough balls into skins. The greatest challenge is to open the skin without getting overly thin spots in it. Our method utilizes the sheeter to open the dough to not more than 80% of the full diameter and then finish opening the skin by hand. This does not de-gas the dough nearly as bad as opening it to full diameter using just the sheeter, done correctly it does a pretty decent job of giving the crust a fully hand made/opened appearance and texture.

VERY STIFF cracker and thin crispy type doughs are all but nearly impossible to open by any other method except for using a dough sheeter to open it to full diameter, and the finished crust characteristics fit the expectations we have of a thin cracker or thin crispy type of crust so the sheeter fits well into making this type of crust.

Tom Lehmann/The Dough Doctor  
3929

### **Shop Talk / Re: Hi Guys New Pizza Store "needing help with thinish pizza base"**

So much for product ingredient declaration! It's a good thing that stuff isn't being marketed in the U.S. as milk, eggs and soy are considered to be allergens and MUST be shown on the ingredient deck/statement.

So, with that aside, let's look at what each ingredient does in a pizza dough:

Dry Yeast is for leavening the dough.

Canola seed coated in a vegetable oil doesn't make any logical sense at all. BUT vegetable or canola oil would be used in the mix to prevent ingredient segregation due to handling.

Salt is used as a multi-functional ingredient, flavor, control rate of fermentation, dough strengthening as just a few of its functions.

Milk powder could be used as a dough softening ingredient but more than likely it is being used to enhance crust color.

Wheat gluten is a dough strengthener, probably comes in pretty handy considering you are using cake flour.

Soya powder/soy flour has no real benefit specific to the dough.

Egg powder/dried whole egg again, no real benefit to the dough but it does contribute to crust color.

There is no real reason to coat the IDY with oil, and in fact it may detract from the performance of the IDY.

Let's go with the modification as proposed in my last response and bench mark from there. My professional guess is that all that other stuff is nothing more than fluff.

Tom Lehmann/The Dough Doctor

3928

### **Dough Clinic / Re: New to group**

BJC;

I'm guessing that you are using 50# of flour but you need to verify that. What kind of flour are you using? What is your targeted and actual finished dough temperature? Lastly, what is your present dough management procedure (be sure to include all steps, no matter how small as well as times and temperatures). Actually, since your dough ingredients are given in weigh measures as opposed to volumetric portions, it is correctly referred to as a "formula". To convert your dough formula into bakers percent the flour is always shown as 100% and then, for each other ingredient just divide the ingredient weight by the flour weight and multiply by 100 and presto! You have the ingredient shown in bakers percent.

Tom Lehmann/The Dough Doctor

3927

### **Dough Clinic / Re: Dough still not right**

A couple of pictures of your dough balls at the time you are getting ready to open them into skins would help in determining if the dough is over fermented or not. Also, what is your scaling weight for what size pizza?

Tom Lehmann/The Dough Doctor

3926

### **Dough Clinic / Re: PRE-cooked pizzas for delivery?**

Because you need to ensure that the skin is thoroughly baked all the way through.

At high temps only the bottom gets baked while the center of the crumb is not sufficiently baked to support itself resulting in collapse upon cooling.

Tom Lehmann/The Dough Doctor

3925

**Dough Clinic / Re: PRE-cooked pizzas for delivery?**

Pizzas made using a par-baked crust are firmer and crispier than a pizza made using a dough skin because the crust is baked not once, but twice driving off even more moisture than is normally possible with a single bake. While many find these characteristics desirable for their pizzas, if you want to have a softer, less crispy pizza the solution is to increase the moisture retention of the crust so that even after the second bake it has the same or approximately the same moisture content as a single baked crust. We did that very same type of research a number of years ago and found the approach to be quite successful. The key to achieving what you are looking for is to incorporate a gum into the dough as an added ingredient. The gum blend that we found to be most effective was a blend of locust bean gum and guar gum and when seeking out a commercial gum blend for this application we found that the Ticaloid Lite gum blend from TIC Gums Inc., Belcamp, MD Tel: 410-273-7300 was highly effective in this particular application. The amount of Ticaloid Lite that we used was 2% but if using another gum blend the amount will most likely be somewhat different. Gums are generally available throughout the world so if you need to search them out look towards a company making candy and jams and jellies as they are the most likely users of gums. If you cannot source gums try using potato flakes in your dough. Potato flakes have a very high absorption and tend to hold onto the water quite well resulting in an increase in retained water. Begin with 2% potato flakes/potato flour and work up in 2% increments. Be sure to add additional water to the dough with the potato flakes. With each 2% addition of potato flakes you will need to add roughly 5% additional water/dough absorption. If you dough formulation includes sugar delete the sugar if adding potato flakes to prevent excessive crust color development.

Another option to look at is the addition of fiber (which is actually just another gum), for example, wheat bran when FULLY HYDRATED will significantly increase the moisture content and moisture retention of the crust, the only problem being is the color imparted by the bran. If you have access to a light colored bran, such as pea or bean fiber these might be likely candidates for this application. To fully hydrate any fiber material place it in a container and add warm water incrementally over several hours until the fiber will not absorb any more water. Once you know the amount of water needed for a specific amount of the fiber you can prepare future batches by simply placing a scaled amount of the fiber material in a container and adding the required amount of warm water, stirring and allowing to hydrate for about 2-hours. The amount of fiber to add to the dough will vary with the type and purity of the fiber material, but it will most likely be somewhere close to 5% to achieve the results you're looking for.

How effective is fiber at retaining water???? For those of you old enough to remember HIGH FIBER BREAD you will remember that it had the mouth feel of a wet sponge. In that application the fiber content was about 30% of the flour weight, and water was the FIRST ingredient shown on the ingredient declaration.

Tom Lehmann/The Dough Doctor

3924

**Dough Clinic / Re: When is flavor maxed out?**

If you use a RF before CF the dough is warm and is expanding quite nicely creating a great insulating dough which is very difficult to get cooled down. With enough

time in the fridge you probably are getting the dough cooled down but I'll hazard a guess that only 25% of the time in CF is actually CF the rest of the time the dough is still warm so you are getting the flavor characteristics of RF.

My guess is that you are getting a finished flavor profile more closely resembling that of a dough which has been fermented at room temperature.

I was raised in the baking industry where room temperature fermentation is the norm rather than the exception and this is where the characteristic flavor of white pan bread comes from, for this reason I think that pizzas which are made using RF have got a flavor more closely resembling that of commercial and most home made breads. It is for this reason that I personally like the flavor achieved through CF, but that's just me, others may not have the same flavor association as I do or have a preference for RT over CF for whatever reason.

I had a professor who used to say "You pays your money and takes your pick".

Tom Lehmann/The Dough Doctor

3923

### **Dough Clinic / Re: When is flavor maxed out?**

The extra fridge time is what's making the difference. Because temperature is the major driver of fermentation if you try to compare 2-days CF against 2-days RT the RT will always produce the crust with the stronger flavor due to more fermentation...but the flavor will also be different from the flavor developed by CF. A 5-day CF dough should give you a pretty decent crust flavor that is typical of a CF dough. I think it takes 5 to 7-days CF for the optimum flavor to develop in the finished crust, but then crust flavor is highly subjective so some might argue that the best CF time is 3-days and others will say it's 10-days. What I'm saying is that if you really want a fair representation of CF flavor in a finished crust I think you are going to have to CF for at least 5-days.

Truth be known though, I'm not a purist when I'm feeding the family so most of my doughs get no more than 3-days CF at those times, but when I have a real taste for pizza, and it's just my wife and me, I plan ahead for at least 5-days CF time.

Tom Lehmann/The Dough Doctor

3922

### **Dough Clinic / Re: When is flavor maxed out?**

I've not seen any factual research done on the use of a poolish as compared to either RF or CF. To get the story correct you would have to do pH (acidity) measurements on the different doughs which is pretty easy to do but what is not so easy to do is to quantify the different acids present and their amounts between the different processes. I know a lot of people have done work along these lines but to the best of my knowledge all of the work has centered around just the flavor of the crusts and as we all know flavor is highly subjective especially when it comes to tasting things that are acid. Back when I used to do the sensory evaluations for AIB we always had a hard time identifying panel members who could accurately distinguish subtle differences in pH/acidity.

Tom Lehmann/The Dough Doctor

3921

### **Dough Clinic / Re: PRE-cooked pizzas for delivery?**

Corn flour no, wheat bran yes (but it will impact the color of the crust).

Tom Lehmann/The Dough Doctor

3920

### **Dough Clinic / Re: reasons dough wont rise in oven**

I totally agree with Essen1, it would help us to figure things out better if you can get us the weight measures rather than volumetric portions.

Aside from that, don't put the dough into a Zip Lock bag, instead, just cover the bowl with a piece of stretch wrap.

Rather than using "warm" water to activate the yeast and add to the dough, instead use a thermometer to measure the water temperature (100F) for hydrating/activating the yeast. By the way, you should be using about 4 times the weight of the yeast as water to hydrate the ADY in. Allow the yeast to hydrate for 10-minutes, 1-minute is not enough time. The remainder of the water that you are adding to the dough should be between 75 and 80F.

What does your dough look like after the CF period?

After taking the dough out of the fridge use your thermometer again to measure the temperature of the dough ball, do not begin opening the dough ball into a skin until the dough ball reaches an internal temperature of at least 50F.

How are you opening the dough ball into a skin? You mention the dough being about 1/4-inch thick throughout, are you using a rolling pin to open the dough ball into a skin?

What size skins are you making?

Are the skins easy to open or do they fight you?

Sorry to have more questions than answers right now, but the answers to these questions plus the actual ingredient weights will help us to better understand your dough and figure out what might be happening.

Tom Lehmann/The Dough Doctor  
3919

### **Off-Topic Foods / Re: Rhubarb Bonanza!!!!**

Same here, only way to eat it fresh, with salt. That was back in the days when salt wasn't the poison that it is today....hummm, wonder what changed?

Today my wife and I also love it as a rhubarb pie (hold the strawberries please) and as a preserve.....really good! :)

Tom Lehmann/The Dough Doctor  
3918

### **Dough Clinic / Re: PRE-cooked pizzas for delivery?**

For testing purposes I would suggest the following:

- 1) 25% Guar + 75 Locust bean.
- 2) 50% Guar + 50% Locust bean.
- 3) 75% Guar + 25% Locust bean
- 4) 100% Locust bean.
- 5) 100% Guar.

Not knowing the strength of the gums that you have available it is impossible to say which combination would work best in your application. If I had to choose a single combination it would be #2 above. Be sure to follow the manufacturer's/suppliers directions for hydrating the gum prior to addition to the dough.

If you find that the crumb is too gummy this is an indication that the amount of gum being used is too high. I like to begin at 2% addition level and bench mark from there to establish the use level for the gum at hand.

Tom Lehmann/The Dough Doctor  
3917

### **Shop Talk / Re: Looking for a new pos system.**

You might also consider posting your question in the Think Tank at PMQ, <[www.pmq.com](http://www.pmq.com)> at that web site is visited mostly by store owners.

Tom Lehmann/The Dough Doctor  
3916

**Dough Clinic / Re: PRE-cooked pizzas for delivery?**

You are confusing crumb "staling" with pizza firming shortly after baking. These are two very different phenomenon. Pizza firming soon after baking is a result of either loss of moisture from the crust or migration of moisture within the crust from the moist crumb portion to the much drier outer crust portion from where even more moisture is lost through evaporation. Crumb staling is a much more complex reaction between the starch and the protein resulting in a distinct firming of the crumb structure over time. This firming begins soon after the product is baked but is essentially un-noticeable for the first 12-hours or so and then after that the firming becomes more and more apparent as time progresses. Just compare a bagel made fresh and one that is 4 or 5-days old to see what staling does to a product, but a bagel that is less than 12-hours old shows minimal deterioration in quality due to staling. The use of diastatic malt will have little or no impact on crust "firming" and if used at sufficiently high levels it will result in a sticky dough that cannot be corrected and a crumb structure that is best defined as gummy.

Tom Lehmann/The Dough Doctor  
3915

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

For a 5 to 6-hour RT ferment all you need to do is to mix the dough until it takes on a smooth appearance. This typically constitutes about 50% of full gluten development. Biochemical gluten development will then take care of the rest for you.

Tom Lehmann/The Dough Doctor  
3914

**Pizza Toppings / Re: Pineapple?**

Hawaiian pizza with pieces of FRESH RIPE pineapple and Canadian bacon or ham (really not much difference) like'm both.

Tom Lehmann/The Dough Doctor  
3913

**Stones/tiles/steel, Pans & Accessories / Re: Peel width for a 14" door width?**

I would consider a 9" peel as ideal or a 10" peel if you can find one or get one made.

Tom Lehmann/The Dough Doctor  
3912

**Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

Two points I'd like to bring up.

- 1) When using a mechanical dough mixer there is no benefit to putting the flour in the bowl first and then adding the dry ingredients and blending them together...it's nothing more than a "feel good" thing.
  - 2) By putting the water in the mixing bowl first followed by the flour and remainder of dry ingredients on top of the flour you will significantly reduce the total dough mixing time.
- When comparing high speed mixing to low speed mixing, the length of time

typically needed to achieve a properly developed pizza dough with a smooth, satiny appearance is some where between 17 and 25-minutes, while if you initially mix the dough for 1.5 to 2-minutes and then add the oil and mix for one additional minute in low speed and then immediately go to medium speed you should be looking at 8 to 10-minutes to accomplish the same level of gluten development. This was one of the things we used to demonstrate to our students at our annual pizza seminar.

Tom Lehmann/The Dough Doctor  
3911

### **Dough Clinic / Re: Gluten: Strength - Development - Arrangement**

QD;

One correction there, after 1.5 to 20-minutes mixing at low speed the dough will not be coming together to form a ball, but instead it will look quite shaggy but without much, if any, dry flour remaining in the mixing bowl, that's when you want to add the oil.

Other than that, let us know how it works out for you.

Tom Lehmann/The Dough Doctor  
3910

### **Dough Clinic / Re: Help! Many many many dough questions**

In addition to what Craig has said in #1 above I'd like to add the following:

Amount of yeast used will also have an impact upon the thickness of the finished crust.

How you open the dough will affect it too, for example, if you want to minimize the edge or rim height open it using a rolling/pastry pin as opposed to opening it by hand which typically results in the greatest amount of oven spring resulting in greatest finished crust height.

And the dough absorption will also impact crust height, generally, the higher the dough absorption the greater the finished crust thickness and more rise to the edge.

Your dough formula and management procedure would help greatly.

Tom Lehmann/The Dough Doctor  
3909

### **Dough Clinic / Re: From Pizza Pie to Humble Pie**

From your description it sounds like an over fermented dough. When the dough is significantly over fermented it becomes bucky/overly elastic, has a mind of its own to the point where I describe it as trying to open a tennis ball into a pizza skin.

Tom Lehmann/The Dough Doctor  
3908

### **Shop Talk / Re: question: how do you manage a multi-day ferment in a commercial setting?**

Simple, you project the greatest number of pizzas that you might sell in a single day, let's say that number is 300 pizzas. You then rebuild that inventory back at the end of each day, so if you only sold 200 pizzas you would only make 200 new dough balls if you have an unusually slow day you're going to have a lot more carry over dough balls so you would rebuild the inventory back to the full 300 or maybe even less if circumstances dictated. In any commercial operation the key is the ability to be able to accurately project sales. Here we know how different events at K-State or other city events impact sales so we plan ahead for them by adjusting out dough ball inventory. We like to work on a 36 to 48-hour cold fermented dough as this still

allows us to manage the dough for as long as 96-hours if that ever becomes necessary. In a commercial setting managing the dough for 48-hours has its benefits in that any unused dough balls can still be held for use up to an additional 2-days before using them becomes problematic from a quality and CONSISTENCY stand point, and if an unexpected caravan of Gray Hound buses pulls up out front unexpectedly one day we know that we can still use the dough at 24-hours if we absolutely need to. This is the same operating/dough management model used very successfully by the large box chains. Example in projecting sales and how local activities impact those projections: We have a very large annual local event coming up soon, the Country Stampede. With literally thousands of people attending this event you might think that a pizzeria would show a significant sales increase, wrong....historically we know that it has little or no impact on sales so no extra dough is made, but when the students start filtering back into town in mid August the cooler gets packed with dough balls. Heavy snow or really cold weather really dampens sales, but warm weather in January or February (even if for just a couple of days) can easily fill the store so we watch the weather and plan accordingly. For those times when we do have left over dough balls we have no hesitation in converting them to cheese bricks or garlic knots.

Tom Lehmann/The Dough Doctor  
3907

### **Dough Clinic / Re: From Pizza Pie to Humble Pie**

An old trick that I learned a long time ago in dealing with over fermented dough is to toss it back into the mixer and CAREFULLY mix the dough just until it becomes extensible, remove from the bowl, scale, ball, allow dough balls to rest for about 20-minutes and open into skins.

NOTE: If you over mix the dough it will turn into "elephant snot" sticky, stringy, gooey and you will need to trash it.

Tom Lehmann/The Dough Doctor  
3906

### **Pizza News / Re: Little Caesars Pepperoni and Cheese Challenge**

I wonder what the count is on their pepperoni slices? Wasn't it PH that did a pepperoni count of one of their pizzas a number of years ago but the fact in the matter was that they went to a higher count pepperoni. It would be nice to be able to see a calorie count between their pizza and a like one made by each of the other big box chains.

Tom Lehmann/The Dough Doctor  
3905

### **Dough Clinic / Re: From Pizza Pie to Humble Pie**

I've never seen it done without a mixer, the dough just keeps wadding up and getting worse by the minute.

Tom Lehmann/The Dough Doctor  
3904

### **Newbie Topics / Re: How to minimize heartburn after eating pizza?**

To Peter's point about the dried oregano, a number of years ago I was working with a pizzeria just outside of a retirement community. They couldn't give their pizzas away to anyone in the retirement community as everyone complained of heartburn after eating their pizza. Based on work that we did when I was employed at the AIB I removed both the dried oregano and the dried basil and replaced both with just fresh, green leaf basil, we did not add any oregano at all...it was never missed. We

had some fliers printed off that we distributed to the residents of said retirement community, we invited them to come by for a free slice of pizza and a fountain drink (we figured that would be hard for them to pass up) we went on to mention that this was to celebrate our new, old world pizza made with garden fresh basil and sliced fresh, ripe tomatoes, and went on to say that this pizza is lighter (thinner crust) and does not give heartburn as other pizzas do. We invite you to try our new pizza and let us know what you think of it. Aside from the very positive comments that were received on the pizza during those first nights, we started getting return customers from the retirement community as well as glowing reports on how this was the first pizza they had been able to really enjoy for many years as it did not result in a severe case of heartburn.

In some cases the heartburn results from the acidity of the tomatoes used in making the sauce so this is why we used thin sliced fresh, ripe tomatoes to replace the sauce on these pizza, plus it didn't hurt that it contributed to the appearance of the pizza too making it look more "old world"/rustic.

This pizza didn't replace their regular pizza, it just supplemented it on the menu to it added to their bottom line.

In later years it was brought to our attention that mozzarella cheese was becoming less flavorful despite what the manufacturers were saying about it not changing....we found that the over use of dried herbs (oregano and basil) was overpowering the more delicate flavor of the cheese making the pizzas appear to have less and less cheese flavor. To demonstrate this concept we used to make pizzas at all of the pizza shows using just 4-ounces of mozzarella cheese on a 12-inch pizza but with fresh, green leaf basil replacing both the dried basil and oregano and the only questions we were ever asked from the audience was "what kind of cheese did you use? It's so flavorful!" Later on we did some sensory tests using only fresh basil, fresh oregano and blends of the two. We found that our sensory panel preferred the basil only to the fresh oregano only and that the combination of 75% fresh basil and 25% fresh oregano was the second most preferred.

Just some interesting things that we found out about dried basil and oregano.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

3903

### **Dough Clinic / Re: Dodgy flour or dodgy weather?!**

Joe;

To see if the flour is responsible for the issues #1, you will need to buy another bag of the same flour, just be sure it has a different lot number.

As for #2 I'd need to see your complete dough management procedure to give you suggested temps and places to take those temps, but if you do not have a targeted finished dough temperature and you are not monitoring that temperature you are missing one of the major control mechanisms for whatever your method of dough management might be, as I've said so many times before, "temperature is the key to effective dough management" and without effective dough management you cannot have dough consistency. While dough consistency may not be a great hurdle when making pizza at home it is a huge issue in a pizzeria setting. Where you are trying to train individuals in opening dough balls into skins you need to have the consistency provided by effective dough management.

If you can share your formula and dough management procedure we might be able to provide additional input.

Tom Lehmann/The Dough Doctor

3902

## [\*\*Shop Talk / Re: question: how do you manage a multi-day ferment in a commercial setting?\*\*](#)

M y poor old head is spinning! :-D

Let me see if I can sort this out.

Assuming that you are planning to use a 2-day (48-hours) refrigerated dough management procedure.

1) On opening day you will have 300 dough balls in the cooler that are 48-hours old plus 300 dough balls that are 24-hours old.

2) If you only sold 200 pizzas you would use the remaining 100 dough balls on the following day (remember FIFO) and pull from the inventory of 48-hour old dough for the rest of the orders throughout that day. Whatever is left over at the end of the day will be used on day 3. If you end up pushing your dough balls out to day 4 you are being overly optimistic in the number of dough balls needed so you're probably going to need to cut back on the number of dough balls that you are planning to make tonight to give you an inventory of 24-hour old dough balls tomorrow. This is going to be an educated judgement call on your part.

3) If you have an unexpectedly large/busy soft opening and sell 500 pizzas you will have depleted your inventory of 300 48-hour old dough balls and have cut into your inventory of 24-hour old dough balls to the tune of 200 pieces, leaving only 100 pieces that will have 48-hours age on them for tomorrow, so to rebuild your inventory you will need to make 500 dough balls tonight (200 to augment the short inventory of 48-hour old dough balls (only 100) plus the 300 needed to provide the daily 300 dough ball inventory.

4) I've yet to see a true soft opening that ever outstripped it projected daily inventory of dough balls on the first day. That aside, if you really anticipate getting slammed at opening (I pity your staff) there is nothing wrong with making additional dough balls that will be 48-hours old at the time of opening and pushing them out to 3 or possibly 4 days if necessary if things don't go as planned.

It's the number of 2 day old dough balls that are being moved into the 3-day slot that you want to be watching because on the 4th day it becomes a case of use it or dispose of it (any number of ways to do this: by trash dumpster, by making the dough balls into something useful like bread sticks, garlic knots, etc., or by incorporating it into new dough at an amount not to exceed 15% of the new dough weight).

Most well managed pizzerias will only be moving a few boxes of dough balls from the 2 day slot into the 3rd day slot. This is an indication that the store always has "spec" dough on hand to meet daily orders with a little extra (just in case they get a special order like an office party or birthday party).

While it is never a good thing to run out of dough on your maiden flight, it does occasionally happen (you're not a mind reader and you cannot be prepared for everything) but when it does happen I've found that people are really quite understanding, just don't let it happen again if at all possible, then you're going to begin getting a reputation that will be hard to live down, but if it does happen there are always ways to mend those fences, like a customer appreciation night (full price for the pizza but maybe a free fountain drink or a free order of bread sticks).

Tom Lehmann/The Dough Doctor  
3901

## [\*\*Pizza News / Re: Are the Fast Casual Pizza Places Having Problems?\*\*](#)

Peter;

Like any new concept, it takes off like a rocket and everyone has to have a piece of

the action, then all of a sudden the consumer is bombarded with the concept at every turn and it becomes "old hat" to them so they go out looking for the next new thing to come down the pike. Like other concepts it will continue to remain with us but to a lesser degree and that means that some of the major players may decide that there just isn't enough profit in the concept to maintain all of their stores so they either close a bunch of them or in some cases all of them. I've found that the smaller chains and independents are better able to survive this type of down sizing so when the music stops they're the one now in the "captain's seat" and generally survive quite well. We have seen this many times but most recently in the growth and demise of the following:

bagel shops, donut shops, and the gourmet hamburger places, going back in time a few years we also saw the demise of the pie shops and it wasn't all that long ago that it seemed that every town had a sandwich shop (Subway wanna be) of one kind or another. Pizza, on the other hand, is variable beyond imagination, just think of all the different pizza presentations that you can have or think up, add to that the fact that most independent pizzerias have a low overhead, decision making on a dime, and most of all no franchise fees to be paid, is it any wonder that the independents outlast the big box chain stores? Due to mistrust that consumers have in commercial food today (processed food, food safety issues, perceived wholesomeness of food in general (organic and non-GMO are classic examples) we're finding that many consumers are now buying their own food (from wherever they feel most comfortable) and preparing meals at home...one can only wonder how long that will last! This is being capitalized on by the independent operators who now promote sourced locally, organic, non-GMO, or whatever makes the consumer feel good about eating.

Ye gotta love the food industry!

Tom Lehmann/The Dough Doctor  
3900

### **Dough Clinic / Re: Joe Beddia Pizza Dough query!**

Craig;

You're correct about the sea/ocean water as it is about 3.5% salinity but remember that if you are using, on average 65% absorption as sea water the actual salt contribution in bakers percent will be about 1/3 less so that brings us right back to something close to 2% or a little more.

Tom Lehmann/The Dough Doctor  
3899

### **General Pizza Making / Re: Best pizza types for a small business?**

Here is a dough formula that is about as bullet proof as it gets. It has record of over 35-years of success and it has been copied by many successful pizzerias over the years. The dough management procedure that it is made by gives you a very consistent and uniform pizza with little or no waste/loss.

Here is the dough formula:

Flour: strong bread type flour (12 to 12.8% protein content) 100%

Salt: 1.75%

Sugar: (optional) 2%

IDY: 0.375%

Water: 60 to 62%

Oil: 2%

The type of pizza made by this formula might be described as a New York style while others refer to it as a Domino's style. Whatever the case, it works well for

making pizzas, calzones, bread sticks, garlic knots, dipping bread, focaccia, and if you brush it with melted butter and sprinkle with a cinnamon-sugar mixture it can be baked as is for a tasty treat or you can add a thin layer of ricotta cheese, some fresh fruit and garnish with a sugar-water icing for a dessert pizza which can be served hot/reheated or cold or even with a scoop of ice cream.

If you e-mail me at <thedoughdoctor@hotmail.com> and request a copy of my Dough Management Procedure I'll be glad to provide you with a copy.

This exact same dough formula and procedure are presently serving duty in the Bahamas, St. Kitt and the Dominican Republic so it is well suited to your climatic conditions.

Tom Lehmann/The Dough Doctor  
3898

### **Pizza News / Re: Are the Fast Casual Pizza Places Having Problems?**

Peter;

Great example and a study of why you need more than a concept to develop a great business or in this case restaurant.

Every pizzeria or restaurant that I've consulted with will tell you that the first thing we discuss in detail is customer service. I wrote an article on this a number of years ago spelling out how you can have great food and lousy customer service and fail miserably while the guy down the street has good/mediocre food but outstanding customer service and is doing very well. I find myself complimenting more and more on great customer service whereas a few years ago I never felt it necessary to do so as everyone had good customer service skills but today is a different world in my view, and customer service is severely lacking in so many places where it shouldn't be. I feel that by complimenting both staff and management on great customer service and tipping accordingly I am doing my small part to encourage this important aspect of any business. This is where I really feel that the small mom and pop stores really excel. For many years now my wife and I have traveled around the country looking for those great family operated restaurants and pizzerias where our business is appreciated rather than taken for granted. Lately we have been on a "kick" of visiting small, very small, family owned and operated "farmer cafes" around our state of Kansas. We have experienced great food and great conversation at all but a very few.....I sure can't say that for many of the big chains, but that's just me, a dinosaur from a different time.

Tom Lehmann/The Dough Doctor  
3897

### **Shop Talk / Re: question: how do you manage a multi-day ferment in a commercial setting?**

John;

Thank you for the very kind words. Something that I coined many years ago and still live by today: "Knowledge learned but not shared is knowledge wasted."

You will find a lot of sharing people here at this web site, I'm just one of the many.

Tom Lehmann/The Dough Doctor  
3896

### **General Pizza Making / Re: Best pizza types for a small business?**

A good grams scale should not cost you much over \$35.00 at the very most. The one that I use was recommended by someone here, it's the KD-8000. It operates on regular flash light batteries, I've had mine for several years now and I've yet to replace the batteries. I use it for all kinds of kitchen weighing chores such as venison for making jerky, vegetables for canning and breaking down those big lots

of stuff that we buy at Sam's Club into smaller usable lots/packages. But you can buy a good scale for even less and a postal scale can come in handy at times too. To convert a "recipe" to a "formula" portion out each ingredient at least 3 times putting each ingredient into its own container. Then weigh each container, subtract the tare (weight of the container) which will give you 3 times the weight of each ingredient, now just divide that weight by 3 to find the average actual ingredient weight.

Once you know the average actual weight of the flour divide each ingredient weight by the weight of the flour and multiply be 100. This will give you the ingredient weight in bakers percent. By the way, flour is ALWAYS 100%. Now, to build a dough using bakers percent. Decide how much flour you want to use, I like to express my flour weight in grams when doing this at home. Enter the flour weight in a calculator, then press "X" and enter the ingredient percent that you want the weight of, now press the "%" key and read the weight of the ingredient which is correct for the weight of flour that you have elected to use. Remember that all ingredient weights will be expressed in the same weight measures that the flour weight is expressed in (grams, ounces, pounds, kilograms, etc.) Now you know the basics of bakers percent.

Tom Lehmann/The Dough Doctor  
3895

### **Dough Clinic / Re: RT vs CF skin stretching issues**

Shane;

I've found that it's not necessary nor desirable to re-ball a 24-hour cold fermented dough, just turn it out of the bag onto a floured surface, turn it over to have both sided floured, and begin opening the dough ball.

As for the dough "getting away from you" are you saying this because the size of the dough ball is quickly increasing? If so, I'm guessing that it is your altitude (7,600-feet) that is giving you that impression. It isn't actually over fermenting, there just isn't as much atmospheric pressure pressing on the dough so it expands more readily. The solution is to use less yeast and allow the dough to cold ferment for a longer time. It's probably the gassy nature of the dough ball that giving you the issues you have been experiencing.

Let me know if this moves you in the right direction or not.

Tom Lehmann/The Dough Doctor  
3894

### **Dough Clinic / Re: Activity in the dough before balling**

It all depends upon how you are planning to manage your dough. For me personally, I like to cold ferment my dough to develop the flavor profile that I like in my crust so for me, I seldom ever allow for any fermentation in the dough prior to scaling, balling and placing in the refrigerator. The reason for this is because fermenting the dough results in a change in dough density (the dough becomes less dense) due to the leavening of the dough by the yeast which in turn makes the dough a MUCH better insulator which impedes the ability of the dough to be cooled at a predictable rate in the fridge so my whole dough management procedure is off kilter. Plus, when the dough is allowed to ferment prior to balling and placing in the fridge the dough is MUCH more prone to showing differences in total fermentation due to differences in the finished/mixed dough temperature, the reason being that the less dense dough now traps the heat in the dough ball which in turn impacts the rate of fermentation. These issues tend to have a greater impact upon the dough as you CF for a longer time, for me I like to CF my dough for a minimum of 2-days but occasionally I will go out to as much as 4 or 5-days.

The sweet spot for my dough, using my dough management procedure is between 2 and 3-days.

This is not to say that you cannot ferment the dough prior to scaling, balling and placing in the fridge, you certainly can BUT your dough management procedure must be designed to accommodate it. This is why we see so many differences in the dough management procedures used by home pizza makers. One common step that we often see when the dough is fermented prior to balling is re-balling the dough a few hours prior to opening, this allows the over fermented dough to be re-strengthened thus making it easier to open into a more uniform dough skin. For me, I just CF for whatever number of days I'm in the mood for, pull the dough out of the fridge 90-minutes before opening the dough balls into skins (this is when I do all of my topping prep) and then go straight into opening and dressing the dough skins and baking the pizzas. I like to keep my life as simple as possible. :)

Tom Lehmann/The Dough Doctor

3893

### **Dough Clinic / Re: Dodgy flour or dodgy weather?!**

Joe;

Hot tap water? Good grief! It could be as hot as 120F/49C. You don't mention what kind of yeast that you are using but I will go out on a limb here and assume that it's IDY??? Your dough must be quite hot and I'm surprised that you are not pouring the dough out of the fermentation container. Here is an old trick to tell when a dough is properly fermented when fermenting the dough in bulk. Allow the dough to rise (undisturbed) until it finally stops rising and then begins to fall back onto itself (recedes), this is known as the first full rise. Note the time required for this to happen. Now punch the dough back down into the container (always punch the dough from the center, don't just bump it to make it recede) this results in blending/mixing the outer portion of the dough with the warmer inner portion and brings more nutrient to the yeast in the warmer center portion of the dough, the first full rise is considered to be 80% of the total fermentation time so divide the first full rise time by 4 and add that time to your fermentation schedule (allow the dough to ferment for that amount of additional time), the dough is now fully fermented and developed, no further fermentation is needed. Any fermentation beyond this point is purely for impacting the dough consistency as well as flavor impact upon the finished crust. Typically, dough that is fermented too long will not exhibit as much oven spring as dough that is allowed to ferment to something closer to full fermentation, so it all depends upon what you are looking for in the finished crust that will determine how long you will actually ferment the dough.

As for temperatures:

- 1) Adjust the water temperature to not more than 80F or 90F if you are using an autolyse.
- 2) Check the finished/mixed dough temperature, you should be looking for something around 80F/27C.
- 3) Monitor the room temperature during the fermentation period as it does impact the rate of fermentation over a 24-hour long fermentation period.
- 4) Check the temperature of the dough after the 24-hour fermentation period (take the temperature in the center of the dough mass) you should be looking for something between 85 and 90F/ 29 and 32C (but never over 32C). Ideally it should be 87F/30.5C. Strange things begin to happen to the dough when the temperature exceeds 90F/30.5C, bacteria can multiply at an accelerated rate creating "off" flavors and the gluten begins to disassociate (come apart/weaken) making for an overly soft and weak dough structure.

Tom Lehmann/The Dough Doctor

3892

**Dough Clinic / Re: Activity in the dough before balling**

CSNACK;

Amen to that!

Tom Lehmann/The Dough Doctor

3891

**Dough Clinic / Re: Yeast free Dough?**

Yep, can be done. In fact I wrote an AIB Technical Bulletin on the very topic a number of years ago titled: Chemically Leavened Pizza Crust. I've got some of the dough formulas posted in the PMQ Recipe Bank. Look in the "pizza dough" category and use "bake to rise" for your search word. One of the formulas shows the use of soda and SALP (sodium aluminum phosphate) for the leavening agent. Also, you can make a pretty decent VERY THIN, cracker crust by just deleting the yeast, rolling the dough out very thin and par-baking, then dressing the par-baked crust and finishing the pizza as you would any other pizza. Think pizza made using Matzo bread for the crust...crispy but good!

Tom Lehmann/The Dough Doctor

3890

**General Pizza Making / Re: Best pizza types for a small business?**

Already sent the D.M.P. to you. hope you received it, if not please resend your request as I do not retain communications for more than a day or two.

Use any salt you wish, you will not see any great difference. As for your pastry flour you may want to start out using no more than 12 to 16-hours (overnight) cold fermentation on the dough balls as pastry flour CAN be quite weak or unpredictable. If the dough performs well after 12 to 16-hours begin extending the cold fermentation time out to see how far your flour will let you cold ferment (CF) your dough.

Check around at local bakeries to see specifically which flour they use for making bread type products.

One other thing that I should mention, some pastry flours have a VERY HIGH level of starch damage so if you find that the dough absorption is very high (70%) or possibly higher this is a sure indication of high starch damage. Flour with high starch damage CANNOT be fermented for more than 60-minutes AT MOST. If you find this to be the case get back to me and I'll lead you through the process to make pizza crusts from that kind of flour.

Tom Lehmann/The Dough Doctor

3889

**Dough Clinic / Re: Activity in the dough before balling**

Dough which is fermented at room temperature is always going to be more gassy and more fermented at any point of time after mixing than one which is placed in the cooler soon after mixing for cold fermentation. During mixing air is entrapped within the dough forming a nuclei into which carbon dioxide and alcohol (byproducts of yeast fermentation) are collected, with time more carbon dioxide and alcohol are collected in these nuclei and the dough begins to expand ultimately becoming what we refer to as being "gassy", then the real fun begins when the dough is heated in the oven, now BOYLE'S LAW comes into play and all those gasses and alcohol begin to expand very rapidly creating what we call "oven spring".

Tom Lehmann/The Dough Doctor

3888

**Dough Clinic / Re: dough management**

It will depend upon the dough management procedure you're using. If you take the dough directly from the mixer to the bench for scaling, balling and boxing and then get it in the cooler all within 20-minutes you can vary as much as 2F on either side of the target finished dough temperature providing the targeted temperature is no higher than 80F. If your targeted finished dough temperature is 90F or close to it, the total variation before you see a difference will be closer to +/-1F of targeted temperature. Ditto if you will be allowing the dough to ferment prior to getting it into the cooler.

Tom Lehmann/The Dough Doctor

3887

**Dough Clinic / Re: dough management**

That should work just fine for you.

Tom Lehmann/The Dough Doctor

3886

**General Pizza Making / Re: Best pizza types for a small business?**

Ashneil;

I found your e-mail address written on a scrap of paper on my desk so I resent the Dough Management Procedure to you again requesting a confirmation of receipt by return e-mail. If you don't have it or get it on your terminal soon check your junk mail/spam folder.

Tom Lehmann/The Dough Doctor

3885

**Dough Clinic / Re: Help with my recipe**

Type of mixer? How long are you mixing the dough and at what speed? What is your finished/mixed dough temperature? How long do you cold ferment for? After the CF period do you allow the dough balls to warm to at least 50F before opening them into skins? What kind of oven will you use? Will you be baking on a pan, disk, screen or hearth? Baking surface in the oven? Baking time and temperature?

Lastly, you ask "how can I improve my final product?" (pizza) What do you see as being wrong with it or how would you like to see it changed?

Tom Lehmann/The Dough Doctor

3884

**Dough Clinic / Re: Autolyse - hot water or cold water?**

I've always advocated using nothing warmer than "tepid"(80 to 85F) water. The flour will hydrate a little faster in warmer water (70F) as opposed to ice water, but the amount of water absorbed by the flour will be the same.

Tom Lehmann/The Dough Doctor

3883

**Dough Clinic / Re: Help with my recipe**

Agreed, the dough balls look good. Your finished dough temperature would help in determining if more fermentation is needed. You also note that you allow the dough balls to warm for an hour before opening them into skins, an hour may not be long enough, depending upon the room temperature, your best bet is to use your thermometer to check the internal temperature of the dough ball prior to opening. You want to look for a minimum temperature of 50F but that is the MINIMUM, you

might find that your dough will be easier to open at 55 or 60F, so don't be afraid to experiment.

What characteristics were you saying you wanted to improve upon?

Tom Lehmann/The Dough Doctor  
3882

### [\*\*Dough Clinic / Re: Help with my recipe\*\*](#)

There is no difference in performance between ADY and IDY when used at the correct substitution levels for your dough formulation. Whils ADY needs to be activated in 100F water (about 4 to 5-times the weight of ADY as water) a lot of people will add a very small amount of sugar to help activate the yeast but it isn't absolutely necessary. IDY on the other have is typically added directly to the flour without any pre-hydration/activation stage. My preference has always been for IDY as the activation stage for ADY is just another place for something to go wrong.

To add more flavor to the crust try allowing the dough balls to CF for 3, 4 and 5-days to see if that gives you a flavor profile that you like. If that doesn't do it for you I'd suggest changing gears and going with developing and adding a sour to the formula. If you want to achieve more porosity in the edge try to maximize dough absorption to achieve the softest dough possible. I assume you were saying that the dough is on the tough/elastic side when opening it into a skin, this is generally an indication that the dough needs more fermentation time which should be addressed by going to a longer CF time.

Tom Lehmann/The Dough Doctor  
3881

### [\*\*Sauce Ingredients / Re: How do I store Dried Oregano\*\*](#)

I used to do a lot of work with flavoring companies and they always stored their herbs in the freezer, it helps to retain the original flavor profile much longer and it eliminates any possibility of an insect problem, just remove what you need and immediately place back into the freezer to prevent condensation from forming on the contents or the inside of the container.

Tom Lehmann/The Dough Doctor  
3880

### [\*\*Dough Clinic / Re: Help with my recipe\*\*](#)

Steve, which would also account for more difficulty in opening the dough balls into skins.

Tom Lehmann/The Dough Doctor  
3879

### [\*\*Dough Clinic / Re: Dough still not right\*\*](#)

The dough after mixing looks pretty rough, like it needs more mixing time. We normally like to mix the dough until it takes on a smooth, satiny appearance. The dough that I see in the first photograph is very under mixed. The dough balls look pretty good after the CF period (biochemical gluten development) but the last picture of the dough, to me, shows a dough that has not been properly opened into a skin...might that not be your problem?

Tom Lehmann/The Dough Doctor  
3878

### [\*\*General Pizza Making / Re: What do you think of this formulation?\*\*](#)

PPJ;  
If your intention is to make an "American" style pizza (I liken that to a Domino's

pizza) why not just increase the dough absorption to 58%?

Tom Lehmann/The Dough Doctor

3877

### **Dough Clinic / Re: The role of yeast during baking**

While the yeast does generate gas during the very early stages of oven spring it is not sufficient to be considered a significant contributor to oven spring. Existing gas, air incorporated into the dough during mixing and water vapor are the main contributors. The thermal death point for yeast is about 135F so the length of time it takes for the dough to reach 135F would be the limiting factor here. That time can vary quite a bit with the thickness of the skin, it would be much shorter for a thin crust skin and much longer for a thick crust skin. Add to that the temperature and humidity within the oven which causes the dough to quickly skin over thus preventing further oven spring but not necessarily yeast activity. Due to all of these extraneous forces you will see little effect of more or less yeast on the oven spring characteristics of a thin crust BUT you will see a greater impact of yeast amount in a thick crust application. If you look at bread for example, oven spring takes place over about 10-minutes, maybe a little more in bread baking due to the much greater cross section of the dough (remember that dough is an excellent insulator), in many cases you can adjust the size of a finished/baked loaf of bread by simply adjusting the yeast level slightly, in other cases the yeast survives in the baking process long enough to allow for the development of the top crust, when this happens the crust is pulled free from the side wall of the load and lifted up creating a condition which is referred to as "scalping".

I hope this sheds a little light on your question, there is very little about baking that is painted in black and white and fermentation combined with baking is a complex mix of chemistry, microbiology and physics hard at work. Remember, it hasn't been all that many years ago that Uncle Louie (Louis Pasteur) with help from a fellow named Anthony van Leeuwenhoek discovered that it was yeast which was responsible for fermentation, we have been researching it ever since trying to fully understand it.

Tom Lehmann/The Dough Doctor

3876

### **Stones/tiles/steel, Pans & Accessories / Re: Making a batch of pizzas for WFO and peel/oven transfer**

Craig has the best solution but here is something that we did in Turkey a number of years ago that worked reasonably well.

- 1) Make all of your pizza skins.
- 2) Flip them over so they're resting upside down.
- 3) Use a hair dryer set on high heat and carefully play the heat over the bottom (side facing up) of the skin, the idea being to form a dry skin, nothing more.
- 4) Invert the skins back over onto your prep peels using fine corn meal or semolina flour for the peel dust.
- 5) Dress the skins.
- 6) Begin peeling prepared skins into the oven as needed.

Tom Lehmann/The Dough Doctor

3875

### **Dough Clinic / Re: Dough still not right**

J;

Just for smiles and grins, try this method for opening the skin.

Use a rolling pin to carefully open the dough ball to about 2-inches less than the desired finished skin diameter, then bench stretch the skin to near full diameter, be sure to pick up the edge of the skin and using your fingers finish opening the skin by stretching only the edge of the pizza. Your photograph shows a skin that was only opened from the center, not from the edge too. There have been some very good videos posted recently showing this procedure using a dough ball that is opened fully by hand, but in this specific case use the rolling pin, making several light passes rather than trying to roll the dough out in a single pass, this will help you keep the entire skin more uniform in thickness, then once you master that, you can easily progress to opening the dough ball fully by hand.

Tom Lehmann/The Dough Doctor  
3874

### **Dough Clinic / Re: The role of yeast during baking**

Actually, while the mixing process does incorporate air into the dough a lot of those nuclei are formed as a result of the air in the flour. The air is entrapped in the dough as the flour hydrates. When we did work along those lines back in the early 70's we were mixing doughs under a vacuum to eliminate as much of the nuclei as possible, it didn't matter if the dough was mixed to gluten development of just barely incorporated, when mixed without the vacuum we got leavened dough, but when we did the mixing under a vacuum we got a dough that had very little rise/leavening at all. The British have a bread making process (Tweety Bread Making Process) which mixes the dough under a partial vacuum which results in a finished bread with a very fine, dense crumb structure, as a side benefit to mixing dough under even a partial vacuum you get a significant reduction in total mixing time too. If anyone has a copy of the book Baking Science and Technology by E.J. Pyler, this bread making process is explained in good detail in one of the book's chapters.

Tom Lehmann/The Dough Doctor  
3873

### **General Pizza Making / Re: Best pizza types for a small business?**

By all indications your flour is much too low in protein content. Do you have access to a different flour or type of flour? How about vital wheat gluten?

Tom Lehmann/The Dough Doctor  
3872

### **Dough Clinic / Re: Help with my recipe**

Why so much dusting flour? After balling the dough try just wiping them with a little salad oil when placing them into the cooler.

Tom Lehmann/The Dough Doctor  
3871

### **Dough Clinic / Re: Help with my recipe**

Remember, it is not what YOU think about the finished crust, instead, it's what YOUR CUSTOMERS think about it. Go with the flow man! If the customers are happy you too will be happy, not a bad place to be in :).

Tom Lehmann/The Dough Doctor  
3870

### **Pizza News / Re: Arby's dives into pizza**

I saw this advertised the other day.....It's a SANDWICH! They can call it what they want but it's still nothing more than a sandwich, and not a very enticing one either.

Tom Lehmann/The Dough Doctor  
3869

**[Pizza News / Re: Consumer pizza preferences evolving](#)**

Peter;

This is a great article. It really underscores the reason why pizza, in one form or another, has remained so popular, not just in the United States, but for the most part, world wide. It exhibits the ability to morph and change to meet consumer demands without loss of product identity. It has gone from what was once called a "snack food", to a low cost quasi meal (remember the great pizza wars of the 70's?), to a high value meal entree (in the 80's the mantra was "we put more toppings on our pizzas than anyone else") and then it morphed into a convenience food/meal entree with the introduction of the Freschetta and DiGiorno type pizzas which coincided with the introduction of the take and bake concept (think Papa Murphy's/Figaro's), in addition to all of this there was the thick crust period followed by the thin crust phase and more recently it had to be baked with a "brick" in the oven which has lead us to the artisan style pizzas and just to keep things interesting the toppings used on the pizza continue to evolve, multiple cheeses, multiple meats, herbs in the crust, Tex-Mex, Asian, Italian (whatever that is), low carb, and now we have gluten free and the introduction of new, different topping presentations, all of this has transpired without the pizza losing its identity. The purists may not wish to call it "pizza" anymore but to the average consumer it's still pizza and that's what counts.

To give you and idea of how popular pizza really is, I was credited with introducing pizza into Saudi Arabia, so how did the pepperoni go over? Well, we didn't use pepperoni, instead we used chicken, lamb, goat, and fish for the meat toppings, the Saudis were already big into vegetables so that part was an easy sell. Today there are frozen pizza manufacturing facilities in Riyad. There are not many, if any cultural boundaries that pizza cannot cross, again all of this is accomplished while still retaining its identity.

Long Live Pizza!!!

Tom Lehmann/The Dough Doctor  
3868

**[Stones/tiles/steel, Pans & Accessories / Re: Making a batch of pizzas for WFO and peel/oven transfer](#)**

I've been able to do that in conventional deck ovens but not very well in really hot wood and coal fired ovens.

Tom Lehmann/The Dough Doctor  
3867

**[General Pizza Making / Re: Pizza Consulting](#)**

Don't worry about that Woodstone oven maintaining deck heat when things get really busy. That deck is at least 4-inches thick. The thing to remember when consulting is to work with the client to give them the pizza that "they want". You can make a suggestion but that's where you have to draw the line. The reason why I say this is because at the end of the day, if the pizza fails, and it's YOUR pizza, it automatically becomes YOUR fault.

Now, if they are contracting with you to develop a menu or a pizza for their specific market, you have a clean slate to work from.

Speaking from 50-years of experience.  
Tom Lehmann/The Dough Doctor  
3866

## [\*\*Resources / Re: Caputo Flour \\$2.50 1kg Walmart\*\*](#)

\$1.13 (almost \$1.14) per pound.

There is a reason why I stick to G.M. Full Strength for under \$0.30 per pound. I've never understood the high premium on Caputo, I realize that it's imported, but really at almost 4X domestic flour prices????

Tom Lehmann/The Dough Doctor  
3865

## [\*\*Dough Clinic / Re: What flour should I use\*\*](#)

What kind of pizzas are you trying to make? Or do you want to make? Do you have a dough formula and dough management procedure that we can review for you? Will/are you mixing the dough by hand or machine? These are all important questions

The advice that I always give to my students is to use a commercial bread type flour when just starting out and once you develop your pizza making skills then begin to experiment using different types of flours or other ingredients.

Tom Lehmann/The Dough Doctor  
3864

## [\*\*Dough Clinic / Re: Crispy Neapolitan style dough and questions\*\*](#)

Victor;

How do the flour distributors distinguish between their different types of flours? That will be the key to finding a flour that will work well for you with the least amount of effort. Have you visited bakeries making pan breads (pan de caja) or similar types of breads to see what flour they're using?

The amount of yeast needed at higher altitudes remains the same as at lower altitudes BUT you will see the dough change in density much faster and to a much greater extent due to the reduced atmospheric pressure at higher altitudes.

Reworking the dough/re-ballng prior to opening the dough balls into skins will help to address this issue. Forming the skin a little thinner will also help as the dough will exhibit greater oven spring. The dimension of the rim can be addressed by making the rim/edge a bit thinner too as well as by increasing the baking temperature which will help the dough to begin setting-up in the oven faster thus limiting oven spring.

There has been some recent discussion on high altitude baking that you might want to research.

Tom Lehmann/The Dough Doctor  
3863

## [\*\*General Pizza Making / Re: Pizza Consulting\*\*](#)

I've worked with Woodstone ovens for a long time, all you need to do is to find the correct bottom heat for the pizzas that you're making and forget about it. If you are targeting a short baking time or if you just like some additional color on the cheese I've found that I normally have to lift the pizza up into the dome for a few seconds just before removing it from the oven. Have you identified the rotation pattern for that specific oven yet? All of the Woodstones that I've worked with over the years have a clock wise rotation direction. Place the pizza at the entrance, just inside the oven (6 o-clock) for about 30-seconds or just until the dough releases from the deck. Then go to 9 o-clock, then 12 o-clock, then 2 o-clock, then move it to the center of the deck to finish (remember to spin the pizzas as you are rotating them in the oven).

Tom Lehmann/The Dough Doctor

3862

**Dough Clinic / Re: What flour should I use**

Unless you compensate by adding sugar to the dough formula.

Tom Lehmann/The Dough Doctor

3861

**Dough Clinic / Re: Suggestions for greater oven spring?**

Only one, increase the dough absorption, the dough ball looks a bit tight to me. Start experimenting with 2% incremental increases until you get the oven spring you're looking for. My guess is you will end up in the mid to high 60's.

Tom Lehmann/The Dough Doctor

3860

**Dough Clinic / Re: mobile on site pizza making**

Is there any way you can get a delivery of your dough balls about half way through the event?

Managed properly, your dough balls should remain in good, usable condition for 3-hours once they reach 50F.

Tom Lehmann/The Dough Doctor

3859

**Dough Clinic / Re: Crispy Neapolitan style dough and questions**

The long fermentation process both develops flavor in the crust and conditions the gluten for ease of opening the dough balls into skins. The idea is to re-ball the gassy dough balls and then allow them to relax sufficiently long to easily open into skins, this way you are not trying to open a gassy dough ball.

Bleaching has no impact upon the performance of the flour unless we are dealing with a high ratio cake flour, which to the best of my knowledge is not marketed in any Latin America countries.

Yes, you can go the gluten washing route but it will be a lot faster and easier for you to just make some doughs side by side using different flours and select the one which performs best for you. Can you get a bag of the flour that those other pizzerias, which say they are using bread flour, are using? For an 11-inch finished crust diameter I would suggest using about 250-grams for your scaling weight. Then experiment with the baking temperature to determine what temperature YOUR oven bakes YOUR pizzas best at.

Tom Lehmann/The Dough Doctor

3858

**Shop Talk / Re: 60 qt mixer**

The Hobart P-660 is the king of the 60-quart mixers. If you plan to mix only dough a spiral mixer might be a better investment.

Tom Lehmann/The Dough Doctor

3857

**General Pizza Making / Re: Best pizza types for a small business?**

Nick57:

No, malt powder was not being used in the dough formula. In my world DMP = Dough Management Procedure. Sorry to get you mislead there.

Tom Lehmann/The Dough Doctor

3856

## **Dough Clinic / Re: results of tom's dough management suggestions**

The dough is still somewhat under mixed, looks pretty dough to me, this is also evidenced by the rough looking dough balls, this most likely explains the sticky dough. Without seeing how you are bagging the dough ball I can't say too much about the shape of the dough after the fermentation period. Are you using ZipLock Bags, or are you using Food Bags? Are you pulling the bag snug (NOT TIGHT) around the dough ball and then twisting the open end of the bag into a pony tail and tucking it under the dough ball as you place it in the fridge? Bags are used a lot in this manner and when the dough is removed from the bag by rolling the bag down to the dough ball and inverting the bag and dough ball allowing the dough ball to fall by gravity from the bag (inverting the bag as it does so) onto a floured surface we always get a reasonably round dough piece that is ready to be opened into a skin.

Tom Lehmann/The Dough Doctor  
3855

## **Shop Talk / Re: 60 qt mixer**

Ask Walter about his story concerning Thunderbird mixers.

The Vari Mixer is another one to look at.

Tom Lehmann/The Dough Doctor  
3854

## **Dough Clinic / Re: My dough never stretches or kneads well. I feel hopeless.**

You don't mention anything about how you are managing your dough (everything you do to it from the time of mixing to use in making a pizza skin). This is possibly the most important aspect to making pizza and bread doughs as it allows for biochemical gluten development. If you will go to the PMQ web site

<[www.pmq.com](http://www.pmq.com)> and go into the Recipe Bank you can search my home made pizza dough "recipe". While this "recipe" is shown in volumetric portions you can use your pizza dough formula in weight measures for improved formula accuracy. Just substitute your formula for my recipe, then follow the dough management procedure given. Let's see if that gives you ant better results.

If you don't want to go that route, try this.

At 3.5% I an assuming that the yeast that you are using is compressed yeast/fresh yeast....correct? If it is, reduce it down to only 1%. If you can get some instant dry yeast use it at 0.25% or use active dry yeast at 0.5%. Regardless of the type of yeast that you use, suspend it in just a couple ounces of 100F water (USE A THERMOMETER).

Use YOUR dough formula with the above change to the yeast amount.

Put water (70F) in mixing bowl.

Add yeast suspension.

Add flour.

Add salt and sugar.

Using wooden spoon stir until very thick.

Remove spoon, lightly cover bowl and allow dough to ferment for 20-minutes.

Scrape dough from bowl onto floured surface and lightly oil the inside of the bowl.

Knead the dough for about 10-minutes or until you begin to see the dough becoming elastic.

Place the dough back into the bowl, lightly oil the top of the dough and drape with a piece of plastic (plastic grocery bag works well).

Allow dough to ferment for 2-hours.

Remove dough from bowl and knead once again until the dough begins to look

smooth.

Allow the dough to rest on a lightly floured surface for 15-minutes, then scale to desired weight pieces and form into balls.

Wipe each dough ball with oil and drop into plastic Food Bags (available from any supermarket for about \$3.00 for a roll of 100).

Settle the dough ball into the bottom of the bag, and pull the bag so it just touches the dough ball, twist the open end of the bag into a pony tail, and tuck the pony tail under the bag as you place it into the fridge.

Allow the dough to cold ferment for 48 to 72-hours.

Remove dough from fridge and allow to warm AT room temperature until the internal temperature of the dough ball reaches 50 to 60F.

Remove dough ball from bag by rolling the bag back onto the dough ball and inverting allowing the dough ball to strip the bag inside out as it falls from the bag onto a floured surface.

Flour both sides of the dough ball and open into a skin using your preferred method.

As I don't know if you have a pizza stone or not, or if you bake on a pan, screen or disk I cannot provide any information on baking at this time.

Tom Lehmann/The Dough Doctor

3853

### **Sauce Ingredients / Re: Which dry spices are worth and which are not?**

Basil and oregano can easily be grown indoors, a large pot and some potting mix and a packet of seeds or starter plants and you're good to go.

Be sure to place them where they will receive plenty of sunlight. Edwardo's Pizzeria in Chicago used to grow all of their own basil in planter boxes inside of their store under grow lights.

Two basil plants kept picked will keep you in basil for a long time.

Tom Lehmann/The Dough Doctor

3852

### **Pizza Cheese / Re: Looking for mozzarella that's sweet but not gamey**

Mozzarella cheese by definition has a very mild flavor, so mild in fact that most of the time we blend it with another cheese to add to the complexity of the cheese flavor. My personal preference is to use a blend made of 3-parts mozzarella and 1-part Parmesan. Occasionally, I'll substitute the 1-part Parmesan with a 50/50 blend of Parmesan and Romano for an even better flavor. You can use just about any other flavorful cheese to blend with the mozzarella. If you want a mozzarella with a very mild flavor but with a dairy note to that flavor the Grande whole milk mozzarella will be hard to beat.

Tom Lehmann/The Dough Doctor

3851

### **Newbie Topics / Re: How much IDY for 24 hr vs 48 hr?**

I only use 0.375% IDY, target my finished dough temperature at 75 to 80F and I get excellent results at 24, 48 and 72-hours cold fermentation time providing the dough is managed properly.

Tom Lehmann/The Dough Doctor

3850

### **Sauce Ingredients / Re: Don't buy Hunts**

If you're only making a couple of pies try buying a couple of fresh (RIPE) tomatoes

plum are fine but any variety will work, slice them about 1/8-inch thick, place onto a clean towel to absorb and excess moisture, LIGHTLY oil the skin, add fresh basil leaves as desired, fresh sliced garlic as desired, and then cover with the slices from one whole tomato (the tomato slices become your sauce) now dress the pizza as you wish and bake as normal. A great pizza on the cheap but it sure doesn't taste or look cheap! :)

Tom Lehmann/The Dough Doctor  
3849

**[Dough Clinic / Re: Dough formula for my blackstone pizza oven](#)**

Hare is a dough formula that I've used when baking at high temperatures:

Flour: 100%  
Salt: 2.25%  
Idy: 0.15%  
Water: (70F) 68 to 72% (variable)

I normally use a very fine corn meal for my peel dust and broom the deck frequently.

3848

**[Dough Clinic / Re: My dough never stretches or kneads well. I feel hopeless.](#)**

The dough is always going to feel sticky and weak until you begin to get some gluten development taking place. That's just the nature of a yeast leavened wheat flour based dough. By allowing the dough to rest for those 20-minutes you are allowing time for the flour to absorb some of the water (just like an autolyse) and for the enzymes to begin changing protein into gluten which will make the kneading process easier and more effective.

Tom Lehmann/The Dough Doctor  
3847

**[Sauce Ingredients / Re: Which dry spices are worth and which are not?](#)**

Matt;

Water the herbs once, maybe twice a week at the most. Maybe there wasn't sufficient sun light exposure time from the skylight. Indoors I've found a window exposure facing any direction except for north works well. We lived in an apartment for the better part of a year when we were between houses and I grew my basil in a pot by the steps leading up to the front door. My neighbor used to grow it in his basement under grow lights....at least I think it was basil, that's what he told me it was.

:D

Tom Lehmann/The Dough Doctor  
3846

**[Pizza News / Re: Tony Gemignani attempts to make the world's longest pizza.](#)**

Nino;

What did I do?

I was originally on the team but had to sit it out due to five blood clots in my left leg that were discovered upon my return from Pizza Expo. The doctor has me side lined until at least August right now. :(

Tom Lehmann/The Dough Doctor  
3845

## **Dough Clinic / Re: Not so relaxed**

I don't have much information to go on but I'll give it my best shot. With a larger dough there is a better than good probability that the dough was over fermented. Large/larger size doughs tend to ferment faster due to their better heat retention (remember that a dough will increase in temperature during fermentation by approximately 1F per hour due to heat of metabolism created by the yeast. This is one reason why the finished/mixed dough temperature is so CRITICAL when using a dough management procedure which utilizes bulk fermentation with larger dough sizes. Smaller doughs (for one or two pizzas) are not as sensitive to finished dough temperature due to their considerably smaller mass. The over fermented dough will become bucky (very elastic) and difficult to open into skins. Re-mixing the dough in a dough mixer is a solution which normally works to restore the dough back to something that we can work with, but hand kneading isn't very effective. Once the dough has been re-mixed and balled, it usually takes a couple of hours before the dough can be opened into skins. As far as gluten development, you had plenty of gluten development due to biochemical gluten development.

Tom Lehmann/The Dough Doctor  
3844

## **Dough Clinic / Re: My dough never stretches or kneads well. I feel hopeless.**

When mixing dough by hand I depend upon biochemical gluten development to do the bulk of the gluten development for my and room temperature fermentation allows that to take place faster and more efficiently.....assuming room temperature is between 65 and 80F.

Tom Lehmann/The Dough Doctor  
3843

## **Sauce Ingredients / Re: Which dry spices are worth and which are not?**

Whatever it was it tasted good on my pizza and he never complained about the pizza which I gave to him for sharing....come to think of it, I always wanted more after we finished the pizza....(munchies?) :-D

Tom Lehmann/The Dough Doctor  
3842

## **Pizza News / Re: Tony Gemignani attempts to make the world's longest pizza.**

Because I'm kinda stuck here at home I could only be a consultant to the effort. Right wrong or indifferent as to the quality of the pizza, it was still a monumental task to pull it all together. It was really interesting to see it evolve from the first concept put on the table to a working model several weeks ago to the final task. Congrats to all!

Tom Lehmann/The Dough Doctor  
3841

## **Dough Clinic / Re: Is there a video on dough-mixing and shaping that you can recommend?**

Take a look at my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> see if you find anything that works for you.

Tom Lehmann/The Dough Doctor  
3840

**[Dough Clinic / Re: My dough never stretches or kneads well. I feel hopeless.](#)**

Right after mixing, remove the spoon from the dough, cover/drape with a piece of plastic and allow to ferment for 20-minutes. Then scrape the dough from the bowl onto a floured surface and knead for about 10-minutes. Oil the bowl and place the dough back into the bowl, drape with a piece of plastic and allow to ferment for 2-hours (you can go as long as 4-hours if it fits your scheduling better).

Tom Lehmann/The Dough Doctor  
3839

**[Dough Clinic / Re: Solid fat incorporation](#)**

Nope, not necessary, just put it on top of the flour when you begin mixing and you're good to go. BUT if you are mixing the dough by hand it should be softened (not melted) prior to addition. If you don't pre-soften the fat prior to addition you stand an excellent chance of mixing the fat into the dough matrix more like a pie crust (pieces of fat dispersed throughout the dough) than an integral part of the dough.

Tom Lehmann/The Dough Doctor  
3838

**[American Style / Re: Ideal Temperature Range for Medium Thick Crust Pizza](#)**

I seldom bake a thick/thicker crust pizza that hot, I like to use 475 to 500F with top and bottom temperature set the same.

I'd also suggest letting the oven warm up longer too this is to make sure you have all the heat possible stored in the deck/stone.

Tom Lehmann/The Dough Doctor  
3837

**[New Forum Members / Re: Hi, I'm a pro pizza cracker maker. I have failed 100%. Why am I so unlucky?](#)**

One other thing I might add, there is no such thing as TMI here. The more information you can provide, the better the chances are that we can help you soon make great pizzas you'll be proud to share with your friends. Oh yes.....pictures are a great help too.

Tom Lehmann/The Dough Doctor  
3836

**[Neapolitan Style / Re: Pre Cut vs Fresh Mozz in commercial setup](#)**

Ditto.

The only time I see a store cutting mozzarella (except to shred it) is when making something like a Chicago deep dish presentation, in that case they slice it off and place whole slices on the pie (cheese first). I have seen a very few stores slice the bricks/logs and then tear off pieces from the slices to add to the pizza. My personal favorite is to use the Grande brine packed fresh mozzarella cheese balls pre-scaled at 4-ounces each and then peel the cheese ball like an orange. This gives me a pre-measured 4-ounces of cheese which when combined with 1-ounce of Parmesan cheese is about perfect for a 12-inch pizza.

Tom Lehmann/The Dough Doctor  
3835

**[Dough Clinic / Re: Solid fat incorporation](#)**

OK, so your comment about duck fat just begs one important question.....Did you

use it in making a "quacker" type crust? :-D

Tom Lehmann/The Dough Doctor

3834

**[Sauce Ingredients / Re: MSG in tomato sauce: "Ideal" concentration interval](#)**

None, never felt an urgent need to use it when salt was available.

Tom Lehmann/The Dough Doctor

3833

**[Neapolitan Style / Re: Pre Cut vs Fresh Mozz in commercial setup](#)**

It's a lot like using a pelican head on a Hobart mixer with an attachment hub for shredding block cheese.

Tom Lehmann/The Dough Doctor

3832

**[Off-Topic Foods / Re: Gooseberries....labor of love!!!!](#)**

There are very few treats as good as an old fashion gooseberry pie! Just slightly tart, not too sweet. :)

Tom Lehmann/The Dough Doctor

3831

**[Pizza Cheese / Re: Looking for mozzarella that's sweet but not gamey](#)**

We eat wild game (deer and turkey) several times a month and I've never likened the flavor to that of mozzarella cheese. We just had venison back strap medallions (thin sliced), fried in butter and smothered in caramelized onions and sauteed morel mushrooms, with baked potato and half of an ear of corn on the cob for dinner tonight. In my humble opinion, that's a gourmet meal!

Tom Lehmann/The Dough Doctor

3830

**[Dough Clinic / Re: cornice not ready, bottom burned?](#)**

Timo;

You may find this hard to believe but you will actually achieve a better, more thorough, bake-out with a higher dough absorption than a lower one, this is especially true where high baking temperatures are employed. The crust actually doesn't look too bad. My suggested action is to increase the dough absorption from your present 56% to 60% by adding additional water to the dough and see where that gets us. If you see improvement you can make further adjustments to the dough absorption to fine tune your dough. If the increase in dough absorption doesn't give you what you are looking for I would double the amount of salt making it 2% (which will result in a better flavored crust) while adding a small amount of yeast to the dough formula. The added salt will help to control the rate of fermentation with the added yeast (AKA yeast spike).

Tom Lehmann/The Dough Doctor

3829

**[Newbie Topics / Re: What makes a dough recipe an "emergency dough" recipe](#)**

JB;

Actually, what you are showing is not a true emergency dough formula, it is just a regular dough formula incorporating warm water to speed up the fermentation

process. A true emergency dough formula is designed to allow the dough to ferment faster while at the same time providing a finished crust with some similarity (at least appearance wise) to the same dough formulation without the emergency dough modifications.

You don't identify the type of yeast that you are using: CY, IDY or ADY; and you don't provide the finished dough temperature which is also an important aspect in making an emergency dough.

Taking the dough formula as provided and changing it to an emergency dough formulation, here are the changes that would need to be made.

1) Adjust water temperature to provide a finished dough temperature of 88 to 90F.

2) Increase the total dough absorption by 2% (this is to compensate for the firmer dough consistency

resulting from the reduced amount of fermentation time.

3) The amount of yeast, regardless of type is doubled from that which is used in the non-emergency version of the dough.

4) Due to the fact that the dough is not fermented as long there will be more residual sugar in the emergency dough so the normal sugar level is typically reduced by about 50%.

5) Total fermentation time for an emergency dough is typically set at 2-hours from mixing to opening the dough balls into skins. If less fermentation time is employed severe bubbling may become a problem.

I hope this provides you with a little more understanding of emergency doughs.

Tom Lehmann/The Dough Doctor

3828

### **Dough Clinic / Re: Crispy bottom crust**

Victor:

It appears that you are baking your pizzas both on a stone and also using one of the old Power Disks. Try this: About a minute before the pizza is finished baking, slide the disk out from under the pizza and allow the pizza to finish baking right on the stone. This is successful most of the time in achieving a crispier center section to the pizza.

The pizza looks GREAT!

Tom Lehmann/The Dough Doctor

3827

### **Dough Clinic / Re: Crispy bottom crust**

More water/higher dough absorption results in a softer dough which expands more readily during the critical oven spring period of baking which results in a less dense crumb structure which is a better thermal break than a denser crumb structure. This improved thermal break prevents the heat from the bottom of the pizza passing right on through the dough and into the sauce and toppings where it is dissipated as steam, as a result the bottom of the crust receives a more intense heat and actually reaches a higher temperature for a longer time which results in a crispier crust....physics 101.

As for a lighter dough weight/thinner crust not getting as crispy as a slightly thicker one, this plays into the above also. The skin is thinner so it cannot develop as good of a thermal break during oven spring as a slightly thicker skin.

Additionally, a skin that is too thin, while it will develop some crispiness during baking will readily absorb moisture from the top of the pizza (basically 90% water) and become quite soft in mere seconds after removing it from the oven. Example: When was the last time you saw a thick crust pizza turn soft and soggy....assuming it was baked properly to begin with?

Tom Lehmann/The Dough Doctor  
3826

**[Newbie Topics / Re: What makes a dough recipe an "emergency dough" recipe](#)**

Don't over think it. The vast amount of research that I've done over the past 50-years all indicates that pizza was being made before rocket fuel.

Further research has unequivocally confirmed that it tastes better too. :-D

Tom Lehmann/The Dough Doctor  
3825

**[Dough Clinic / Re: results of tom's dough management suggestions](#)**

I would say that your dough ball looks to be about as good as one might strive to achieve. :)

Tom Lehmann/The Dough Doctor  
3824

**[Pizza Cheese / Re: Looking for mozzarella that's sweet but not gamey](#)**

Benny;  
Welcome to the table. :)

Tom Lehmann/The Dough Doctor  
3823

**[Off-Topic Foods / Re: Gooseberries.....labor of love!!!!](#)**

Come on guys!!! Cut it out!!! You're driving me crazy with all this talk about those great gooseberries, especially that gooseberry chutney or relish that really got me going...sounds GREAT. We are still nearly 6-weeks out from our gooseberry picking season so now I've got to live with 6-weeks of depression unless I can find a home made gooseberry pie at Hy Vee (our local supermarket sells hand made pies from a small Kansas manufacturer and gooseberry is one of them). :)

Tom Lehmann/The Dough Doctor  
3822

**[Dough Ingredients / Re: How much of a difference does brand of flour make?](#)**

You want to be careful with A.P. flour. Since there is not predetermined level for performance of A.P. flour (all purpose = jack of all trades but master of none) the protein content as well as the type of wheat the flour is made from can/will vary all over the board. If you fins an A.P. flour that works for you changing brands may give you a flour with very different performance properties. Bread flour, on the other hand, has a predetermined level for performance/expectation, that is to be able to make decent bread so in a way this type of flour is somewhat standardized between the different milling companies and changing brands is,'t as critical. High gluten flour (actually there is no such thing in existence) has absolutely no predetermined identity (High....with reference to what?) In a sampling that we did some time ago we found that the protein content of "high gluten" flour from different millers/manufacturers/brands would vary from a low of just over 11% protein content to a high of 14%+. When buying "high gluten" flour be sure to check the ingredient and nutritional panel on the bag as it will provide information as to the protein level of the flour. This is the reason why when I talk about flour I almost always speak in terms of protein content. There is one good bench mark flour that I will reference quite frequently, Pillsbury Bread Flour AKA Pillsbury Bread Machine Flour. This specific flour was introduced back in the days when

everyone had to have a bread machine and everyone wanted to make bread just like that made at the bakery so there was a demand for a "bakery grade bread flour". This flour consistently runs at 12% protein or just a little more. I consider it to be a good "go to" flour for making just about any type of pizza, especially for someone just getting started at making pizza at home.

Tom Lehmann/The Dough Doctor  
3821

**Off-Topic Foods / Re: Gooseberries....labor of love!!!!**

Rather tart too, it's my all time second favorite for a pie.

Tom Lehmann/The Dough Doctor  
3820

**Dough Clinic / Re: Crispy bottom crust**

As a general rule, higher dough absorption = crispier finished crust due to the reasons cited in my previous post. This is especially true when baked in a hot oven.

Tom Lehmann/The Dough Doctor  
3819

**Dough Clinic / Re: cornice not ready, bottom burned?**

That crust edge looks very good! Well baked from all appearances too. Well done!  
:)

Now that you're making a better pizza you can begin to experiment with the dough formulation and dough management procedure to further refine the finished pizza. I'm glad to hear the recommendations work well for you.

Tom Lehmann/The Dough Doctor  
3818

**Dough Ingredients / Re: How does Corn Oil differ from other oils?**

- 1) It comes from corn as opposed to olives.
- 2) It doesn't taste anything like olive oil (not made from olives)
- 3) Is neutral in flavor as opposed to olive oil, sesame oil, and other oils with a dominant flavor.
- 4) It can be substituted pound for pound for olive oil BUT you will get a different flavor. See #2 above.
- 5) I've not found it bad for different types of doughs/pizzas from a performance standpoint.
- 6) Corn oil or canola oil are commonly blended 10% olive oil 90% corn/canola oil / 20% olive oil 80% corn or canola oil and sold as a "blended oil". Blended oils have much of the same flavor/aroma characteristics as olive oil but are sold at a much lower cost.

I have never been a strong advocate of putting EVOO into the dough, straight corn or canola oil works just as well in the dough. If I do use olive oil in the dough I always try to use pomace olive oil (lowest grade olive oil) and then sprinkle a little EVOO on top of the pizza as soon as it comes out of the oven, the heat of the pizza "pops" releases the aromatics from the EVOO giving the pizza a great aroma and flavor that the consumer readily picks up on.

Tom Lehmann/The Dough Doctor  
3817

**Sauce Ingredients / Re: Anyone have a good sauce recipe?**

Sauce:

Fresh, garden ripe tomatoes sliced thin (about 3/16-inch) placed on towels to

remove excess moisture, place fresh basil and sliced fresh garlic on the dough skin, apply tomatoes to cover about 75% of the top of the skin (no need for 100% coverage like a sauce), dress the pizza to the order. Can't get fresh, ripe tomatoes? Try Stanislaus 74/40 Tomato Filets (drain for 20-minutes, then use as is. Wonderful fresh tomato flavor and great texture. You get a burst of tomato flavor with each bite.

Tom Lehmann/The Dough Doctor  
3816

### **Pizza Toppings / Re: Vegetarian toppings?**

Add roasted red peppers, roasted garlic, egg plant, the list ends where your imagination stops.

Tom Lehmann/The Dough Doctor  
3815

### **Pizza Cheese / Re: Ideal Ratio for 4 cheese blend?**

I might reverse the parmesan and romano percentages, depending upon the romano cheese it can make your cheese a bit strong.

Tom Lehmann/The Dough Doctor  
3814

### **Pizza Cheese / Re: Are any of the high-end cheeses worth it?**

When it comes to domestic mozzarella, I'm 100% for Grande, especially their Fleur de Latte (I think that's correct for their fresh, brine packed mozzarella cheese). Their regular mozzarella is hard to beat from both a flavor and performance standpoint too.

Tom Lehmann/The Dough Doctor  
3813

### **Resources / Re: How do I order King Arthur's Bread Flour in bulk?**

I've been around bagged flour for well over 50-years, and even when flour came in 100-pound bags, I can't remember ever having a bag rip apart on me. Now that it's only offered in 50-pound bags there is even less chance of a bag ripping. Thank OSHA for the 50-pound bags.

If you're talking about bags of cement coming apart, you have a lot to be concerned over, I've had numerous bags rip apart on me, just look at the area where they're stored, torn/ripped bags, and cement dust all over the floor where they're stored. I've been known to buy a partial (torn) bag of cement from time to time and just place it into a plastic trash bag to keep it all together until I get home to use it.

Tom Lehmann/The Dough Doctor  
3812

### **Commercial Ovens / Re: commercial gas pizza oven recommendation ?**

If you can go with electric rather than gas take a look at Dahlen Ovens/Sveba Dahlen (Sweden). These are great ovens with an excellent history.

Tom Lehmann/The Dough Doctor  
3811

### **Shop Talk / Re: Questions on consumers preferences.**

I'll toss my hat into the ring.

1) Lunch out sells slices by a significant margin over dinner time. All pizzerias do not offer slices. I think more information is needed to answer this question accurately.

- 2) This will depend upon the size of the slice being offered but for the most part 1 slice with a soft drink is a typical order.
- 3) Where we're at multiple toppings and the order of the day and they out sell cheese and/or pepperoni by a significant margin. We offer out slices with any toppings the customer wants. Many shops only have a limited offering of slices so this would make a difference.
- 4) Regular customers.

Tom Lehmann/The Dough Doctor  
3810

### **Sicilian Style / Re: Butter in the PAN of Grandma's Style Pie**

Use clarified butter in the pan, or Butter Flavored Crisco (better than the real thing).

Tom Lehmann/The Dough Doctor  
3809

### **Off-Topic Foods / Re: Krispy Kreme Donut Recipe**

Peter;

I just got back to my computer after retching from reading the article on donuts. Put icing or glaze on an inner tube and call it a "donut"!  
From the article I'm guessing it might taste better too.  
Just give a a good, old fashion yeast raised donut (cut weight 2-ounces) with a honey glaze or chocolate fondant icing and be done with it. For variety, cut it using a biscuit cutter, fill it with Bavarian cream filling, top it with a white or chocolate fondant icing, call it a Bismark and drop a few in the box with the donuts too. Now we're talkin' DONUTS.

Tom Lehmann/The Dough Doctor  
3808

### **Off-Topic Foods / Re: What's your favourite bread recipe?**

Flour: 100%  
Salt: 2%  
Butter: 6%  
IDY: 1.25%  
Sugar: 6%  
Potato flour (dehydrated mashed potato) 5%

White pepper: 0.25%  
Water: 68%  
Tom Lehmann/The Dough Doctor  
3807

### **Dough Clinic / Re: Suggestions for greater oven spring?**

Only if you leave your flour open and exposed to the air.

Tom Lehmann/The Dough Doctor  
3806

### **Dough Clinic / Re: Differences between New York/Chicago/California style dough?**

First let'd define each:

New York type pizza: Moderately thin crust, tough/chewy mastication properties, foldable.

California style: This is a thick crust pizza with a very light, tender eating characteristic and a crispy bottom crust.

Deep-dish Chicago style: Thick crust with a crispy, biscuit like eating characteristic, somewhat dry mouth feel.

What accounts for the differences?

New York style: Made using a very high protein flour, typically baked at higher temperatures, dough absorption about 62%.

California style: Made using a lower protein content bread type flour, dough is well fermented which exhibits a tenderizing effect upon the flour proteins, dough absorption typically around 65% +.

Deep-dish Chicago style: Higher fat content in the dough provides a unique eating characteristic, does not utilize a long fermentation time, dough absorption is typically 57%+.

Mixing time has little to nothing to do with the unique characteristics of each of these pizza types, instead, it is due more so to the flour strength, dough absorption and dough fermentation time and dough formulation.

Tom Lehmann/The Dough Doctor  
3805

### **Sicilian Style / Re: Butter in the PAN of Grandma's Style Pie**

Mo;

Both butter and margarine are the same fat content (approximately 20% water and 80% fat) so a blend of margarine and butter will have the same fat content of either one alone. If you want to make your own clarified butter just "nuke" some butter until melted and you will see a particulate floating on top of the butter oil, skim this off or decant and you're left with clarified butter, just the thing for dipping your lobster tail into! :) :).

Another trick that I use occasionally if the dough has a bit more memory that I like is to refrigerate the pan after buttering it, this seems to help the butter hold the dough in place a little longer allowing the dough to relax.

Tom Lehmann/The Dough Doctor  
3804

### **Dough Clinic / Re: My dough didn't cure properly in dough box.**

When you say leaving it activate too long, how long are we talking about?

Do you measure the temperature of the water that you use to activate the ADY in?

How much water and how much ADY?

Right now more questions than answers.

Tom Lehmann/The Dough Doctor  
3803

### **Newbie Topics / Re: Important questions on pizza-eating and etiquette?**

When we take friends out for pizza I always figure on 3-slices per person (usually a 16- of 18-inch pie sliced into 8 pieces). A 14-inch pizza is for my wife and I.

If we eat it all, great, everyone has had several slices, if there is any left over we always give it to our guests to take home with them.

Tom Lehmann/The Dough Doctor  
3802

### **Off-Topic Foods / Re: What's your favourite bread recipe?**

It tastes the same as black pepper, you just don't see it when you use white pepper.

Tom Lehmann/The Dough Doctor  
3801

## **Shop Talk / Re: Things to do with excess dough?**

Roll/pin it out thin, brush with melted butter and sprinkle with a cinnamon-sugar mixture then bake until lightly browned when partially cool drizzle with a simple powdered sugar-water icing. Cut into squares (party slice) about 2-inches square, set out on the table and the grandchildren eat them like cookies until they're gone.  
Tom Lehmann/The Dough Doctor  
3800

## **Home Ovens / Re: Double deck pizza oven for home use?**

In looking at the picture presented if you do some scale assessment, assume those two rocker switches at the bottom right front of the oven are a total of 1-inch wide, measure it, now measure across the width of the oven. It's about 10-times as wide as the switch. Do the same thing for the dials, assuming they are 2-inches in diameter and you come up with what looks to be a 10-inch wide deck. Just looking at the oven it seems all out of proportion (too boxy) for a 20-inch wide deck.

Just my observation.

Tom Lehmann/The Dough Doctor  
3799

## **Sicilian Style / Re: Butter in the PAN of Grandma's Style Pie**

Mo;

To add "chew" to your pizza replace 25% of the regular flour with durum semolina flour (it will take more water so be prepared to increase the dough absorption (and it absorbs water SLOWER so don't be fooled by a slightly tacky dough after mixing).

To test for a gum line just cut a slice from the pizza, flip it over (bottom side up) and carefully cut the slice in half lengthwise using a VERY SHARP SERRATED knife (use light pressure cutting the crust) as soon as the crust is cut fold the crust in half so the two topped sides are in contact with each other. If you have a gum line you will recognize it as a gray/wet looking area under the sauce 1/8-inch thick or more. To confirm, take another slice and grasping it by the rim, pull/tear it apart as if pulling a slice of bread apart. As the crust cleaves look for the crumb to form a short film as it pulls apart (you want it to tear/cleave cleanly). If it "feathers" (that's what we call that film or membrane) you have a gum line.

Tom Lehmann/The Dough Doctor  
3798

## **Dough Clinic / Re: Crispy bottom crust**

Regarding the dough weight, it's YOUR pizza, you know what YOU like, if YOU want it to be thicker, use more dough. Remember, we're making PIZZA not rocket fuel or nitroglycerin.

As for the ADY, did the dough perform well for you? Were you happy with it? Did the finished pizza look good? (I personally think it looked great) If yes, you're "good to go". Remember, dough formulation and dough management go hand in hand. If the amount of yeast is working for you with YOUR dough management procedure why change it?

Tom Lehmann/The Dough Doctor  
3797

## **New York Style / Re: [Recipe] White Basil Pie**

Are you using 57-grams of water at 100F in addition to the 100F water used to activate the yeast in? That will give you a very hot finished dough temperature. A

good finished dough temperature to target for is 80 to 85F for a warm dough or 70 to 75F for a cold dough.

Tom Lehmann/The Dough Doctor  
3796

### **Dough Clinic / Re: Suggestions for greater oven spring?**

Yes, flour most certainly can/will change in moisture content if left exposed to the open air (open container). Fresh flour has approximately 13% +/- moisture content. In cold climates when the winter air is very low in moisture (low relative humidity) the flour will dry out to approximately 10% moisture content (it's hard to get it to go below that naturally) and in a humid environment it will pull moisture from the air until its moisture content is around 15%. Think of how that can impact your dough absorption. Like I've always said, there is a huge difference between flour and hockey pucks....Hockey pucks are always the same, flour is always different or changing.

This is one very good reason to break down a large bag of flour into several smaller ones which can be used before the flour changes too much.

Tom Lehmann/The Dough Doctor  
3795

### **Off-Topic Foods / Re: What's your favourite bread recipe?**

I make it using a straight dough procedure with 3.5-hours bulk fermentation, then scale into 16-ounce pieces and form into balls, place balls onto lightly oiled cookie sheets and final proof for about 75-minutes or until the balls are nice and full in shape, cut a cross hatch (#) on top of each loaf to prevent bursting, bake at 425F until golden brown in color (loaf will sound hollow when you tap on it). As soon as the bread comes out of the oven brush it with melted butter and wrap in a clean towel (this prevents the crust from cracking upon cooling). Allow the bread to cool for at least 90-minutes before cutting into it. We love it! :)

Tom Lehmann/The Dough Doctor  
3794

### **Dough Clinic / Re: RT vs CF detail**

There are different flavors produced between CF and RF and it all depends upon where your tastes lie as to which you prefer. I was raised in the baking industry so I know very well what the flavor of RF is all about, and for me it brings up memories of bread. I want something different in the flavor of my pizza crusts so my preference is for CF.....BUT you cannot compare CF and RF on an equal time basis. Because of the difference in flavor profile you cannot really say that if you RF for x-time you need to CF for XX-time. From a dough performance stand point you can do that but not from a flavor stand point. As you know flavor is a highly subjective thing, I've said it before and I'll say it again: "The best flavor is the one that you like the most." If one feels that a combination of both RF and CF gives them the flavor that they prefer, so be it. There is no right or wrong, just so long as it WORKS FOR YOU.

For many years I did sensory evaluations for AIB on a vast myriad of different types of products and I can attest to the fact that for any sensory evaluation/taste test to have any glimmer of validity a lot of thought has to go into the process. We used to do a triangular test first to see if there was indeed any difference in flavor to pursue any further, if there was we would then go to a hedonic testing scale for our next test. In this test the panel was asked to taste a control product and rate it on a 1 to 10 scale (10 = like very much) and then they were presented with another (test) sample and asked to rate it also. From this most basic sensory test we could

determine that the panel recognized a difference between the two samples, which one they preferred, and to what magnitude they preferred it over the (control) sample. I won't even go into the selection and profiling of the panel members. To have any validity we had to have at least 20 participants in our panel for any study, and we had to have nearly twice that number of participants in a pool to draw from so we could always ensure we could get the minimum number of panel participants and the participants had to be available for the entire testing/evaluation series which in many cases could take a full week or more. Think of it like a jury, you have a large group to draw from, you select the ones best suited to evaluating the type of product(s) and get a commitment that they will be available to participate for the duration of the testing, we would always shoot for anything between 22 and 25- people just in case someone got sick or couldn't participate at any time.

A lot of work went into those studies.

Tom Lehmann/The Dough Doctor

3793

### **Dough Clinic / Re: Suggestions for greater oven spring?**

I've not tried it but you might try a plant moisture indicator, the type that you stick in the soil neat the plant and it gives you the moisture content of the soil....does anybody have one? Have you tried it with flour? Like I said, I don't have any idea if it will work or not but if anyone has one it would be interesting to find out.

Tom Lehmann/The Dough Doctor

3792

### **Dough Clinic / Re: My dough didn't cure properly in dough box.**

That's about twice or a little more than twice the amount of IDY that I would use with a 90+ F dough temperature unless I'm making an emergency dough which is a whole different story. When you have a finished dough temperature of 90F or more there is a possibility of growing some of the "other" bacteria which we normally don't encounter at lower dough temperatures. While not dangerous, these bacteria can contribute to an "off" flavor or aroma to the finished crust, this is especially so when long fermentation times are employed in the dough management procedure.

Tom Lehmann/The Dough Doctor

3791

### **Dough Clinic / Re: RT vs CF detail**

JPB;

For the most part that assumption is correct. The reasoning being that acids are formed in greater amount during the initial RF and then holding the dough, even as CF allows those acids to continue to degrade the flour proteins/gluten. Think of it like marinating a piece of meat where the degradation of the meat protein continues even after we put the marinating meat in the fridge. So, to be absolutely correct, one might have to say "It all depends". It all depends upon the amount of acid formed during the RF period as well as the resistance exhibited by the flour proteins to acid degradation (this is correctly referred to as fermentation tolerance).

Tom Lehmann/The Dough Doctor

3790

### **Sicilian Style / Re: Butter in the PAN of Grandma's Style Pie**

I wrote a very detailed article on what causes the "dreaded" gum line in PMQ Magazine <[www.pmq.com](http://www.pmq.com)>. You might see if you can access it through my article

(In Lehmann's Terms) archives.

Here are the main things responsible for a gum line:

Baked too fast (oven too hot).

Too much sauce.

Insufficient yeast in dough formula.

Dough too hot resulting in reduction of yeast level to control fermentation.

Excessive dough fermentation.

Dough collapse, poor oven spring.

Bright colored/silver pan resulting in insufficient bake.

These are the most common causes.

Tom Lehmann/The Dough Doctor

3789

### **Dough Clinic / Re: RT vs CF detail**

Since a good part of "flavor" is due to the denaturing of proteins during baking, and flour constitutes a significant source of protein, yes, significant differences in flour protein content can impact finished crust flavor, but in all likelihood, you would see other significant changes, especially in the way the dough handles first so the likelihood isn't very great that you will see differences in crust flavor due to changes in flour protein content.

Tom Lehmann/The Dough Doctor

3788

### **Chitchat / Re: Table Saw Purchase Guidance**

Since I bought my compound radial arm saw I've seldom needed to break out my table saw. About the only thing I use it for anymore is for ripping a board.

I've got a router and a router table but I think I use my trim router more than either.

I'm like you, raised around wood working, retired, 73-years old, and love wood working as a hobby. Building bird houses, bat boxes, rod racks for fishing rods and some furniture too when the mood strikes me.

Tom Lehmann/The Dough Doctor

3787

### **Dough Clinic / Re: Pizza crust**

Stephanos;

I really need more information from you to say what the problem might be. I really need to know your entire dough management procedure complete with ALL times and temperatures as well as information on how you are baking your pizzas (type of oven, baking temperature, baking time, baking platform such as pan, screen, disk or right on the oven hearth).

Additionally, do you have access to a small electronic scale capable of weighing in grams? If so your dough formulation in weights (grams) would be more helpful than "about" and "a pinch", if you cannot access a scale it would be more helpful if you can provide volumetric portions to replace the pinch and about measurements. In the meantime if you go to <[www.pmq.com](http://www.pmq.com)> and go into the RECIPE BANK, use dough for your search word, I've got a home made pizza dough "recipe" posted there in volumetric portions which will serve to get you started in making pizza while we sort out your existing dough.

Once we have a little more information to go on it shouldn't take too much to get you pointed in the right direction and making pizzas you will be proud of.

Tom Lehmann/The Dough Doctor

3786

[\*\*Dough Clinic / Re: Differences between New York/Chicago/California style dough?\*\*](#)

A well fermented dough would be one that has significant fermentation time, for example, if using CF (cold fermentation), at least 3-days in the fridge would typically qualify as "well fermented". New York style pizzas are made with what is essentially the highest protein flour commercially available which is a minimum of 13.5% protein to as much as 14%+ protein content. Any of the pan style pizzas (California style included) are made using a lower protein content flour which would be considered 10.5 to 11.8% protein content, or something close to that.

Tom Lehmann/The Dough Doctor

3785

[\*\*Newbie Topics / Re: protein % in flour effect on pizza?\*\*](#)

Moving to a higher protein content flour will just make the pizza crust more chewy/rubbery when eaten as cold pizza.

Things to consider:

- 1) Use flour with 12 to 12.8% protein content.
- 2) Incorporate a lot of fermentation time into your dough making procedure for both flavor and developing tenderness in the finished crust.
- 3) Include oil in the dough formulation at 5%.
- 4) Open the dough into skins by hand to achieve a better bake and lighter texture in the finished crust.
- 5) Bake your pizzas at a lower temperature for a longer time to ensure a THOROUGH bake.
- 6) Don't use a thin sauce, instead use drained whole tomatoes which are torn into pieces for your sauce...it does wonders for the flavor of cold pizza.
- 7) NEVER refrigerate pizza unless you plan on reheating it.

Cold pizza here (Manhattan, Kansas) has another name with the students at Kansas State University (KSU)....BREAKFAST.

Tom Lehmann/The Dough Doctor

3784

[\*\*Chitchat / Re: Table Saw Purchase Guidance\*\*](#)

Mitch;

I just finished an order for 15 bird houses for my son, now I'm making him a bat box (the kind that eats flying insects) after that I've got the head of the buck that I shot last fall (it is presently under the lawn cart (inverted) on an ant hill so the ants can clean it up for me, they do a very thorough job at removing all tissues, then I'll be soaking it in bleach water and letting the sun finish the bleaching process then I'll be making a mounting plate from red oak that I have and I'll have a European mount to give him to hang in his "cabin" in up-state Minnesota. That's where all those bird houses are headed too.

I really enjoy wood working as it lets me completely "change gears" and do something different for a few hours each day. During the winter months I like to amuse myself doing leather work, I build a few custom knives and leather sheaths but mostly rifle slings and pistol holsters.

I needed a stitching pony to hold my projects while I'm hand stitching so I made one out of red oak (better than any one I could buy) and then I needed a rifle cradle/vice to hold a rifle secure while mounting sights, yep, built that too. Looking

around here in my office I see all the shelves and book cases that I've built. Even made a Mission style shoe rack for the bedroom. I get these wild hair ideas and head out to the shop,aka garage and immerse myself in some mental relaxation.  
Tom Lehmann/The Dough Doctor  
3783

### [\*\*Dough Clinic / Re: Pizza crust\*\*](#)

Stefanos;

I can't encourage you enough to dig out that scale and use it to weight your ingredients rather than using volumetric portions. By weighing each ingredient you will be able to achieve much greater consistency from dough to dough and you will be much better able to make the formula adjustments needed to give you what you're looking for in a finished pizza.

It sounds like you are only allowing the dough to ferment at room temperature for 5 to 6-hours which in all probability, is not enough fermentation to develop the type of flavor that you're looking for. The amount of yeast that you are using (is it active dry yeast or instant dry yeast?) seems quite high for allowing the dough to ferment at room temperature or in the fridge for a sufficiently long time (24 to 48-hours) to develop a great fermentation flavor. If the top of the pizza is now getting done (fan turned off) but the bottom of the crust isn't sufficiently done I would suggest reducing the oven temperature in 25C increments while extending the baking time. From a flavor stand point, you will probably achieve the best crust flavor as well as regulation of the fermentation process by adjusting the salt level to 2% of the total flour weight. The amount of yeast that I would suggest adding would be 0.2% of the flour weight (1-gram for 500-grams flour weight).

Please keep us posted on your progress.

Tom Lehmann/The Dough Doctor

3782

### [\*\*Dough Clinic / Re: Pizza crust\*\*](#)

Wrapping the dough tightly won't stop or slow down fermentation....it will still ferment. Refrigerating the dough will help to regulate the rate of fermentation, freezing the dough will stop fermentation BUT it creates a whole different set of issues.

Tom Lehmann/The Dough Doctor

3781

### [\*\*New York Style / Re: Pizza topping order\*\*](#)

A lot of it depends upon the toppings and amounts and what you are looking for. Some like sauce first while others go with cheese first (Chicago style), if using raw meats they should go on last to ensure they get thoroughly cooked. Chicago style pizzas will have the meat (raw sausage) buried under everything BUT these pizzas are given a long baking time so the meat is cooked. As for pepperoni, some pepperoni doesn't tolerate heat very well so it's buried under the cheese while some like the pepperoni toasted so it gets put on top. Today, many will use a precooked meat product so it can get buried under the toppings without any problem, in most cases though the vegetable toppings will be oriented near the top of the pizza to allow them to steam-off freely during baking. The type of oven used to bake the pizza will also impact the placement of the toppings too. In a pizzeria using an air impingement oven the intense airflow can scorch the vegetable toppings so they may be buried under the meat and cheese.

In short, vegetable toppings (due to their high moisture content) are generally oriented towards the top of the pizza but in the end your preference and oven

performance will dictate the order of placement.

That's a good looking pizza!

Tom Lehmann/The Dough Doctor

3780

### **Dough Clinic / Re: Help!! My Dough is FLAT**

Your yeast level is quite low at only 0.05882% (fresh/compressed yeast). For 1,700-grams of flour 2 to 3-grams (0.11764 to 0.17647% should work much better for you.

Additionally, if your "00" flour isn't malted you will need to add some sugar (2%) to support fermentation. Can you tell us something about your oven too?

Tom Lehmann/The Dough Doctor

3779

### **Dough Clinic / Re: Crispy bottom crust**

Your proposed approach "B" would be the one that I would pursue for greatest consistency/uniformity in the dough as it significantly diminishes the impact of any differences in the finished dough temperature on the rate of fermentation.

I would just use your standard dough making process, either 75 or 80F finished dough temperature will work well (pick a temperature and try to hit it as consistently as possible for greatest consistency in fermentation rate.

As for humidity in a fermentation room the magic number is 85 to 87% R.H. (relative humidity). At that R.H. you will control evaporative loss from the dough while still avoiding developing a tropical rain forest which is what happens when the R.H. reaches 100%, but as you get closed to 100% the room will begin to drip due to developing condensation. I don't know how big or small the "room" will be but keep in mind that we have gotten away from using fermentation "rooms" in the baking industry due to the highly acidic/corrosive nature of the environment inside of the room literally eating away everything including the concrete floor over time. Instead, what is now used is a fermentation "shelf". This is nothing more than a suitable large container to hold the fermented/fermenting dough with about 12 to 18-inches of head space above the dough, this head space fills with carbon dioxide, and since carbon dioxide is heavier than air, it displaces the air on top of the fermenting dough creating a green house effect, trapping moisture and heat in the dough which prevents the dough from drying and ensures a uniform fermentation rate. Now all you need to do is to have a temperature controlled room (no humidity). The term "fermentation shelf" comes from the fact that a shelf/lid is suspended above the "dough trough" (fermentation container) to fend off any possible drafts which could disrupt the carbon dioxide layer. In your case you can just DRAPE a piece of plastic sheeting over the fermentation container to accomplish the same thing.

Tom Lehmann/The Dough Doctor

3778

### **Dough Clinic / Re: Pizza crust**

What am I looking at there? Did you place the dressed dough, in the pan, in the oven to promote faster proofing?

Tom Lehmann/The Dough Doctor

3777

### **Dough Clinic / Re: Crispy bottom crust**

Victor;

You can incorporate "old" dough back into new dough at an amount not to exceed

15% of the total new dough weight. For example, 50-pounds of flour will give you about 85-pounds of dough weight 15% of 85-pounds is 12.75-pounds, so you could add as much as 12.75-pounds of dough back into your new dough without influencing the performance of the dough or flavor of the resulting crusts. Even if dough is RF you can still open it into skins and place it in the cooler to stabilize the fermentation process and use it later in the day. Once the dough is opened into a skin it cools down to a temperature where fermentation is stabilized (40F <) is a very short time. I've not had good success in holding the pre-opened skins overnight.

Tom Lehmann/The Dough Doctor  
3776

### [\*\*Pizza Toppings / Re: Why is pepperoni so popular?\*\*](#)

There's that word again...."gamey". I've had poultry pepperoni, bison pepperoni (absolutely GREAT), regular pork and beef pepperoni, ostrich pepperoni, and even venison pepperoni and I've never had the word "gamey" come to mind. :-D

Tom Lehmann/The Dough Doctor  
3775

### [\*\*Newbie Topics / Re: what happen if you use All-Purpose Flour to make your dough?\*\*](#)

As you move to a lower protein content flour you reduce the ability of the dough to resist the effects of fermentation so with all things equal, with longer fermentation times (beneficial in developing crust flavor and texture) the dough made using a lower protein flour will be weaker, tear more easily, have less elasticity, and possibly even collapse under the weight of the topping ingredients resulting in a finished crust with all of the eating characteristics of an art gum eraser. Since the protein content of the flour also plays a direct role in flavor development the crust made using a lower protein content flour will have less flavor or a different flavor profile. This is not to say that great pizza cannot be made using a low/lower protein content (under 10.5%) flour, it certainly can, the dough just needs to be formulated and managed a little differently than a dough made using a higher (over 11%) protein flour. The lower protein content flour will generally result in a more tender eating crust (this is why lower protein flours (11% to 12.5%) are favored for making thick crust and deep-dish pizzas) but if the limit to processing tolerance is exceeded the dough can collapse during oven spring giving just the opposite effect. Keep in mind that when we are dealing with flours in the 11 to 14.5% protein range we working with flour milled from a suitable variety/varieties of hard red winter wheat or hard red spring wheat with good to excellent bread baking properties making them highly suitable for making pizza, but when we go to the lower protein flours, typically sold as "all purpose" we never know exactly what we are getting as some manufacturers use soft wheat varieties in their AP flour (soft wheat is primarily used in cake, cookie and pastry production), while still other manufacturers will use it sorta as a place to use their "not so good" wheat/flour . After all, it IS an ALL PURPOSE flour, it can be used to make many different baked foods but is not great at making any one of them (jack of all trades, master of none) where as "bread flour" congers up the notion that the flour is suitable, by some standard, for making bread type products and for the most part the flours live up to their inference. This is why I always tell people if they are using an AP flour and want to change to a different brand, do so with caution as all AP flours are not equally suitable for making bread and pizza type products where long fermentation times are the order of the day where as higher protein flours are some what standardized in their performance characteristics, given their protein content, and

tend to perform much more similarly between different brands.

Tom Lehmann/The Dough Doctor

3774

**[Stones/tiles/steel, Pans & Accessories / Re: Making a batch of pizzas for WFO and peel/oven transfer](#)**

I've never tried a heat gun as a hair dryer was easier to find at the time, Using a heat gun I would use the low heat setting and hold it some distance away from the skins, as all you want to do is to form a dry skin on the top side, then invert onto another screen or floured peel. To use the skins off of the peel just slide off of the peel as you will want to have the dry side down, dress and bake. Dock if you need to just prior to dressing.

Please let us know how it works for you.

Tom Lehmann/The Dough Doctor

3773

**[New Forum Members / Re: Lincoln Ovens](#)**

Todd;

I did a comparison of all of the "new generation" air impingement ovens a few years ago in PMQ Magazine. You might be interested in reading it. You will need to search the "In Lehmann's Terms" archives. I don't remember the exact title of the specific article but if memory serves me correctly it was something to the extent "a new generation of air impingement ovens" or something of the like.

Welcome to the site!

Tom Lehmann/The Dough Doctor

3772

**[Neapolitan Style / Re: Deck cooling down](#)**

It could be an issue of heat saturation as you suggest (2-hours is not a very long warm up time), or it may be due to a thin deck. How thick is the deck and what is the composition?

Tom Lehmann/The Dough Doctor

3771

**[Newbie Topics / Re: what happen if you use All-Purpose Flour to make your dough?](#)**

Your assumption is correct.

Tom Lehmann/The Dough Doctor

3770

**[General Pizza Making / Re: My pizza oven / dough conundrum](#)**

The first thing I would do is to open the dough so there is less dough around the edge of the skin. The more dough you leave around the edge the more pronounced the edge becomes on the finished crust.

Tom Lehmann/The Dough Doctor

3769

**[Newbie Topics / Re: all-purpose vs 00 for neopolitan?](#)**

At what temperature are we baking at for the comparison?

Tom Lehmann/The Dough Doctor

3768

**[Neapolitan Style / Re: Deck cooling down](#)**

If your oven deck is 6-inches thick I can't see where the deck is fully saturated in just two hours. The surface might be up to temperature but the center probably isn't.

Tom Lehmann/The Dough Doctor  
3767

### [\*\*Dough Clinic / Re: Gluten development and stretch&folding\*\*](#)

To get an assessment of how much gluten development you've achieved in your dough you will need to see how far you can open each of the doughs. Believe it or not, the problem could also be due to lack of fermentation providing the necessary bio-chemical gluten development, in which case the hand kneading would have provided the bulk of the actual gluten development. It can also be due to a high acid content in the dough due to the use of a starter and a lot of RF. In a case like that those hand folds would have helped to oxidize the gluten bonds making for a stronger dough. Without more information, finished dough temperature, room temperature, dough temperature after the fermentation period, and the appearance of the dough balls immediately prior to being opened into skins, one cannot say for sure just what created the situation you've experienced.

Tom Lehmann/The Dough Doctor  
3766

### [\*\*Dough Clinic / Re: Cold Ferment longer than 3 days?\*\*](#)

3-days is probably pushing the envelope with your dough formula and procedure. Try these modifications to what you are doing and you should be able to use the dough anytime between 2 and 4-days without any problems. Additionally, your dough making procedure is time consuming and offers no added benefit so I'll propose some changes there too.

Your salt level is very low at only 0.76% at this level the salt cannot properly regulate the rate of fermentation or provide for a decent crust flavor. Many say the crust flavor is "starchy" when the salt level is too low. I suggest increasing the salt to between 1.75 and 2.25%.

You're also going to need to add some sugar to support fermentation so my recommendation is to add 2% sugar. Your Caputo flour is not malted so the sugar is necessary to support fermentation much beyond about 36-hours.

Hopefully, you're baking at or above 750F using the Caputo flour, if not, you're probably just wasting money.

There is absolutely no reason to dissolve the salt in the water as you are, unless you're using rock salt, and then letting it set for 5-minutes after adding the oil serves no function either (saved you 5-minutes already) :). I suggest using 70F water throughout the dough making process. The colder water should give you a lower finished dough temperature of between 77 and 82F which is more suitable for a 3 to 4-day CF.

To make your dough, add all of the water to the mixing bowl, add salt and sugar (do not stir), add the flour and add the IDY right on top of the flour. Mix at low speed until the flour is completely whetted, then add the oil (this delayed oil addition method is important in view of the amount of oil you are using), then continue mixing as you would normally do. After mixing, turn dough out onto lightly floured surface and knead/fold for no more than 30-seconds, form into a ball, lightly oil the dough ball and place into your container CF. This dough will be ready to use after 48-hours and will remain good to use through 96-hours and might even give you 93-hours (5-days).

Tom Lehmann/The Dough Doctor  
3765

## **Pizza Cheese / Re: freezing galbani fresh?**

I can't speak for the brand you're referencing but as a rule, some cheese tolerates freezing quite well but others do not. When they don't tolerate freezing the end result is a cheese that oils out badly and develops a VERY tough, bubble gum like eating characteristic. People have actually choked on the cheese under these conditions (yes, it CAN be that bad). My advice is to buy some and freeze it for at least a full month, thaw it and try it. If you're satisfied with the results....go for it! Maybe someone else has tried freezing this cheese and be more definitive as to whether it can be frozen or not without loss of quality.

Tom Lehmann/The Dough Doctor  
3764

## **Dough Clinic / Re: Gluten development and stretch&folding**

Timo;

Testing gluten development by the "window pane" test is not applicable to pizza production unless you are making commercial frozen pizza dough, in that case it is absolutely critical for determination of correct gluten development since the dough will not receive any biochemical gluten development.

In order to make a good assessment of the pictures they need to either be taken side by side or from the same angle and distance, but from what I can see it appears that your dough "A" is significantly under mixed, for whatever reason, while "B" appears to have a smoother skin/appearance. Dough "A" looks weak to me while dough "B" appears to be stronger and more robust. If the dough rose very fast at 22-23C this might indicate an over fermentation condition and my comments earlier about the benefits of kneading the dough would be appropriate.

Ambient temperature, while having an influence on the rate of dough fermentation pales in comparison to the effect of finished dough temperature on the rate of fermentation, this is why it is always important to know the finished dough temperature and to strive to keep it as consistent as possible, this is especially important when RF is used.

Tom Lehmann/The Dough Doctor  
3763

## **Dough Clinic / Re: Cold Ferment longer than 3 days?**

Allow me to address some of your questions;

#2) When using IDY you can actually make a "goodie bag" containing IDY, salt and sugar. The salt and sugar actually help to protect the IDY. NOTE: I am saying "IDY". With compressed yeast (CY) you DO NOT want the yeast to come into direct contact with either the salt or the sugar.

#3) No, I'm just saying that when you use oil in the dough it is best to use the delayed oil addition method for adding the oil, especially when the amount of oil in question is over 2%. The more oil being added, the greater the probability of the oil soaking into a portion of the flour thus rendering it incapable of producing gluten.

#4) Nothing wrong with what you have been doing but there is no benefit from doing it...so why do it? I find that breaks in the procedure like that create a mental distraction which just increases the possibility that I will get side tracked or make a mistake...I make enough already, I don't need any more encouragement! The more streamlined process which I outlined is both faster and it helps to keep you focused on what you're doing meaning there is a reduced possibility of something

going wrong.

#5) The easiest way to cool a mixing bowl is to fill it with ice water and allow it to stand for 5-minutes, then pour it out immediately prior to beginning the ingredient addition part of your dough making process. Don't allow the bowl to sit with the ice water for less than 5-minutes as the bowl may not be COMPLETELY cooled, you can leave it go longer but not shorter. If you're in a really hot environment and you need to super chill the bowl you can use a brine water instead of plain ice water. Water + ice + salt will get colder than just water and ice.

Tom Lehmann/The Dough Doctor  
3762

### **Dough Clinic / Re: Gluten development and stretch&folding**

None at all, in fact, some research that we did many years ago on dough mixing showed that mixing the dough much past the "smooth and satiny" appearance point results in a more dense, bread like crumb structure in the finished crust.

Tom Lehmann/The Dough Doctor  
3761

### **Dough Ingredients / Re: Vital wheat gluten effect on taste**

While flavor isn't a major issue, when you get to adding much over 4 to 5% VWG the resulting dough begins to take on different characteristics from a flour with that amount of naturally occurring protein. This is due to the fact that the VWG has already been fully developed and it imparts those characteristics to the dough making them tough and bucky (lacking extensibility) to work with which creates a much greater issue to deal with. When building protein content of a flour with VWG for each 1% VWG added you will increase the protein content of the flour by 0.6%. A portion of the crust flavor is developed through the denaturing of proteins during the baking process, fermentation weakens the gluten forming proteins allowing for a greater percent of the protein to be denatured in the oven resulting in more flavor development. It's kind of a complex thing but you can experience it yourself pretty easily by making a crust using a low protein A.P. flour and something like A.T. (about a 4% difference in protein content). Both doughs MUST be managed in the exact same manner which might get to be rather interesting if you are managing the dough out to several days as now there will be differences in dough performance which will impact the way the dough bakes and hence the way flavor is developed during baking. Like I said...complex.

Tom Lehmann/The Dough Doctor  
3760

### **Dough Clinic / Re: results of tom's dough management suggestions**

I like to oil the dough balls prior to bagging them, others like to spray some oil into the bag prior to placing the dough ball into the bag, both methods work well, you might give that a try, when I oil the dough balls they just plop right out of the bag.

Tom Lehmann/The Dough Doctor  
3759

### **Dough Clinic / Re: Cold Ferment longer than 3 days?**

The use of a proofer at 80 to 85F for tempering the dough ball prior to opening will work but is seems like a bit of over kill to me. Remember, the objective is to allow the dough to warm up to at least 50F (some like to go as high as 60F). Keep in mind that this is the INTERNAL temperature of the dough ball. If your proofer is at

85F the outer portion of the dough will be warm enough to ferment quite vigorously while the inner portion could still be cold. Assuming that the dough ball will have an internal temperature of around 40F when coming out of the fridge we're only allowing it to warm up 10F or there abouts.

Tom Lehmann/The Dough Doctor  
3758

### **Dough Ingredients / Re: Vital wheat gluten effect on taste**

High protein flour can seriously impact the toughness of pizzas in a DELCO type of operation (think commercial pizzeria) where 48 to 72-hours CF is the norm. If you manage the dough in such a way so the dough receives plenty of fermentation time the by-products of yeast fermentation will weaken the high protein flour resulting in crust textural properties more like that of a lower protein flour. If it is toughness/chewiness that you are looking for manage the dough (made with a 14+% protein content flour) for an 18 to 24-hour CF, target the finished dough temperature at 75 to 80F and you should see a difference. Another option that you have for a thin crust pizza is to use a rolling pin to open the dough to full diameter and then bake as normal, you should see a tougher, more chewy finished crust. For a thick crust or pan style pizza you're going to have to reduce the total dough fermentation time.

Case in point: Back around 1969 Pizza Hut introduced their first departure from a thin cracker type crust, it was called their "Thick and Chewy". The flour of the day for them at that time was a high protein flour at just over 13% protein content, all of their doughs were made in-store at that time so fermentation time was VERY LIMITED, the resulting pizza was so chewy (TOUGH) that you couldn't eat more than one slice, because your jaw got sore from all that chewing! It wasn't too long after that when P.H. went to their pan pizzas with a better eating characteristic. We've come a long ways since then.

Tom Lehmann/The Dough Doctor  
3757

### **Dough Clinic / Re: My dough always dry out**

Ted;

Let's try this:

- 1) Increase the IDY to 0.3%
- 2) Increase the dough absorption to 62%
- 3) Target the finished dough temperature for 75F (this will mean using 70F water, or possibly a little cooler).
- 4) Oil the dough ball(s).
- 5) Place the oiled dough ball into container and leave it UN-Covered in the fridge for 2.5-hours.
- 6) Place the lid onto the container (Note: you should have a few pin holes in the lid to release pressure)
- 7) Come back to the dough after 72-hours and remove from fridge.
- 8) Allow dough to warm AT room temperature until the internal temperature of the dough reaches 50 to 60F. (about 2-hours)
- 9) Turn the dough out of the container onto a floured surface, dust both sides of the dough and proceed to open into a skin in your normal manner.
- 10) Dress the skin and bake as you normally do.
- 11) Capture some pictures along the way and let us know how this works for you.

Tom Lehmann/The Dough Doctor  
3756

## [Shop Talk / Re: Why is it worth it?](#)

Jacob;

There must be something special about having your own restaurant/pizzeria and running it yourself because over the years I've had the following come over from the "dark side" to learn pizza and start up their own business.....mind you, these people were in pretty decent occupations to begin with but the one thing they all had in common was a lack of satisfaction with what they were doing. There is a lot to be said for what Walter said.

Lawyer (more than you could imagine)

CPA

Teachers (many of them)

High School Student Counselor

Clothing buyer for a large department store chain.

Building contractor (sound familiar?)

These are just some of the professions that a few of my clients have come from, the vast majority are just regular folks looking to be their own boss and to make an honest living in a rewarding job. Pizza Expo is filled with these people and their success and failure stories abound.

Tom Lehmann/The Dough Doctor

3755

## [Dough Clinic / Re: My dough always dry out](#)

The reason for the pin holes (and I do mean pin holes) is to release any excessive pressure which will prevent the lid from being dislodged due to excessive pressure in the container.....a lot of pressure can be formed! The opening of the plastic bag is twisted into a pony tail and tucked under the dough ball which allows the bag to vent off any excess pressure. I've seen, on numerous occasions, where a Ziplock bag has either opened at the closure or burst at the seams due to the pressure within the bag....hence my recommendation no to use Ziplock bags, additionally, the plastic Food Bags or bread type bags tend to expand a lot more than Ziplock bags thus further preventing blow-out.

Tom Lehmann/The Dough Doctor

3754

## [Dough Clinic / Re: My dough always dry out](#)

Ted;

One thing I forgot to ask you is: Do you find that there is a lot of water/condensation in the container when you first open it after 3-days of CF?

Tom Lehmann/The Dough Doctor

3753

## [Shop Talk / Re: Why is it worth it?](#)

As you might already know, this is one business that is commonly entered into by the inexperienced. As in just about everything else, business experience is more important than hands-on experience. Have sufficient funding to carry you through at least the first year of operation. Gain an understanding of operations by attending seminars at Pizza Expo as well as at the Ohio Restaurant Association show. Gain some hands-on experience by working in a pizzeria if at all possible, then get some more hands-on assistance actually making pizzas in YOUR store using YOUR equipment about two weeks prior to opening, lastly, and this is the pivotal question that I ask all of my new potential clients; Do you feel like you have to be on top of things 24/7/365? If so, you're probably a micro-manager and doomed to failure through burn-out within the first few years of operation, that

being the case I advise my potential client to find something else to aspire to. Two shining examples of what you can do with some business experience and very limited pizza experience and no desire to micro-manage are seen at Courthouse Pizza, Medina, Ohio (I worked with them in opening their first store, now he has a second store, wife and two kids and still happily married) the other example is AJ's New York Pizza, Manhattan, Kansas. I worked closely with Adam Peyton (owner) in opening his first store, he took his first vacation (about a week) after a little over 14-months, he takes trips out of town and vacations regularly and he has three successful stores (one in Topeka, KS and two in Manhattan, Ks), Topeka store won best pizza in Topeka last year, and his main Manhattan store won best pizza by K-State University as well as the coveted best pizza in Manhattan. Yes, I did ask Adam that pivotal question and as you might have guessed, he abhors micro-management. Now, look in the mirror and ask yourself that same pivotal question and answer honestly as an untruthful answer may cost you dearly in the end.

Tom Lehmann/The Dough Doctor  
3752

### [\*\*Dough Clinic / Re: Cold Ferment longer than 3 days?\*\*](#)

Yep, you just made and used a "goodie bag". Works every time.

Tom Lehmann/The Dough Doctor  
3751

### [\*\*General Pizza Making / Re: Improved Bread from Salt-Stressed Bakeri;<sup>1/2s</sup> Yeast\*\*](#)

I've told this story once before but I'll repeat it again. A good number of years ago we had a rather large bread project that required us to make nearly 2,000-pounds of dough a day, we only made 20-loaves of bread from each dough with the rest of the dough going into the trash.

Knowing that the dough was going into the trash we heavily salted each dough after removing the dough that we needed and before kicking the dough out of the mixer. The dough was placed into 50-gallon size trash barrels for the trash man to pick up. Trash man was called to ensure he was going to make the pick-up as scheduled...no problem, I'll be there. We finished the day and all of the barrels of dough were taken to the trash pick-up room, we turned the lights off and went home secure in the faith that the trash man would keep his end of the bargain. Fast forward to the next morning: I arrived at AIB at 7:00 a.m. and our building engineer was having a "hissy fit" that would rival the Chernobyl melt down, it seems he had just returned from making his building inspection tour that he makes each morning, he was so red in the face I thought he was having a stroke or something, he lead me to the trash room and told me to open the door, OMG!!! The dough line was about 8-feet above the floor! It seems the trash collector didn't hold up his end of the bargain and during the night s.l.o.w.l.y.. the dough fermented away and rose not just out of the containers but onto the floor and up the walls, at some point during the night the room was completely filled with fermenting dough, then as usually happens when dough over ferments it collapsed, leaving a stringy mess behind that had now crusted and hardened. After that little episode it was required that ALL DOUGH first be baked prior to being placed into the trash room. Point is, salt doesn't kill the yeast unless it is in direct contact with it in sufficient quantity to pull the plasma out of the cells, at high levels in the dough it just slows down the rate of fermentation, but baking/heating the dough does kill the yeast. I've got a story about that one too...how a local farmer almost killed several of his cattle when he loaded a bunch of "baked" dough into his truck in addition to the bread he was supposed to pick up.

Tom Lehmann/The Dough Doctor  
3750

### **General Pizza Making / Re: Temperature electric**

Assumptions:

- 1) We are talking about a commercial pizza oven (electric).
- 2) Up and down is in reference to top and bottom heat?
- 3) What can you tell us about the oven deck, what type of material, how thick is it?
- 4) You are baking your pizzas directly on the hearth.
- 5) What is EVO cake?
- 6) You say your individual dough ball weight changes when you use additives in the dough? This leads me to believe that you are dough for a single dough ball but baking in a commercial electric pizza oven.
- 7) How long do you allow your oven to heat up prior to baking?

Please address any/all assumptions which are incorrect.

Tom Lehmann/The Dough Doctor  
3749

### **Dough Clinic / Re: My dough always dry out**

Let's discuss this.

Where is all that water in the container coming from? Answer: From the dough that you placed into the container.

How did it get there? Answer: You covered the container right away with a warm dough ball in it, the container itself cooled down way before the dough did so the moisture from the dough condensed on the inside surface of the container where it collected as water.

But won't that water be reabsorbed back into the dough? Answer: No

Solution: Leave the container UNCOVERED for at least 3-hours to allow the dough to cool to a temperature closer to that of the fridge temperature BEFORE you place the lid on the container. Be sure to lightly oil the dough ball before you place it into the container, this serves two functions 1) It prevents excessive drying of the dough for those 3-hours in the fridge while it's uncovered (actually, dough will not dry out very much in the fridge, even if uncovered and not oiled but the oil is just a safe guard to any possible drying or skin formation on the dough. 2) It facilitates removal of the dough ball from the container.

Additionally, if you can use a smaller size container it will also help as there will be LESS head space around the dough ball for moisture to gravitate into (this is why we never experience this problem when using plastic bags to store the dough in). I hope this helps to better understand the problem and leads to a potential solution.

Tom Lehmann/The Dough Doctor  
3748

### **General Pizza Making / Re: Temperature electric**

Good points as that will give direction to baking time and temperature.

Tom Lehmann/The Dough Doctor  
3747

### **American Style / Re: Dusterinator**

That's exactly what I've been using for well over 30-years, equal parts of your regular "pizza" flour, fine corn meal and semolina flour.

Works great.

Here are some things about storing it that you should know.

1) It will keep at room temperature for quite some time (insect infestation is the only real issue) so all I can say is that it might last for a year or more, or it might last for a week, it all depends upon how insect/insect egg free the constituent ingredients are. Tip: Store a couple pounds of each (flour, corn meal, semolina flour) in a bag in your freezer for a minimum of 45-days then blend together in equal parts, remove what you will use over the period of a month or so leaving the rest in the freezer, that which was removed from the freezer should be stored in a tightly covered bowl and stored at room temperature. You can also do this with the entire amount if you wish as it will last for up to a full year when stored at any temperature of 85F/29C or lower. This is possible because the 45-day frozen period will kill any insects or their eggs which might be present. Why not store it in the fridge or freezer? Because every time you open the container you will allow warm, moist air to enter the container which, over time will increase the moisture content to a point where you could begin to develop mold or wild yeast growth :( by storing it at just plain old room temperature this will not be a problem.

Tom Lehmann/The Dough Doctor  
3746

### [Neapolitan Style / Re: Suggestions for accelerating/retarding dough fermentation?](#)

To speed up the rate of fermentation:

Increase the finished dough temperature.

Add a small amount of vinegar to the dough (replace 2% of the dough absorption with vinegar), this acidifies the dough slightly to speed up the rate of fermentation, don't worry about the flavor, acetic acid is one of the acids formed by the yeast during fermentation.

Reduce the salt level to 1.5% (less salt = faster fermentation rate).

Place the dough in a warm environment (115F) is the warmest you will want to go as anything above that will actually begin to slow the fermentation rate (thermal death point for yeast begins at 138 to 140F).

To slow down the rate of fermentation:

Decrease the finished dough temperature.

Add a small amount of baking soda to the dough (1%) to neutralize any acids present or being initially formed by the yeast. Yeast is an acid loving organism so keeping the pH a little higher will slow the fermentation rate slightly until the yeast can over come it through production of its own acids (acetic, lactic and propionic). Increasing the salt level will slow the fermentation rate.

Place the dough in a cooler/cold environment to slow the fermentation rate (when combined with decreased finished dough temperature this is VERY effective). This is how we prevent frozen dough from fermenting prior to the freezing process.

Note: By flattening the dough slightly (reducing its cross section) the dough will adjust to a higher or lower temperature much faster than it would if left in a dough ball form.

Tom Lehmann/The Dough Doctor  
3745

### [American Style / Re: Dustinator](#)

Peter;

Spot-on with the reason for adding the soybean oil, it also helps to prevent the mixture from segregating during handling.

Tom Lehmann/The Dough Doctor  
3744

## [\*\*General Pizza Making / Re: Temperature electric\*\*](#)

OK, that helps a lot.

Cake = your dough ball weight/scaling weight. :) got it.

Without knowing your specific dough formulation I might suggest the following:

Set the bottom temperature at 274C/525F and the top temperature at 218C/425F and bake a pizza until the bottom is nice and brown...this will take several minutes. When the bottom of the pizza is done remove it from the oven and look at the top of the pizza, if it needs to be baked more increase the top temperature by 25C for your next pizza, if the top needs to be baked less, reduce the top temperature by 25C for your next pizza. This will allow you to achieve a basic temperature balance for your oven using your dough formulation. Once you have achieves this base line temperature balance you can begin to bake at higher bottom temperatures while making adjustments to the top temperature (higher) to accommodate the shorter baking times.

If you will share your dough formulation and dough management procedure I'm sure we can provide additional suggestions for improving your pizzas.

Tom Lehmann/The Dough Doctor

3743

## [\*\*Neapolitan Style / Re: Suggestions for accelerating/retarding dough fermentation?\*\*](#)

Formulation changes/modifications are just that, made to the dough formulation at the time the dough is made while procedural and environmental changes/modifications can be made at ant time.

Tom Lehmann/The Dough Doctor

3742

## [\*\*American Style / Re: Dustinator\*\*](#)

A "sour" taste? Possibly "bitter" instead? Bitterness is caused from the flour scorching under the pizza or around the edges of the pizza. If that's the case you're just getting too much flour into the oven, try dusting off the dough skin better to get most of the flour off, or if using it as a peel release you might be using too much which means that a change in peel dust might allow you to use less and reduce or eliminate the bitterness.

Tom Lehmann/The Dough Doctor

3741

## [\*\*Dough Clinic / Re: My dough always dry out\*\*](#)

Me too!

Tom Lehmann/The Dough Doctor

3740

## [\*\*Neapolitan Style / Re: Suggestions for accelerating/retarding dough fermentation?\*\*](#)

Maybe I'm still missing the point of the question, but after the dough is made, and by the time it is scaled and balled, short of putting the dough back into the mixing bowl and making a formula change, like the time I made a dough and couldn't figure out why it was fermenting so fast, I kept going over the ingredients that I had scaled and I distinctly remembered scaling everything as specified in the formula and then I went over the addition of the ingredients to the mixing bowl and I could envision adding each ingredient....but wait! Not the salt! Could I have forgotten to add the salt? Yep! There it was a small plastic bowl with the salt still in

it...oops! I took all of the dough and added it back to the mixer along with the salt that was not previously added, I remixed the dough and for as good as it could be, all was good at the end of the day. Aside from forgetting to add an ingredient, I don't advocate ever remixing a dough unless the dough is blown and I need dough TODAY. In a normal setting, if one sees that the dough is fermenting at too fast or slow of a rate the best option is to expose the dough to a warmer or colder temperature, BUT because the dough has already fermented to some extent it is going to be less dense than when it was mixed so it will present something of a challenge to change the temperature of the dough (less dense dough is an excellent insulator) so the best approach is to flatten each dough ball to about 1 to 1.5-inches/25 to 37.5 mm before exposing the dough to the external temperature. By decreasing the cross section of the dough piece in this manner it will be easier and faster to bring about a change in the dough temperature, thus affecting the rate of fermentation in the desired manner. Remember, the rate of fermentation is not affected until the core (center) temperature of the dough is adjusted. Just putting the dough into a warmer or colder environment will not appreciably impact the rate of fermentation and by the time that it might have the desired impact you will have probably forgotten why you put the dough into that environment to begin with. The problem with putting the dough into a very warm environment to speed up the fermentation rate is that only the outer portion of the dough will warm up and expand, further complicating any hope of impacting the core temperature so any expansion of the dough that you see will be due only the expansion of the outer portion of the dough/dough ball.

Tom Lehmann/The Dough Doctor  
3739

### **Dough Clinic / Re: My dough always dry out**

It more than likely is but once you implement the suggested changes (especially leaving the container uncovered for 3-hours after placing it in the fridge) we can make a better determination.

Tom Lehmann/The Dough Doctor  
3738

### **Dough Clinic / Re: My dough always dry out**

In cases where the required water temperature is lower than your tap (or coldest) water temperature we have a longer and more complex "ice calculation" that we use. It's just a whole lot easier for the home baker to just experiment with adding ice (chipped or shaved only). Freezing the flour will not help as the cold flour will not absorb water as readily as warmer flour will so it will force you into a longer mixing time which equals more friction which equals more temperature gain. You would be better off filling at least half of the mixing bowl with ice or brine water for 10 or 15-minutes prior to mixing a dough. When using ice remember that it will replace an equal WEIGHT of water, and it MUST melt completely during the mixing cycle in order for it to provide the cooling effect upon the dough. The rule that we have always followed is that the total amount of ice MUST completely melt in the mixer no less than 2-minutes before the termination of the dough mixing time, when the ice melts it creates wet spots in the dough and this practice allows time for those wet spots to be thoroughly incorporated into the dough mass.

Tom Lehmann/The Dough Doctor  
3737

### **Newbie Topics / Re: What do you use to store items at home?**

We just recently had some discussion on this very topic.

Tom Lehmann/The Dough Doctor  
3736

**[Dough Clinic / Re: My very first WFO pie - please help make the next one better](#)**

What was the deck temperature?  
Tom Lehmann/The Dough Doctor  
3735

**[Shop Talk / Re: Gas powered stone oven problem with soot.](#)**

Are we talking about "soot" normally associated with inefficient combustion, or are we talking about carbon build up on the oven deck/hearth?

Tom Lehmann/The Dough Doctor  
3734

**[Shop Talk / Re: Gas powered stone oven problem with soot.](#)**

It is normal for the burner to modulate other wise the oven would just keep getting hotter and hotter throughout the day, and especially so during idle times.

How are you removing the excess accumulation of carbonized material from the oven? What kind of over broom do you use? Do you also use an oven rake to remove and stubborn baked on material adhering to the deck? Remember, it is not unusual to broom the oven after each load of pizzas has been baked.

What kind of ventilation do you have for your oven?

Any pictures or video would be helpful.

Tom Lehmann/The Dough Doctor  
3733

**[Shop Talk / Re: Gas powered stone oven problem with soot.](#)**

How many pizzas did you bake to get that much build up?

Tom Lehmann/The Dough Doctor  
3732

**[American Style / Re: My first attempt to pan pizza\(?\)](#)**

Looks a lot like a Detroit style pizza...looks good!

I notice in the dough formulation that the salt level is only 0.9% which is too low and might be responsible for "what's missing". I would suggest that the next time you make your pizza that you just double the salt level which will provide 1.8% salt (I think 1.75% is about the minimum). If you want, you can go up to 2.25% and maybe improve the flavor of the crust even more.

Tom Lehmann/The Dough Doctor  
3731

**[Shop Talk / Re: Gas powered stone oven problem with soot.](#)**

Before doing anything else, I would HIGHLY encourage you to have your gas burners checked so we can at least put that behind us. Normally when there are complaints of smoke even without anything in the oven it is due to a gas/air ratio issue or there might be oil on the deck but in the photographs it appears that the deck is clean (as the oil burns off it causes the deck to develop a black color) which I don't see in the pictures.

Tom Lehmann/The Dough Doctor  
3730

**[Dough Clinic / Re: My very first WFO pie - please help make the next one better](#)**

## **better**

I'd suggest increasing the IDY to 0.4% of the flour weight and allowing the dough to CF for 48-hours.

Tom Lehmann/The Dough Doctor  
3729

## **Dough Clinic / Re: Dough stretching!**

Yes.

I developed this procedure just for individuals who were having trouble opening the dough and getting an overly thin center in the opened skin.

You want your dough to be soft and extensible.

Place the dough ball onto a floured surface and flour the dough ball.

Use a rolling pin to open the dough up to about 2-inches within the finished diameter that you want to have.

DO NOT allow the rolling pin to roll off of the edge of the dough and be sure to roll the dough from multiple directions.

Then table stretch the dough skin to full diameter. The method works great and it will allow you to practice opening the dough skins and very soon you will find yourself putting the rolling pin away and doing the entire opening by hand.

I have this method demonstrated on my web site at <[www.doughdoctor.com](http://www.doughdoctor.com)>

Tom Lehmann/The Dough Doctor  
3728

## **Dough Clinic / Re: Hi Doc,**

It sounds like he is using one of the brewer's yeast strains.

Tom Lehmann/The Dough Doctor  
3727

## **New York Style / Re: Par Baking**

Not speaking specifically to NYC, but its a fairly common practice and in my opinion it makes for a very good pizza, especially where crispiness is the order of the day.

Tom Lehmann/The Dough Doctor  
3726

## **Dough Clinic / Re: No undercarriage browning - disappointed**

If the problem is that your bottom crust color is too light the addition of more sugar to the dough formula (recipe in your case) will help to induce crust color development. Another ingredient that can be used very successfully is the addition of dairy whey (available at health food stores). The whey is high (about 73%) in lactose aka milk sugar which is not metabolized by the yeast so it will not impact your current dough fermentation in any way. We typically do not make any changes to the dough absorption when adding whey as it is not necessary. The amount of whey to add will be 5%. This is a good point to bench mark at, then you can adjust the level to provide you with the specific color you are looking for.

Tom Lehmann/The Dough Doctor  
3725

## **Dough Clinic / Re: Hi Doc,**

Antlife;

"of glucose"?

Please explain.

Tom Lehmann/The Dough Doctor

3724

**American Style / Re: My first attempt to pan pizza(?)**

Your pizza looks GREAT!

Tom Lehmann/The Dough Doctor

3723

**Dough Clinic / Re: Hi Doc,**

Yes, I'm familiar with that but it gives you a different finished crust flavor just as it does in brewing.

Tom Lehmann/The Dough Doctor

3722

**Dough Clinic / Re: Hi Doc,**

Just a "heads-up", I am preparing to evaluate a new type of yeast which will have a unique application in pizza production, and if it proves itself it may cause me to rewrite dough management. I can't say anything more about it until I receive approval (from the manufacturer) to release the results of my testing in one of my published articles. I'm really looking forward to this.

Tom Lehmann/The Dough Doctor

3721

**Newbie Topics / Re: Where to get training in NY style pizza making?**

Regardless of the type of oven you use, it will, for sure, bake differently from the one which you will have in Japan. This is reflected in the much repeated rule that "Every oven is a law unto itself and only itself". Additionally, keep in mind that gas ovens bake somewhat differently than electric ovens. This is not to say the electric ovens are bad, they just bake differently due to the dry heat so you may need to bake your pizzas longer and at a lower temperature using your electric oven regardless of what kind/type it is. One of the laws of physics says that dry air in an electric oven doesn't conduct heat as well as moist/humid air in a gas, wood or coal fired oven. Depending upon the type of oven you are planning on, one trick that works well in electric ovens is to bake the pizza right on the deck and then "dome" it for the last few seconds (this is where you lift the pizza using your oven peel into the dome of the oven to finish the top of the pizza).

Tom Lehmann/The Dough Doctor

3720

**Dough Clinic / Re: Inconsistent crust**

Ing;

It would help in answering your question to know your dough "recipe" as well as the dough management procedure you are using and how you are baking your pizzas. This is one place where TMI (too much information) is welcome.

Tom Lehmann/The Dough Doctor

3719

**Dough Clinic / Re: Hi Doc,**

Retired? Who's retired?? My son says I'm like a car, I get re-tired and I'm good for another 50,000-miles.

Tom Lehmann/The Dough Doctor

3718

## [\*\*Other Types / Re: New Haven Pizza\*\*](#)

I always think of a New Haven pizza as being like a New York pizza but more crispy.

Tom Lehmann/The Dough Doctor  
3717

## [\*\*Dough Clinic / Re: all purpose flour\*\*](#)

The problem with A.P. flour is that it isn't designed with anything in particular in mind....think of it as a "jack of all trades but master of none". It can be used to make a lot of different types of baked products but none of them especially well. Add to that the problem that it varies considerably from one manufacturer to another. A.P. flour might be made using a relatively strong winter wheat so it might be better suited for making bread type products while that from another manufacturer might make it from a soft red wheat, making it more suited to making cookies and pastry. Typically, when made using a soft wheat variety we find that the starch damage can be a bit higher thus further limiting its application in making fermented doughs, especially those which will receive significant fermentation. The addition of VWG can improve the dough handling and baking properties of SOME A.P. type flours but not all. It just depends upon the type of wheat that it was made from and the amount of starch damage present (nothing can reverse the starch damage issue).

When making dough using A.P. flour you will not need to use the delayed salt mixing method (used only for very strong doughs) so I'd put the salt into the water in the mixing bowl. Sugar should be MINIMIZED so I wouldn't go with more than maybe 2%. Forget the honey unless it's all you have as it will not provide any benefit at levels below 5%, and only then if it is a dark (flavorful) honey...but then it can also make the crust crumb darker in color too (great in a multi-grain type dough/crust). Use lower yeast levels, not more than 0.2% IDY or 0.5% compressed yeast. Dough absorption is impossible to say as I have no idea of what it is for your A.P. flour, but for every 1% VWG that you add to the flour you will increase the protein content of the blended flour by 0.6% also for every 1% VWG that you add you will need to add an additional 1.75 to 2% absorption to hydrate the VWG. As for mixing, I'd recommend following the practice of just mixing the dough to a smooth consistency targeting a finished dough temperature of 75F and probably not more than 24-hours CF to start with. If the dough will take more, go for it.

Tom Lehmann/The Dough Doctor  
3716

## [\*\*Dough Clinic / Re: No undercarriage browning - disappointed\*\*](#)

A stone would certainly help as would allowing the pizza to bake longer before hitting it with the broiler.

As you go up in protein content the dough absorption will also increase as will the ability of the dough to tolerate longer fermentation for flavor development BUT at the same time you might also find that the finished pizza is getting increasingly tough/chewy so the flour protein content has to be balanced against the type of pizza you are making as well as your dough management procedure.

Tom Lehmann/The Dough Doctor  
3715

## [\*\*New Forum Members / Re: dough xpress DMS-18\*\*](#)

Your press likes to have a SSOOFFTT dough, one that is very relaxed. Absorption will get you the softness needed but only fermentation or a reducing agent such as dead yeast or PZ-44 will get you the relaxed condition necessary to get a uniform

press.

Your dough formulation and dough management procedure complete with times and temperatures will help us to get you pointed in the right direction.

Tom Lehmann/The Dough Doctor  
3714

**[Dough Clinic / Re: Hi Doc,](#)**

No it doesn't due to the fact that the dough itself is full of air which is incorporated and entrapped during mixing where as in the liquid brewing process you can have a fully anaerobic environment.

Tom Lehmann/The Dough Doctor  
3713

**[Dough Clinic / Re: When/How to add CY](#)**

Clarkth;

The only change I would make is to delete mixing the salt into the water. Just add the water, drop in the salt and sugar (if used) and then add the flour and crumble the CY right on top of the flour, then begin mixing. Your mixer will take care of the rest for you.

Tom Lehmann/The Dough Doctor  
3712

**[Dough Clinic / Re: Inconsistent crust](#)**

Humm. Didn't see any reference to the temperature of the "starter" or the finished dough temperature. When you are using a dough management procedure such as yours where there is considerable RF the dough temperatures become MUCH more critical with regard to dough consistency over time.

Tom Lehmann/The Dough Doctor  
3711

**[Other Types / Re: New Haven Pizza](#)**

Joe-B;

Call me simplistic but I would work off of a N.Y. style dough and just make adjustments to the baking of the pizza.

Tom Lehmann/The Dough Doctor  
3710

**[General Pizza Making / Re: Temperature electric](#)**

The pizza certainly looks done to me and it appears to be firm and probably somewhat crispy too? If you want to experiment with more bake, target a slightly higher bottom temperature and about 15C higher for the top temperature to add a little more color.

Tom Lehmann/The Dough Doctor  
3709

**[Dough Clinic / Re: Active Dry Yeast!](#)**

I think this will answer your question.

All liquids included in the dough formulation are a part of the dough absorption. In the case of adding water containing ingredients such as milk, eggs, syrups, etc. only the water portion of the ingredient is included in the dough absorption. While the use of oil in the dough formulation can influence the total dough absorption it is never included as part of the dough absorption.

Tom Lehmann/The Dough Doctor

3708

**[Pizza Cheese / Re: What are some good mixes to amp up the flavor of mediocre mozz?](#)**

Agreed, either parm or romano or both are hard to beat. I like to use parmesan at about 20% of the cheese blend or romano at about half of that.

Mozzarella cheese by definition is pretty bland in flavor...that's why you couldn't find a flavorful one.

Tom Lehmann/The Dough Doctor

3707

**[Prep Equipment / Re: Issues with scale](#)**

Yes, it is pretty typical for the electronic scales (even very expensive ones) to begin to show inaccuracy when the batteries are low. Ditto on the KD-8000. I love mine!

Tom Lehmann/The Dough Doctor

3706

**[General Pizza Making / Re: Weight of dough per pizza](#)**

I would start with a dough loading factor of 0.0973 per square inch of surface area for the round and 0.1239 for a pan style.

12" = 113-square inches

14" = 152-square inches

18" - 254-square inches

Pi (3.14) X Radius (1/2 of the diameter) squared = surface area of a circle.

Thin crust:

12" = 113 X 0.0973 = 10.99 (round to 11-ounces)

14" = 152 X 0.0973 = 14.78 (round to 14.75-ounces)

18" = 254 X 0.0973 = 24.71 (round to 24.75-ounces)

Pan style:

12" = 113 X 0.1239 = 14-ounces.

14" = 152 X 0.1239 = 18.83 (round to 18.75-ounces)

18" = 254 X 0.1239 = 31.47 (round to 31.5-ounces)

There you go, now you know why you weren't supposed to sleep through math class! :)

Tom Lehmann/The Dough Doctor

3705

**[Pizzeria & Restaurant Reviews / Re: Rant...what should pizza place employees be expected to know](#)**

Take it from me....for the most part, they know little about what they do or why they're doing it. Some have inherited the shop and run it "monkey see, monkey do" fashion. A great number of them had someone help them get started by giving them a formula and some type of dough management procedure to follow....but neglected the training part...so they don't have a clue as to why they are doing something but it seems to work so I'll continue doing it....and then something goes wrong....that's where I finally end up getting called in. As for line workers, well...that's just what they are, workers. They follow directions/orders and get paid for it...that's all. For all too many, it's just "a job". If you really want to get a feel for the depth of knowledge in the store you're going to need to speak with the

owner...it all starts with him/her and some of it then flows down to the other workers, but more than likely it will not.

Tom Lehmann/The Dough Doctor

3704

### **Dough Clinic / Re: A more flavorful crust**

There is "yeasty" which is a flavor commonly associated with high yeast levels (actually it's a flavor associated with high yeast levels and shorter fermentation times (common to a lot of the home made bread), and then there is the "tangy" flavor that you mention, this is due to the increased acid formation due to fermentation as a result of long fermentation times or it can also be the result of using a sourdough starter as a component in the dough (think sourdough bread). Both of these are common in pizza crusts. To determine which one you're really looking for you might try using 3X the ADY yeast level in your first formula and process the dough in the same manner.

To see if a starter or sourdough starter is in your future you can make a starter using 50-grams of flour and 1-gram of ADY mixed into 50-ml of 80F water, set this aside and allow to ferment at room temperature for 12-hours, then add 10-grams of additional flour and 10-ml of additional water, allow to continue fermenting to 36-hours, repeat the flour and water addition again and allow to ferment for 24 more hours.

Remove 100-grams of the starter to add to the dough. Reduce the amount of water added to the dough by 50-ml/grams and use only half of the amount of ADY called for in the dough formula (0.1%) and make the dough by your usual manner.

Remaining starter can be saved in a glass container (DO NOT COVER TIGHTLY) and fed every few days to save it for the next time you make pizza.

The other option is to follow any of the methods used by a good many of us here to make a "natural" sourdough starter which can also provide some different flavors to the finished crust. I won't go into the methods used to make these as they have been discussed at great detail in other posts here.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

3703

### **Dough Clinic / Re: Pizza bottom nice and brown, top side wet - why?**

Your comments about the whole grain crust are pretty common...it seems to be a love or hate relationship. You might want to try using a 50/50 blend of your whole grain flour along with one of your other white flours, this will lighten the color and do away with the "grainy" flavor. In truth, here in the U.S. what most people call whole wheat is actually a blend of white and whole wheat flours and a very popular bread type as well as pizza crust (growing in popularity) is what is called "multi-grain". This is a flour blend made from about 70% white flour and 30% ground grains. If you try this be sure to make a soaker out of the multi-grain blend as they are slow to hydrate (about 60-minutes) then add the hydrated multi-grain blend as an ingredient to the dough. Most people describe the flavor as "nutty" rather than "grainy".

The pizzas look good, but the bacon pizza looks like the bacon is not sufficiently done, you might try pre-cooking the bacon until it just begins to crisp before adding it to the pizza, this will improve both the appearance as well as the flavor of the pizza.

Tom Lehmann/The Dough Doctor

3702

## [\*\*Dough Clinic / Re: Should I care about a seamless dough ball?\*\*](#)

All of the work that we've done over the years shows that it is not necessary to that a seamless dough ball just SO LONG AS THE SEAMS ARE ON THE BOTTOM OF THE DOUGH BALL WHEN PLACED INTO THE DOUGH BOX. The weight of the dough ball will cause any open seams to close up. Open seams on top of the dough ball will cause the dough ball to open up after being placed into the box which typically results in the dough ball expanding more in size and flowing into another dough ball which makes handling the dough ball after fermentation just that much more difficult.

Tom Lehmann/The Dough Doctor  
3701

## [\*\*Chitchat / Re: Cigars!\*\*](#)

Take the stubs and soak in water for several days, stir vigorously whenever you think of it, strain through cheese cloth and use for insect control on your flower garden. What we just made was once sold under the name of Black Flag. Nicotine is the lethal ingredient here. It works GREAT!

Tom Lehmann/The Dough Doctor  
3700

## [\*\*Dough Clinic / Re: Problems with holes while stretching dough, gluten underdeveloped?\*\*](#)

Generally, when the dough becomes extremely extensible and tears easily it is an indication of excessive fermentation. What was the finished dough temperature at the time it went into the bulk fermentation phase? Even a difference of a couple degrees will have a dramatic impact upon the amount of fermentation the dough receives when bulk fermenting over a lengthy time. This may seem hard to believe, but the temperature of the environment can change several degrees F. without significantly impacting the rate that the dough will ferment at (bulk fermentation only). Assuming you are weighing all of the ingredients too, if not all cards are off of the table.

Tom Lehmann/The Dough Doctor  
3699

## [\*\*Dough Clinic / Re: My very first WFO pie - please help make the next one better\*\*](#)

One thing to remember is that IDY doesn't like to be put into the water, instead, add it along with the flour in its dry form.

Try this for mixing:

Place water in mixing bowl.

Add salt (no need to stir)

Add flour

Add IDY

Mix until the dough just begins to come together and add the oil.

Go to second speed if you can and mix for 8 to 10-minutes.

Go with 48-hours CF

Allow dough ball to warm to 60F before attempting to open it (you will need to use a dial/stem type thermometer to get the internal temperature of the dough ball prior to opening).

Let us know how this works for you.  
Tom Lehmann/The Dough Doctor  
3698

## [\*\*Dough Clinic / Re: Problems with holes while stretching dough, gluten underdeveloped?\*\*](#)

If you're going to put the dough ball in the fridge after bulk fermenting be sure to flatten it out like a hockey puck, if you don't there will be little impact of putting the dough in the fridge for the first 8 to 10-hours (dough, especially fermented dough is an EXCELLENT insulator).

Fridge set temperature: The fridge should be operating at between 36 and 40F. When removing dough from fridge in preparation for use, just set it out at room temperature (covered to prevent drying) and allow it to come to between 50 and 60F (internal dough ball temperature). You will want to experiment to see which internal temperature works best for your specific conditions.

Once the dough ball reaches the desired internal temperature proceed with opening it into a skin for immediate dressing and baking.

Tom Lehmann/The Dough Doctor  
3697

## [\*\*General Pizza Making / Re: Effects of Different Ingredients\*\*](#)

I think we covered this very question a short time ago, perhaps Peter could weigh in and pull up the posts for you.

Tom Lehmann/The Dough Doctor  
3696

## [\*\*Dough Clinic / Re: Problems with holes while stretching dough, gluten underdeveloped?\*\*](#)

If you bulk ferment prior to scaling and balling the flattening procedure goes a long ways in helping to cool the dough down more efficiently. As you know, a round ball is a shape good for only one thing, rolling. It seems to fail at just about everything else including freezing or cooling. The smaller the cross section the more efficiently the dough will cool (core temperature is the name of the game here), until the core is cooled you don't have a cooled dough ball or dough mass.

Tom Lehmann/The Dough Doctor  
3695

## [\*\*Dough Clinic / Re: My very first WFO pie - please help make the next one better\*\*](#)

His comment was that there were lots of bubbles but he did not say the dough balls were gassy (a sign of probable over fermentation). I suggested he increase the IDY to give more fermentation in the same period of time. In this case I'm going more on the difficulty of opening the dough rather than the appearance of bubbles (bubbles can be the result of any number of factors, but an elastic dough is pretty easy to nail down....with that said, IF he was referring to the dough being overly extensible when opening into skins then either a reduction in yeast or a reduction in finished dough temperature. In this case though he has indicated that the dough came out fine the first time so I would make an educated guess that he has a temperature control issue. A temperature change of just a few degrees will significantly impact the amount of fermentation that the dough receives during an extended bulk fermentation period. With the data provided and no pictures to go on it's assumption and educated guessing.

Tom Lehmann/The Dough Doctor  
3694

## [\*\*Dough Clinic / Re: Suggestions for greater oven spring?\*\*](#)

Talk to us about what your actual dough temps are.

- 1) After mixing. (bread machines have a habit of increasing finished dough temperature)
- 2) At the time of scaling and balling.
- 3) At the time you open the dough balls into skins.

Punching the dough has a specific purpose, that is to 1) keep the dough in the container. 2) It allows for turning of the dough to help equilibrate the temperature throughout the dough mass. To a lesser extent it provides for a more consistent environment for the yeast which in turn results in a more consistent fermentation rate. Punching the dough does not de-gas the dough in a way that would reduce oven spring properties.

An easy way to increase oven spring is to maximize dough absorption (you have already done that) and then increase the yeast level using a lower (colder) dough temperature to control the rate of fermentation. This will result in greater oven spring.

Tom Lehmann/The Dough Doctor  
3693

**Dough Clinic / Re: Opening short fermented dough vs long with poolish**

I'm guessing that the doughs made using a poolish as described are over fermented.

Tom Lehmann/The Dough Doctor  
3692

**Dough Clinic / Re: Problems with holes while stretching dough, gluten underdeveloped?**

I agree that a greater percentage of bread flour would be beneficial. The weakness of the dough as is clearly visible can be due to either of two factors, an extremely weak flour (increased percentage of bread flour would help) as well as an over fermented dough for the flour being used. From the looks of the dough I'm guessing that excessively high dough temperature might by playing a significant role in this.

Tom Lehmann/The Dough Doctor  
3691

**Dough Clinic / Re: Suggestions for greater oven spring?**

Large industrial mixers as well as the commonly used planetary type mixers (spiral mixers included) do indeed raise the finished dough temperature which is adjusted through manipulation of the temperature of the dough water to give the desired targeted finished dough temperature. VCM (vertical cutter mixers as well as the Robot Coupe mixers), are high speed mixers which result in a VERY significant increase in dough temperature. Home bread machines work the dough in an enclosed chamber where the dough is exposed to high frictional forces which result in a significant temperature gain, at least that was the case with the bread machine that I had a number of years ago. I got rid of it when I bought a food processor which served multiple duties in our kitchen. I rarely use it for making dough as I do essentially all of my dough using fermentation to develop the gluten that I'm looking for.

Tom Lehmann/The Dough Doctor  
3690

**Dough Clinic / Re: Opening short fermented dough vs long with poolish**

A slightly over fermented dough, as you know, is soft and extensible, just the thing needed for oven spring. As long as the dough has not been over fermented to the point where the yeast has been damaged or the dough has been weakened so much that it is incapable of retaining gas anymore it should exhibit decent oven spring properties even though the handling properties of the dough are anything but great.

Tom Lehmann/The Dough Doctor  
3689

**Dough Clinic / Re: Over Fermentation**

Ditto.

Temperature control is the key to effective dough management.

Tom Lehmann/The Dough Doctor  
3688

**Dough Clinic / Re: Opening short fermented dough vs long with poolish**

Peter is correct in saying that there is no one test that can be used to indicate when the dough has been properly fermented and ready to use in making skins and pizza. The one common denominator that I've seen over the years though is that if the dough is easy (I know that's a subjective term subject to the experience of the person opening the dough) to open into a skin possessing the sought after physical characteristics it is most likely correctly fermented for that particular application, or put another way, if the dough is easy to work with and performs as you wish, it is correctly fermented for the application for which it is being used for. That's about as wide of a brush stroke I could make in defining when a dough has been properly fermented. As Peter said, there are just so many different type/styles of pizzas, as well as dough management procedures that one cannot provide a picture with a five word caption describing a properly fermented dough. At one time we tried using such criteria as TTA (titratable acidity), pH, temperature rise, and increase in dough volume but all failed to define when a dough was properly fermented unless the dough was fermented to the specific values already known for making a specific product. A classical example of this was when the baking industry was using brews/liquid ferments to replace sponges in providing fermentation to the bread making process, some fermented the brew to a specific pH (acidity), other fermented it to a specific TTA (measurement of the amount of acid present), and still other used both measurements. The industry was in a state of turmoil for several years and dozens of papers were written on the topic, but alas, the industry continued to suffer with inconsistency in finished product due to the inability to accurately determine when the brew was properly fermented. I was working on McDonalds Bakery Products International Task Team as they went International, in some countries (like the U.K.) the brew system of fermentation was the order of the day, but even there, it could not produce the consistency in quality demanded by McDonalds for a simple hamburger bun (McDonalds Bun in their terminology) so I spear headed the movement to return back to the traditional, time proven sponge and dough proces which ultimately became the "law of the land" as it was a required process for any bakery to produce their buns. Just in case you're wondering, the liquid ferment/brew process is very similar to what we would call a poolish (30 to 45% of the total flour, 100% absorption/water = to flour weight, and from 50 to 80% of the total yeast).

Tom Lehmann/The Dough Doctor  
3687

**Dough Clinic / Re: Problems with holes while stretching dough, gluten**

## **underdeveloped?**

Begin by backing down the finished dough temperature and/or the total dough fermentation time until you achieve handling properties that allow you to better work with the dough. The finished dough temperature can have a significant impact upon the fermentation rate of your dough. Also, check the dough temperature at the conclusion of fermentation, you will want to control it to something under 90F.

Tom Lehmann/The Dough Doctor  
3686

## **Off-Topic Foods / Re: High end olive oil**

If you are planning to use it IN the dough step back and think about all the other flavors and aroma which will be present....will you REALLY be able to tell a difference?? If you're planning to put it ON the pizza a better quality olive oil is advised but again, there will be all those "other" aromas present, will you REALLY be able to distinguish between a decent olive oil and one that is outrageously priced?

Tom Lehmann/The Dough Doctor  
3685

## **Dough Clinic / Re: Croissant dough for pizza?**

You bet! Tony's (frozen pizza) did just that a good number of years ago when they introduced their Italian Pastry Crust Pizza. The basic dough formula isn't all that much different from a pizza dough formula until you begin adding the roll-in fat (10 to 15%). Two three-folds and a book-fold should be sufficient for what you want to do. You can also use a blitz pastry dough method too. By this method butter is cut into small pieces, frozen and mixed into the dough, the dough is then folded a few times, set aside to rest for a couple hours in the cooler, brought out, and allowed to warm JUST until the dough can be rolled out to about 3/16-inch in thickness, it is then allowed to rest for about 20-minutes, dressed and baked. We made them for about two years until the interest cooled so we stopped making them in our class.

Tom Lehmann/The Dough Doctor  
3684

## **Dough Clinic / Re: Sugar vs. Molasses vs. Maple Syrup vs. Honey vs. Coke**

There may also be some flavor contribution from the molasses with very little perceived flavor contribution from the honey or sugar except for sweetness. And then there is the pH factor of each. The Coke will have the lowest pH (most acid) which will impact fermentation. The color of the sugar (especially molasses) and in this case the Coke, will also potentially impact the finished crumb color, making it darker to some extent. Both the honey and molasses I believe will come in at about 18% water content with the remainder being solids. I have no idea of the solids content of the Coke but it would be easy to find out what it is by weighing a pot, putting 250-grams (not ml) into the pot and boiling off all of the water, then weighing the pot, subtract the tare weight of the pot and divide the remaining number by 250 and then multiplying that number by 100. This will give you some idea of the percent water in the Coke which will need to be taken into account when calculating how much water to add.

Tom Lehmann/The Dough Doctor  
3683

## **General Pizza Making / Re: Pizza Sub**

That's like a French bread pizza by Stauffer Foods. One of the tricks to making it is

to brush the crumb surface of the split bread/roll with melted butter to create a barrier so the sauce won't be absorbed into the crumb.

Tom Lehmann/The Dough Doctor  
3682

**Dough Clinic / Re: Over Fermentation**

Brett;

Can you be more specific when you say that when you bring the dough up to room temperature (70F) it makes the dough soft and hard to stretch out. Specifically, soft at 70F as compared to what other temperature and when you say that the dough is hard to stretch out specifically what issues are you having when stretching the dough out (opening it into a skin)?

Dough which is held under refrigeration will always be firmer than dough at a higher temperature, this is why it is recommended that the dough be removed from refrigeration and allowed to warm to something between 50 and 60F prior to opening into a skin, the dough is just sooo much easier to open, especially by hand. If you are allowing the dough to come up to 70F the dough is probably becoming too warm and too soft and exhibiting too much extensibility making it difficult to handle and open without tearing it.

Tom Lehmann/The Dough Doctor  
3681

**Dough Clinic / Re: Sugar vs. Molasses vs. Maple Syrup vs. Honey vs. Coke**

And don't forget about the impact of pH/fermentation on crust color as it is VERY significant. The longer you allow the dough to ferment the more acid (lower pH) it becomes, acidity (low pH) inhibits the Maillard browning reaction making for a significantly lighter colored crust or at the very least it is more difficult to develop a darker crust color. This is why sourdough bread is always so light in color.

Tom Lehmann/The Dough Doctor  
3680

**Dough Clinic / Re: Croissant dough for pizza?**

The whole idea behind putting small pieces of frozen butter into the dough is to achieve a dough-fat matrix, as the dough begins to warm the butter melts creating a void which accomplished some of the benefits of laminating the dough without the need to go through a number of laminations. If the butter is not frozen or if its melted it will just mix into the dough with absolutely no benefit to producing this unique type of dough which is created through the development of multiple layers of dough and fat throughout the entire dough structure. The Blitz (fast) method as describer using the frozen pieces of butter doesn't allow for creating the laminations but it does result in a similar type of structure and eating characteristic.

If you study up on making a laminated dough it will help you quite a bit if you decide to try your hand at making a croissant dough. You will need to have a rolling pin or pastry pin and a little time as well as knowledge in how to make the different lamination folds. As I said before, two three folds and a book fold are plenty for making pizza. When making your laminated dough it is best to use a Danish butter (Lapur) I think the name is. This butter is VERY DIFFERENT from table grade butter in that it is still plastic at refrigerated temperature. The amount of butter added will be 15 to 25% of the dough weight. When adding the butter it needs to be added at room temperature for east of application, after the first folding procedure the dough is refrigerated for about 60-minutes and given the second lamination followed by a recommended over night refrigeration period before

being given the last lamination fold. There is a WHOLE LOT more to it than what I've described here so you will really need to read up on the process to get a feel for it prior to attempting it.

Tom Lehmann/The Dough Doctor  
3679

### **Dough Clinic / Re: Over Fermentation**

Brett;

You said it was a "new" steel. Did you season it before attempting to use it for the first time? If not....problem solved.

Even a new cast iron frying pan needs to be seasoned before using it.

Tom Lehmann/The Dough Doctor  
3678

### **Dough Clinic / Re: Over Fermentation**

Sure! Guaranteed one coat coverage too. :)

Even the Lloyd non-stick pans require that you wash them to remove any production oils and then season them only once prior to the first use. After that further seasoning is not required. I don't know anything about your baking steel but it might require seasoning more than once before it becomes non-stick. If the bottom is baking too fast move the steel to a higher rack position in your oven so the pizza receives more top heat (heat rises). Let us know if this works for you.

Tom Lehmann/The Dough Doctor  
3677

### **Dough Clinic / Re: Croissant dough for pizza?**

Bill;

Puff pastry is made without yeast, and croissant dough gets its only fermentation from that over night rest in the fridge. No other fermentation is required or desirable.

Tom Lehmann/The Dough Doctor  
3676

### **Dough Clinic / Re: Sugar vs. Molasses vs. Maple Syrup vs. Honey vs. Coke**

Rolls;

It is a separate process entirely. On the reverse side alkalinity (high pH) promotes crust color development....but don't jump on that too fast! Alkalinity will significantly SLOW yeast activity and contribute to the development of a "funky" flavor in the finished crust, and if you put too much in it can saponify the fat, resulting in a soapy after taste in the finished crust...but that's in extreme cases.

Tom Lehmann/The Dough Doctor  
3675

### **New Forum Members / Re: Pizzeria Restaurent**

I've had good success using Forno Bravo as well as Woodstone ovens.

Make sure your location will allow wood fired ovens and be sure to check your insurance costs before committing to anything.

As for \$50,000.00...not enough for a restaurant (dine-in) facility.

In your space be sure to allow at least 2X the depth of the oven as free space in front of the over as room for the oven tender to work in, anything less and someone will end up wearing a hot pizza.

You might want to talk to George Mills over at [www.pmq.com/think](http://www.pmq.com/think) tank, George does a lot of installation work and is very generous with his knowledge.

Tom Lehmann/The Dough Doctor  
3674

**[General Pizza Making / Re: Help! Baking in 3 hours!!](#)**

Looks like your dough was too warm. If you oiled the container you should be able to pop the lid and invert the dough into your pan, then using oiled fingers carefully fit the dough into the pan, allow to proof/rise for 30 to 45-minutes, dress and bake. With only 1.5-days in the fridge I think you'll be just fine.

Tom Lehmann/The Dough Doctor  
3673

**[General Pizza Making / Re: Help! Baking in 3 hours!!](#)**

Taste the dough, just a pea size piece is all you need to taste. If you forgot the salt the dough will taste very "starchy".

Tom Lehmann/The Dough Doctor  
3672

**[General Pizza Making / Re: Help! Baking in 3 hours!!](#)**

Some of the best things come from mistakes. :)

Looks good!

Tom Lehmann/The Dough Doctor  
3671

**[Dough Clinic / Re: Changing dough for carry out](#)**

Jason;

AT (All Trumps) flour is not the best for your intended purpose, unless you want to have a tough, chewy pizza. Instead try using a flour with a lower protein content (11.4 to 12.6%) should work well. I cannot comment on the IDY as I don't know how the dough is being managed.

Tom Lehmann/The Dough Doctor  
3670

**[Newbie Topics / Re: focaccia getting hard too fast](#)**

I'm in total agreement with increasing the fat content of the dough. I would suggest starting at 5% and going up from there if necessary.

Tom Lehmann/The Dough Doctor  
3669

**[New York Style / Re: 58% Hydration?](#)**

It also helps to put the water in the bowl first, then add the flour salt and sugar if used along with the yeast (IDY).

Tom Lehmann/The Dough Doctor  
3668

**[Dough Clinic / Re: Dough didn't rise and had weak gluten](#)**

If the dough didn't rise from the "get go" and it was very weak, tearing easily there is a probability that the problem might have been your yeast. If the dough exhibited rise during the 36-hour bulk fermentation period it is probable that the yeast depleted its nutrient source and began feeding upon itself thereby releasing glutathione into the dough resulting in weakness observed. If there were bubbles in the dough but it just didn't rise the starter might have been too acid resulting in a very weak dough structure (it would have to be VERY acid for this to happen). I think more information will be required as well as maybe a picture or two before

anything definitive can be said.  
Tom Lehmann/The Dough Doctor  
3667

### **Dough Clinic / Re: Of course I should know this but..**

In my humble opinion, there is no way to tell by just looking at the fermented dough through a clear plastic container. The dough could be totally collapsed on top but you would not see it from the bottom. Different flours, different dough formulations, different dough management procedures, different environmental conditions will all impact the "optimum/ideal" amount of fermentation needed by a dough to make a fermented product, be it a pizza crust, bun, roll, bread, pita, donut or cracker. After over 50-years of conducting and directing research on yeast leavened products as well as fermentation systems the only thing that I can say about fermentation is that you have to look at it as a separate entity from the rest of the dough. By that, I mean you have to look at it as providing something to the dough (like an ingredient), fermentation can provide flavor, control over color development, extensibility, elasticity, dough strength, dough flow, oven spring, baked volume, as well as a host of other things. So you decide what characteristics you want it to impart and then you select the fermentation process which has the best chance of providing those characteristics within the constraints of your formula, dough management procedure and space (some of the fermentation procedures can require more space than others), this is then matched to the product you're making and adjusted until the desired results are achieved. This is why there is no one correct or optimum amount of fermentation for any product....it is specific to each product under the conditions by which it is made. With all of that said, looking at the picture, there is clear indication of active fermentation by the visual appearance of bubbles seen through the container, so we may assume that the dough has been fermented....to what degree? Then your question: How much fermentation is needed, is this enough? Too much? Or not enough?...This is where the baking begins as it will provide the only true answer for your product (pizza) under your conditions.

If we really want to assess the status of a fermenting dough we can do that through pH and TTA (titrateable acidity) measurements as well but as we painfully learned back in the 80's this is not an accurate way to determine if a dough is properly fermented or not. Possibly the most effective way that I've seen for assessing the correct amount of fermentation for a specific flour or dough is to observe it for the "first full rise", this is the point where the dough will rise to its maximum volume and then begin to recede. This is normally considered to be ABOUT 80% of the full amount of fermentation the flour/dough requires to be "fully" fermented for most baked products, BUT because of the thin shape of the pizza crust and ease with which it is baked the dough can be easily over fermented (and in most cases it is) to provide unique characteristics (remember, these were discussed above) to either the dough or the finished crust so this rule is no longer valid but you could easily develop a new rule which would state something like this: First full rise of the dough represents 50% of the optimum fermentation for this flour, in this dough formulation, under these specific conditions. Note: If any of the conditions are changed the rule might no longer apply as such and a new % value would need to be developed.

Sound confusing??? Who ever said the study of fermentation was easy?????? Working with chemical leavening systems is a snap compared to working with yeast leavened systems, they are inert and follow very specific rules that can be calculated and are highly predictable, while yeast is alive and has a mind of its own, at least that the way it seems at times.

Tom Lehmann/The Dough Doctor  
3666

**Dough Clinic / Re: Dough didn't rise and had weak gluten**

As long as the water doesn't smell like sulfur (rotten eggs) and it is from a municipal water supply there should be no problem with the water.

Tom Lehmann/The Dough Doctor  
3665

**New York Style / Re: 58% Hydration?**

Actually, it doesn't do much good to just add the water, then the flour and let it rest for 15-minutes without mixing the water into the flour for just a couple of seconds. The idea is to allow for better hydration of the flour and that is achieved when the flour and water are in direct contact with each other as is the case after a few seconds of mixing. If mixing large doughs usually a minute to 90-seconds mixing is sufficient.

Tom Lehmann/The Dough Doctor  
3664

**Dough Clinic / Re: Dough temperature problems**

Can you buy the dough a day prior to using it? If it's cool at night they could be left outside all night in the individual bowls and be ready to use later on the following day.

Another thing you might do is to open the dough balls an hour or so before you need them to make your pizzas. Open the cold dough balls roughly into "skins" if you want to call them that. The opened dough will be smaller and thicker than what you want for your skins, place them on an oiled sheet pan and cover with a sheet of plastic to prevent drying. In this form they will warm up MUCH faster. After about an hour (shouldn't hurt if longer than an hour) they will have warmed sufficiently to allow for opening them to full diameter and the warmer dough temperature will address the bubbling problem too.

Cold dough is always a bear to open and once you do get it opened it rewards you with copious bubbles.

Tom Lehmann/The Dough Doctor  
3663

**Dough Clinic / Re: RT vs CF detail**

When dough is allowed to ferment to the point which you described the protein is essentially destroyed between acids formed during fermentation and enzymatic activity. Since protein is the water carrying portion of the flour when the protein is completely degraded it releases the water it's carrying, hence the wet, slimy characteristic. Then as degradation of protein during the baking process is responsible for a good part of what we call flavor, since the proteins are already degraded, a whole different flavor profile is developed during the baking of the dough. Additionally, there is no telling what other micro-organisms have taken the place of the yeast (remember, it's now dead), but it will be an acid loving organism, at least for the present. Is old, rotten dough dangerous to eat? Yes, it can be, but thankfully the acidification of the dough prevents most of the really nasty stuff from growing, at least for a while. However, since most of us don't consider raw dough as part of a fine dining menu the dough gets baked prior to consumption....thank GOD for the oven! Without the oven bakers would have poisoned mankind thousands of years ago.....think of it, for the most part, it's the only kill step any of the ingredients go through if you're making a pizza totally from scratch (nothing

store bought). Yes, bakers use old dough for the unique properties it CAN impart to their products, BUT the "old" dough is made under controlled conditions so it can be replicated and so it doesn't impact their baked products in some unforeseen way.

Tom Lehmann/The Dough Doctor  
3662

**Dough Clinic / Re: Dough temperature problems**

You could also oil the dough pieces and place them into individual plastic "food" bags (discussed many time previously). Fast, clean, sanitary.

Tom Lehmann/The Dough Doctor  
3661

**Dough Clinic / Re: How to get to a 13.5% protein flour**

Yep, just change over to a lower protein content flour. The G.M. Superlative and Full Strength both come in at about 12.6% or you can also try Rex Royal (aka Pillsbury Bread Flour, available at many supermarkets) which comes in at about 12% protein content.

Tom Lehmann/The Dough Doctor  
3660

**Dough Clinic / Re: Dough didn't rise and had weak gluten**

Here's what I'd do, make a dough using the exact same formula EXCEPT use yeast for the leavening. Then make another dough using your pre-ferment and capture side by side pictures of them. If the yeast leavened dough comes out better there is a distinct probability that something has gone wrong with your pre-ferment (like that has never happened before) and you will need to start one all over again. I would suggest starting one from scratch rather than inoculating a new one with the old pre-ferment since you don't have a clue as to what is growing in it, and that might be the source of your problem. It would make for an interesting test to also make a new pre-ferment using a portion of the old one to inoculate it. In this case if the pre-ferment ends up performing in the same manner you have a very strong case for something unwanted growing in the pre-ferment.

Tom Lehmann/The Dough Doctor  
3659

**Dough Clinic / Re: Bottom oven stone broke**

Norma;

Until we sold it, at AIB we had a B.P. deck oven with several cracks in the stone and we never had a problem with it over the many years that we used it. I have to admit though that one of the cracks ran perpendicular across the deck causing our metal peels to constantly snag up on it but a little handy work with a hand held grinder soon had both pieces back on the same plane again and that's how we used it for probably a good 15 or more years after the crack developed.

Tom Lehmann/The Dough Doctor  
3658

**Neapolitan Style / Re: First Neapolitan Pizza - bottom caught on fire**

Any IR (infra-red) thermometer will work just fine but before you buy, make sure it has the capacity to measure temperature in the range that you want to measure. Some only go up to a bit over 500F and others go to 750F and still others go up to 1,000F. Check on the internet for one that will work for you. By the way, my experience with most of the thermometers supplied on the ovens is that they are on

about par with a sun dial on a cloudy day. The biggest problem is that they only give you an average deck temperature at best, and they do not show you where the hot spots are located which a hand held IR thermometer will.

Tom Lehmann/The Dough Doctor  
3657

### **Dough Clinic / Re: Diastatic Malt vs Brewer's Powdered Malt Extract**

The guy who was buying it for his pretzel making endeavors was most likely using it to replace the caustic (lye) solution that the pretzels are dipped in just prior to baking. It is the caustic solution (2% in water) that gives the pretzels their unique color and flavor. A lot of people will use a malt solution (10 to 15%) for the dip to replace the caustic solution. This will impart a darker color (more like that of an Auntie Ann's pretzel) which is better than nothing at all but not nearly as dark as a caustic solution, and it does not impart any of the unique flavor characteristics common to the caustic dip.

Tom Lehmann/The Dough Doctor  
3656

### **Dough Clinic / Re: Bottom oven stone broke**

Norma;  
We were still using the oven on a regular basis for our pizza research and training programs right up until it was sold. The reason for selling it was that we were being given a new Marsal deck oven so at that price point we figured it was time to make the upgrade and as far as I know that Marsal oven is still in use at AIB.

Tom Lehmann/The Dough Doctor  
3655

### **Dough Clinic / Re: Dough didn't rise and had weak gluten**

Welcome to the wonderful world of "fermentation", there is a perfectly logical explanation ...you just need to figure out what it is :)

Tom Lehmann/The Dough Doctor  
3654

### **Dough Clinic / Re: Bottom oven stone broke**

Norma;  
Bigmoose did exactly what we did.  
Rolls, our oven had the same solid deck as Norma's and yes, it does appear that over time they do warp a little. The difference in height at the break wasn't a whole lot but it was enough to constantly snag the metal peel but the grinder made quick work out of fixing it.

As for the Marsal oven, we absolutely loved it! Baked better (more consistently) than the B.P. but don't believe their claims that the pizzas don't need to be moved in the oven, they DO! The only time that claim seemed to work was when we placed a single load of pizzas in the oven and closed the door, not to be opened until the pizzas were about ready to come out of the oven. We did find that we didn't need to spin the pizzas as frequently with the Marsal but when running the oven in production where we were continually removing pizzas from the oven and putting new ones in we found that it was necessary to rotate the pizzas over the deck area as the pizzas in the back of the oven would bake differently from those placed in the front of the oven near the door. This is common to all deck ovens as the door is opened frequently during production cycles resulting in some loss of heat. I might also add that we found our baking times were a bit shorter in the Marsal oven, probably due to a greater BTU burner.

Tom Lehmann/The Dough Doctor  
3653

**Dough Clinic / Re: What causes dough to loose strength?**

Too much starter, starter too strong (acid), insufficient protein content in the flour that you used, excessive fermentation time for your dough management procedure will all contribute to a weak dough. My personal experience with Caputo "00" flour is that it doesn't do well with a lot of fermentation.

Tom Lehmann/The Dough Doctor  
3652

**Dough Clinic / Re: What causes dough to loose strength?**

A good general purpose flour, in my opinion, is Pillsbury Bread Flour. This is available at most supermarkets and it has roughly 12.2% protein content. Many of the King Arthur flours are good too, just look for something at 12% or more protein content. If you find that your finished pizzas are too tough/chewy for your liking drop down 0.5% to 1% in flour protein content.

Tom Lehmann/The Dough Doctor  
3651

**Neapolitan Style / Re: Use of a pluviometer to judge and correct the development of a neapolitan dough.**

If any of you live in or near, or are planning to visit Urbana, Ohio I would highly recommend a visit to R.T. Bundy/Russel T. Bundy and Associates. They are one of the largest suppliers of new, used and reconditioned bakery equipment in the U.S. but more importantly, they have a large, dedicated museum on baking and everything related to baking, including a lot of early dough testing apparatus. The museum is open to the public and is well worth the visit It is the only one of its kind in the U.S.. if not the world.

Tom Lehmann/The Dough Doctor  
3650

**Dough Clinic / Re: Mixing speed**

Why not just reduce the dough size to 750 or 500-grams? Life will be a lot easier for your mixer. As far as mixing speed is concerned, too slow of a speed is not good as it does not develop the gluten very well which results in overly long mixing times which make it hard on the mixer as well as controlling the finished dough temperature (bowl friction). On a K5-A mixer second speed is shown as 216 r.p.m. which is pretty close to the recommended 200 r.p.m. for dough development in a planetary mixer. If you go on a hunt for a larger mixer seek out a 20-quart Hobart A-200 or A-200-T, just make sure you get a reverse spiral dough arm with the mixer or you'll be adding the cost of one to the mixer. These mixers also have an attachment head so you can add a modified "pelican head" to it if you want, this will make the mixer something of a pizza maker's Barbie Doll as you can have fun looking for all of the attachments in the internet.

Tom Lehmann/The Dough Doctor  
3649

**Dough Clinic / Re: How long can I keep dough in the refrigerator?**

If your finished dough temperature was under 85F it should be just fine with the additional time in the fridge.

Tom Lehmann/The Dough Doctor  
3648

## [\*\*Neapolitan Style / Re: Use of a pluviometer to judge and correct the development of a neapolitan dough.\*\*](#)

The method discussed where a precisely weighed amount of dough, at a specific temperature is placed into a graduated cylinder, tamped flat across the top and then observed and the change in volume noted is good only for assessing the rate of fermentation of a given dough. The accepted (AACC) American association of Cereal Chemists methods for measuring dough strength are the Farinograph for measuring the strength of un-fermented dough and the Extensograph for measuring the change in extensibility over time with an un-fermented dough. When it comes to measuring the strength of a fermented dough the pup loaf baking test is still the preferred method. The Alveograph has some application in measuring the strength of a dough BUT it doesn't work as well with the strong U.S. and Canadian hard wheat varieties as it does with the softer European wheat varieties, this is why we don't see greater use of the Alveograph here in the U.S.

When it comes to measuring the fermentation tolerance of a flour the accepted method is to place a standardized quantity of dough at a specific temperature into a container and place it into a temperature/humidity controlled cabinet. The dough is allowed to rise until it reaches the first full rise (the point at which it collapses on its own). This time is noted and compared to that of other flours fermented in exactly the same manner. That with the greatest time to first full rise is said to have a greater tolerance to fermentation for whatever reason (protein quantity and protein quality are the main factors responsible for this).

I should also add that there is one other test for measuring flour quality, this is the Mixograph. The Mixograph is very similar to the Farinograph in operation but the equipment needed to conduct the test is much less costly.

Tom Lehmann/The Dough Doctor  
3647

## [\*\*Prep Equipment / Re: Countertop Spiral mixer for the price of a KA Pro\*\*](#)

If it works and holds up it would be great, but I'm a little concerned over the single speed aspect, two speeds are really needed. If the agitator speed is fast enough to mix the dough it will be too fast to combine the ingredients resulting in a flour dust cloud, and if it is slow enough to prevent the dust cloud at start up it is usually too slow to efficiently mix the dough, and then I would proceed with extreme caution as Walter is spot-on with his warning. If anyone jumps at one of these please let us know how it works for you.

I'd sure like to see some uncensored reviews of this mixer before buying.  
Tom Lehmann/The Dough Doctor  
3646

## [\*\*Dough Clinic / Re: How long can I keep dough in the refrigerator?\*\*](#)

What was 92F when you started? If it was the finished dough temperature the results may not be very good as the dough will continue to heat up (even in the fridge) due to heat of metabolism. Wheat proteins begin to break down at 90F the high temperature combined with long fermentation time do not set the stage for a great dough 48-hours later. The best advice I can offer in that case is to re-ball the dough a few hours prior to expected use time, this may help to re-strengthen the dough to at least avoid complete failure.

Tom Lehmann/The Dough Doctor  
3645

## [\*\*Prep Equipment / Re: Countertop Spiral mixer for the price of a KA Pro\*\*](#)

Matt;

Can you tell us something about your mixer? Do you have the "dust cloud" issue which I referred to? How long do you have to mix the dough to get to a point where the dough is just becoming smooth? With four years of use under your belt with the mixer you should have a pretty good opinion of the mixer by now.

Any chance of you posting a video of it mixing a dough?

Tom Lehmann/The Dough Doctor

3644

**Dough Clinic / Re: Use of a pluviometer to judge and correct the development of a neapolitan dough.**

None. WWWAAAYYY too many variables.

Tom Lehmann/The Dough Doctor

3643

**Dough Clinic / Re: How long can I keep dough in the refrigerator?**

Steve;

Can't tell much using only the water temperature as it's the finished dough temperature which sets the stage for everything to come. But I will say this, 90 to 95F water temperature is very hot water to be using to make anything but an emergency dough unless you happen to be making your dough in Nome, Alaska in an unheated tent on a very cold winter day. ;D

Tom Lehmann/The Dough Doctor

3642

**Dough Ingredients / Re: Freeze Dough....Neapolitan Pizza??**

My recommendation is to freeze the extra dough balls, but first flatten them to reduce their cross section, oil the flattened dough ball and place on a pie pan or something similar to freeze (un-wrapped), after about 2-hours in the freezer place into individual plastic Food Bags for the remainder of the storage time. The dough can be frozen for up to 10 to 15-days. To use the dough balls, remove from the freezer and place into the fridge 12 to 18-hours, then re-round the dough and allow the dough balls to rest at room temperature for 2 to 3-hours before opening them into skins. Plastic bowls that have been lightly oil work fine for holding the dough balls during the room temperature rest period.

Tom Lehmann/The Dough Doctor

3641

**Prep Equipment / Re: Countertop Spiral mixer for the price of a KA Pro**

Matt;

The mixing action looks good, I can see why the flour doesn't dust, because the dough size being mixed is quite small for the mixer bowl (not a problem).

Tom Lehmann/The Dough Doctor

3640

**Dough Clinic / Re: What is the best way to maximize simple sugars in my dough only using FWSY?**

Additionally, your premise is that alpha amylase is already present in the flour. Not necessarily so. Flour which is milled from high quality wheat, which has not begun sprouting in the field prior to harvest (you can't hardly give it away when that happens) is almost totally devoid of any amylase activity. This is why flour is treated with the addition of sprouted barley flour (malted flour) so there is a specific level of amylase activity present in the flour which results in flour with a

known level of ability to support fermentation and develop crust color through enzymatic conversion of starch to simple sugars.

If your flour is malted, what you are proposing will result in conversion of starch to sugars but if it is not little or no sugars will be produced unless you add a source of amylase. Amylase supplements are available here in the U.S. from most bakery ingredient suppliers. A good number of years ago I wrote an AIB Technical Bulletin titled "Use of Cripples in Bakery Products". Cripples are baked products which are below specification and cannot be sold. This might include under or over weight products, over or under proofed products or any product deemed unsaleable but still clean and sanitary and fit for human consumption. In the bulletin I gave discussed and gave direction for taking those products and grinding them or creating a slurry by mixing them into water with agitation (baked products are a very rich source of damaged starch as almost all of the starch present is gelatinized/damaged during the baking process) and then adding a source of amylase (in this case we used a commercial amylase preparation (Amflex from Cain Food Industries, Dallas, Texas) and allowing it to react for 90-minutes during which time the starches were effectively converted to sugar resulting in a sugar solution which could be added back to new doughs as a source of sugar, thus saving considerable money for the baker. This became so popular that a machine was developed just for the purpose of liquifying the baked products for this application, it is called a "Liquifier", it is a lot like a giant blender in function. As a side note: McDonalds French Fries have a very unique color and texture, this is achieved by taking the potato milk (juice from the potato) resulting from the slicing operation (potato milk/juice is very high in potato starch), this is then cooked to gelatinize the starch and amylase is added to the cooled slurry where the starch is now converted to sugars. This sugar solution is used to dip the potato slices in prior to freezing, it is the sugar solution adhering to the slices which results in the unique color and texture of their French Fries after the final frying process.

Make your own sugar solution by taking a couple slices of baked bread, place into a blender and add enough water (90F) to make a slurry, like a milk shake, then add a small amount of diastatic malt (amylase) and allow it to set for 90-minutes or more. Place the resulting sugar slurry into a pan and CAREFULLY heat it to 120F (this will kill the amylase), then allow to cool or refrigerate. What you will end up with is a sugar solution which can be used in baked products to replace sugar much like one might use any other type of liquid sugar.

Tom Lehmann/The Dough Doctor  
3639

### **Dough Clinic / Re: How long can I keep dough in the refrigerator?**

The water temperature will depend upon a number of factors. Flour temperature, room temperature and friction factor of your mixer.

The calculation for desired water temperature is:  $3 \times$  desired dough temperature minus the sum of flour temperature, room temperature and friction factor. Note: If you are using a mixer us 30 for the friction factor, if you are hand kneading use 5 for the friction factor. In general application you will probably want to use water at 70F to give you a desired finished dough temperature in the 75 to 80F range.

Remember, it's not the water temperature we are looking for, it's the finished dough temperature that's important. The water temperature is just the means by which we arrive at the desired finished dough temperature. As I always say: "You cannot have effective dough management without temperature control"

Tom Lehmann/The Dough Doctor  
3638

## [\*\*Dough Clinic / Re: What is the best way to maximize simple sugars in my dough only using FWSY?\*\*](#)

Peter;

Within the classification of Leuconostoc bacteria are the lactic acid forming bacteria which we are all so familiar with, I'mm guessing that this was to a large extent responsible for the results that you were seeing. In any kind of a baking environment this is probably the most common bacteria present and it contributes to the flavor of all yeast leavened baked products, especially those made using starters and sours where we have a significant incubation time, especially at elevated temperatures such as room temperature.

Tom Lehmann/The Dough Doctor  
3637

## [\*\*Neapolitan Style / Re: Use of a pluviometer to judge and correct the development of a neapolitan dough.\*\*](#)

The only issue with the test is that if you are looking for the time it takes for a dough to double or triple in volume the test will provide you with a pretty good approximation of time, but if you are looking for the time to first full rise which is the indicator that most U.S. bakeries use it is not a good test at all as the diameter of the cylinder has a significant bearing on the time at when the dough collapses. For example, first full rise will occur in a dough trough 3' X 10' X 3' deep much faster than it will in a graduated cylinder. If a bakery is trying to sort out differences between two different flours it is a meaningful test but it does not provide real time guidance on the production floor in a large scale automated bakery.

Tom Lehmann/The Dough Doctor  
3636

## [\*\*Dough Clinic / Re: How long can I keep dough in the refrigerator?\*\*](#)

If the required water temperature is COLDER than your available water temperature (tap or refrigerated) you will need to add ice to replace a portion of the WEIGHT of the dough water. There is an equation for the calculation but unless you're good at math you won't like it. Over the years I've found that in cases such as you present, replacing 25% of the weight of cold water with chipped or shaved ice will normally get you pretty close to the target temperature range. The ice MUST be either chipped or flake/shaved which will allow the ice to fully melt in the dough thus effectively cooling the dough. If the ice is in any other form it normally will not melt within sufficient time for the water to be mixed into the dough resulting in wet spots or even ice particles within the dough. Both of these conditions are conducive to the development of large bubbles within the dough upon baking.

You are correct in that if you fill the mixing bowl with cold water and add ice to it and allow it to set for 10 to 15-minutes you will effectively super cool the bowl (you can also use brine water to get it even colder) and this is an effective method for cooling the dough providing there isn't too much of a difference between the calculated water temperature and the coldest water temperature you have available to you.

As for higher absorption doughs requiring a longer mixing time this is correct. The greater fluidity of the higher absorption dough makes it more difficult to develop the gluten.

Tom Lehmann/The Dough Doctor  
3635

## [\*\*Dough Clinic / Re: How long can I keep dough in the refrigerator?\*\*](#)

Werty;

If you add the yeast right up front you don't have a true autolyse, instead, you're making a pre-ferment. With an autolyse the yeast should be added to the dough after the hydration period.

Tom Lehmann/The Dough Doctor  
3634

## [\*\*Neapolitan Style / Re: Use of a pluviometer to judge and correct the development of a neapolitan dough.\*\*](#)

There is no specific "standard" that I'm aware of so you can use a cylinder diameter of your choosing, the dough weight must be constant though if you are going to be comparing results ditto for dough temperature and environmental temperature. You don't need to cover the cylinder as the carbon dioxide being generated by the yeast is heavier than air so it will displace the air in the space above the dough creating its own green house effect at locking in heat and moisture. If you are experimenting with different dough formulas or ingredients the test can also provide you with an idea of the fermentation rate for the new dough formulation allowing you to incorporate possible changes into your dough management procedure or anticipate differences in the dough as it ferments. When we did the test at AIB we used a 500-ml glass graduated cylinder and a 50-gram dough ball weight. I think the last time I did the test was back in about 1978 or 1979 when I did a presentation at ASBE (American Society of Baking Engineers) , now just called ASB (American Association of Bakers) on Fermipan IDY and how it compares to other types of bakers yeast. It was the first presentation made at ASBE on the then new instant dry yeast.

Tom Lehmann/The Dough Doctor  
3633

## [\*\*Dough Clinic / Re: under vs over-fermented dough?\*\*](#)

When a dough ball has been properly fermented and is ready to be opened into a skin you can push your index finger into the dough up to the first joint and the dough will recede slightly as you do so. The hole will also remain after you withdraw your finger. If the dough ball is under fermented you will feel resistance to your finger as you press it into the dough, the dough will not recede and as you withdraw your finger the dough will quickly begin to fill back into the hole left by your finger. If the dough is over fermented the dough will show some signs of collapse, depending upon how much over fermented it is, the dough might completely collapse or more commonly, it will just collapse slightly appearing as a wrinkled surface near to where you pushed your finger into the dough. An under fermented dough ball will fight you as you try to open it into a skin and when you do get it formed into a skin it will exhibit memory characteristics, meaning that it will snap-back as you prepare it for dressing. For this reason it is better to error on over fermenting the dough balls as they will be easier to open and will not exhibit memory characteristics.

Tom Lehmann/The Dough Doctor  
3632

## [\*\*New York Style / Re: Emergency NY-ish Pie ?\*\*](#)

In my world: 4-ounces of sauce and 5-ounces of cheese.

Tom Lehmann/The Dough Doctor  
3631

## [\*\*Detroit Style / Re: Proofing in the pan?\*\*](#)

What we normally do is to manage the dough through a 2-day CF, remove the dough balls from the cooler about 2-hours prior to placing it in the pan, use Crisco in the pan as opposed to oil. Press the dough into the pan, set pans aside to proof at room temperature for about an hour, press the dough again in the pan and it will be ready to use in about 30-minutes. No need to dock pan dough. There are many different ways to fit the dough into the pan and all of them seem to work well. If the dough is pulling away from the pan it is either too cold or it has insufficient fermentation. Two fittings into the pan are usually required with about an hour between them. In your specific case I think you need to allow the dough to warm to 50 to 60F BEFORE pressing it the first time into the pan and then wait another hour before pressing/fitting it into the pan the second time, then a 30-minute final proof and you should be ready to dress the dough for the oven.

Tom Lehmann/The Dough Doctor

3630

## [\*\*Dough Clinic / Re: How long can I keep dough in the refrigerator?\*\*](#)

Actually, I'd take a pass on adding the sugar as it will compete for the water. Add it along with the salt and yeast after the autolyse. As for the dough ball, after re-ballng it you only need to wait long enough for the dough to become sufficiently extensible to be opened easily, then you're ready for dressing and baking it. If you plan to open the dough while it's still cold you had better plan on docking it too, if not keep your bubble popper handy.

Tom Lehmann/The Dough Doctor

3629

## [\*\*Dough Clinic / Re: How long can I keep dough in the refrigerator?\*\*](#)

JPB;

That last post might have provided the answer. Since temperature is the driver for fermentation when high dough temperatures are utilized one must resort to low yeast levels to control the fermentation rate. A common problem associated with this practice is when you go to bake the pizza often there is not enough yeast present (remember that yeast does not multiply in a dough) to provide the oven spring necessary to support the weight of the toppings so the pizza bakes out thinner than anticipated which is usually accompanied by our old friend, the dreaded gum line. This is why we don't see high dough temperatures (high water temperatures) employed in commercial settings. We can get away doing it in a home or very low production setting because we have the flexibility to keep an eye on each pizza and bake it until it has the crust characteristics that we desire, and if the crust is dark....well, that just part of our presentation but at a pizzeria many of the customers will return the pizza since they think the crust is burnt. That's the problem at a pizzeria....you bake the pizzas for your customers, not you.

That's my guess.

Tom Lehmann/The Dough Doctor

3628

## [\*\*Dough Clinic / Re: under vs over-fermented dough?\*\*](#)

JPB;

Yes, it also works for bread doughs too, that's where I first learned it from when working in a small bread bakery during my early high school years. This is why we express FFR (first full rise) as a percent of the total dough fermentation time. Some bread makers might use FFR + 20%, meaning that total fermentation time for that particular dough of a specific formulation for making a specific product is FFR plus

20% of that time. So if it took 3-hours for a dough to reach FFR (and 20% of 180-minutes = 36-minutes) the total fermentation time would be calculated as being  $180 + 36 = 216$ -minutes or roughly 3.5-hours.. As I said previously, the factor used in making pizza doughs is almost always much higher than that which is used in making bread doughs (often as high as 100% or more) since pizza doughs do not go under nearly as much stress during oven spring as bread doughs do (collapse is not an option when making bread).

Werty:

It does not apply as well in very high absorption doughs due to the inherent weakness of the dough. Up to about 68% seems to be the limit for this test.

Tom Lehmann/The Dough Doctor  
3627

### **General Pizza Making / Re: Help: black pizza bottom**

Jr07;

A wood peel aka prep peel may serve you better than a metal peel as the dough typically does not exhibit as much of a tendency to want to cling/stick to it. The metal peels are used for removing the pizzas from the oven. The only exception to this is the perforated peel which is designed as a prep peel but I've personally had some issues with it when using high absorption doughs. I've also found that fine corn meal works well with doughs that pose a problem with stickiness on the peel.  
Tom Lehmann/The Dough Doctor  
3626

### **Dough Clinic / Re: under vs over-fermented dough?**

JPB;

In that case put your emphasis on controlling the finished dough temperature. If you can control the finished dough temperature to within +/- 2F of your target temperature you can lock in the fermentation time and go by that alone with a high level of success. Don't worry about the room temperature unless there is a 10F change in it from the temperature at which you established the fermentation time, and don't worry about the outside temperature unless you are making your dough outside in the back yard. Even then, the 10F rule applies.

Tom Lehmann/The Dough Doctor  
3625

### **Dough Clinic / Re: How long can I keep dough in the refrigerator?**

High temps, while not recommended, are used in pre-ferments and autolyses due to better flour absorption properties and more active fermentation (but remember that other micro organisms may also like the elevated temperatures too resulting in an unwanted flavor shift) this is why we like to avoid using temperatures above 90F whenever possible. The key to successful dough management, as I've said so many times, is controlling the FINISHED DOUGH TEMPERATURE. Fermentation is something like driving different types of cars. When lower fermentation temperatures are employed (65 to 85F) the dough ferments at a slower rate exhibiting less variability within any given period of time (like driving a Prius) but when higher fermentation temperatures are employed (90+) the dough ferments at a considerably faster rate so within any given period of time there can be more variability (sorta like driving a 500+ horse power Shelby Mustang). Both can be done, you just need to be better at what you are doing to drive the Mustang. Sorry to all, I'm just not an advocate of high temperature fermentation...too many potential things to go wrong, go wrong, go wrong, go wrong. We all know that

never happens though.....right???

Tom Lehmann/The Dough Doctor

3624

### **General Pizza Making / Re: Scorching bad time**

You probably want to measure the temperature of the stone rather than going by the temperature on the grill. The stone temperature, being just above the heat source could be well above 600F. Do you have any sugar, milk or eggs in the dough formula? (they're not recommended for high temperature baking). How long was the pizza baked for? What did the top of the pizza look like? Remember, pizzas are baked from the bottom up, so when the bottom is done the top also has to be done at essentially the same time, if it isn't there is an imbalance of heat between the top and bottom of the baking chamber which needs to be addressed.

Tom Lehmann/The Dough Doctor

3623

### **Dough Clinic / Re: How long can I keep dough in the refrigerator?**

JPB;

Unless "for a while" means several or more hours it really doesn't do any good to "pop" it in the fridge to cool the dough off unless you are re-ball the dough after taking it out of the fridge if it is actual dough temperature that you are trying to adjust. The reason for this is due to the excellent insulating properties of the dough. You are only cooling off the very outside portion of the dough, not the core of the dough which needs to be cooled for dough management purposes. If you are cooling the dough just to improve the immediate handling properties (which appears to be the case) that's fine, we also do something similar in large scale production where we use a nitrogen or carbon dioxide fog to cool the surface of the dough for improved processing characteristics.

Tom Lehmann/The Dough Doctor

3622

### **Dough Clinic / Re: under vs over-fermented dough?**

JPB;

Yep, the finished dough temperature is the driver. If you use a warm or hot autolyse or pre-ferment it may be beneficial or helpful in achieving your finished dough temperature by cooling the autolyse or pre-ferment to around 50F before adding it to the dough. You won't do any harm to it at all by doing so. When we do this commercially we run it through a plate type heat exchanger to rapidly cool it prior to use, in many cases we will then hold it in a refrigerated tank at 40F with constant gentle agitation to keep the flour in suspension (1 r.p.m. sweep agitation is used) under these conditions the autolyse or per-ferment can be used at any time within 24-hours but best results are almost always had if used within a few hours.

Tom Lehmann/The Dough Doctor

3621

### **Dough Clinic / Re: How long can I keep dough in the refrigerator?**

Steve;

Welcome! I don't think you'll find a better place to learn about home pizza making, and if your endeavors lead you to a commercial operation aka pizzeria we can help you with that too.

Tom Lehmann/The Dough Doctor

3620

## [\*\*New Forum Members / Re: Newbie\*\*](#)

Holly821;

Welcome!

You've come to the right place to learn about yeast and what it takes to make a consistently great pizza. Jump right on in with your questions whenever you're ready.

Tom Lehmann/The Dough Doctor

3619

## [\*\*Dough Clinic / Re: Opening was harder than expected\*\*](#)

Just a guess, but from what you have described, especially as you found the dough more difficult to open after resting on the counter top for 90-minutes is that the dough might have been over fermented (common when the dough is placed in containers and tightly covered right away). Over fermented dough tends to become "bucky" or very elastic especially when trying to open it into a skin, and a sure tip off that the dough is over fermented is that this condition just keeps getting worse the longer you allow the dough to rest before opening it into skins. By the way, acronyms and/or abbreviations should be used only after the word/phrase have been previously used in the communication as this prevents any errors in translation, and makes understanding a lot easier too.

Tom Lehmann/The Dough Doctor

3618

## [\*\*Dough Clinic / Re: Hydration/incorporation issues continued\*\*](#)

If your dough is mixed by hand, it needs to be kneaded a lot more, but if it was mixed by machine it is terribly under mixed which is the reason for the stickiness. If you are mixing by hand an alternative to kneading is to use biochemical gluten development to achieve the gluten development for you. You can do this by placing the dough as seen in the picture, into an oiled bowl, lightly drape the bowl with a piece of plastic to prevent drying and allow the dough to ferment for at least 2-hours, though it can go for 3-hours if you want. Then turn the dough out of the bowl and knead the dough for several minutes on a lightly floured surface, then divide the dough into desired weight pieces, form into balls, lightly oil each ball and place into individual Food Bags (not ZIP-LOCK) and store the dough balls in the fridge for at least 24-hours though 24-is better. To use the dough balls, remove from the fridge, allow to warm AT room temperature until the internal temperature of the dough balls reaches 50 to 60F, then remove the dough ball(s) from the bag(s) and begin opening them into skins by your preferred method.

Tom Lehmann/The Dough Doctor

3617

## [\*\*Dough Clinic / Re: Opening was harder than expected\*\*](#)

JPB:

No, the bags don't pose the problem as lidded containers do, this is because the plastic is so thin and it is in direct contact with the dough so the conductivity is much better than a closed container with dead air space.

Tom Lehmann/The Dough Doctor

3616

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Aluminum Metal Discs for Serving Pizza, worth trying a bake?\*\*](#)

A pan which is commonly used for both cutting and serving pizzas in pizzerias is the coupe pan. It has a smooth, rounded bottom profile which makes it easy to cut

the pizzas in and it also serves as a serving tray for a lot of pizzerias. They do bake quite differently from baking directly on a stone or steel, and they must be seasoned if they are going to be used for baking but seasoning is not needed or desired if they will be used only for cutting and/or serving. I agree with Steve about the screens, but be sure to season the screens if you plan to bake on them and DO NOT cut your pizzas on a screen.

Tom Lehmann/The Dough Doctor  
3615

**Chitchat / Re: If you grow tomatoes...**

This has been a really strange year for us here in Manhattan, Kansas. With two exceptionally mild winters back to back, with last years being not much more than a cold fall we thought we would be over run by mosquitoes and garden pests this year, but as hard as it might be to believe, we have few mosquitoes...almost none! And in the garden hardly any problems with insects (great tip on the black light...thank you!) but we have been spraying regularly for fungus on our tomato and cucumber plants....I think I'd rather be fighting off the bugs than fungus, it has really cut into our harvest this year. :(

Tom Lehmann/The Dough Doctor

3614

**Dough Clinic / Re: Hydration/incorporation issues continued**

If your mixer will allow it, go to a higher speed as this will give you significantly better mixing action for improved gluten development. A lot of times a very slow speed doesn't pull the dough off of the bowl during mixing so you could mix the dough all day and still get poor gluten development whereas a higher speed will pull the dough off of the bowl allowing the dough to get worked between the bowl and the hook as it should for gluten development.

Does your mixer have the reverse spiral dough arm or is it one of the older models with just a plain "J" hook?

Tom Lehmann/The Dough Doctor  
3613

**Dough Clinic / Re: Suggestions for greater oven spring?**

When dough temps reach and exceed 90F there is a decided weakening of the gluten forming proteins in your dough. This is why we don't like to use high dough temps unless we're making an emergency dough.

As for hand kneading or machine mixing the dough, this will have no impact upon the flavor of the finished crust, great pizzas are made without the benefit of a dough mixer. It's what you do with/to the dough after mixing that really impacts the flavor, I'm referring to fermentation. Within reason for the dough formula and dough management procedure the longer the dough is allowed to ferment, the more flavorful the resulting crust will be...this is assuming it is baked properly too. As for myself, I do almost all hand mixing allowing biochemical gluten development to do all the hard work for me but there are a lot of great pizza makers here too that use dough mixers to develop the gluten so you should get some good first hand direction from them on the different mixer options available to you.

As for flour strength/protein content, almost every pizzeria will opt for the stronger flour rather than a weaker/lower protein flour as it exhibits greater tolerance to abuse or variances encountered in everyday dough production...dough failure is not an option in a pizzeria.

Tom Lehmann/The Dough Doctor

3612

[\*\*Stones/tiles/steel, Pans & Accessories / Re: Aluminum Metal Discs for Serving Pizza, worth trying a bake?\*\*](#)

In case you're wondering, the rack that's pictured (great picture) is called a tree rack. While the standard one might be too large for home use look at the wall mountable tree rack, it holds fewer pizzas (7 or 8) and it has the option of being mounted on a wall or free standing and it sells for quite a bit less too.

Tom Lehmann/The Dough Doctor

3611

[\*\*Dough Clinic / Re: Hydration/incorporation issues continued\*\*](#)

"J" hook...that tells the whole story! The "J" hook is almost useless by itself (delete the word "almost") as it will not pick up the dough from the bottom of the bowl unless the bowl is filled to capacity. By all means, you DO need to use the flat beater aka paddle to mix the dough initially until it begins to ball up, then remove the paddle and use the hook to continue mixing until the dough just takes on a smooth appearance. By the way, "J" hooks on the larger size mixers are not as bad as the ones for the Kitchen Aid mixer as they are much different in shape and dimension while the one that you have is more like a piece of wire (actually cast aluminum) in a hook shape. This is why the newer Kitchen Aid mixers all come with the newer design reverse spiral dough arm as standard equipment (BIG IMPROVEMENT).

One last note: When we used to mix dough in the old mixers using the "J" hook we would initially mix the dough using the paddle until the mixer began to object, we would then remove the paddle and install the hook and mix the dough to completion at the highest speed possible which will be either speed 1 or 2 depending upon the viscosity of your dough.

Let us know if this helps.

Tom Lehmann/The Dough Doctor

3610

[\*\*Dough Clinic / Re: Opening was harder than expected\*\*](#)

JPB;

I typically just oil the dough balls, but I know that some forum members oil the bags using spray oil (I find this messy) and still others oil both. my method is to form the dough balls, oil one hand and oil the dough ball and pick it up using the oiled hand and place it into the bag while holding the bag with the un-oiled hand, this keep the bag clean on the outside. Another method that works well is to roll the bag down and place it on the table/counter top and use both hands to oil and pick up the dough ball(s) and place it into the bag, then wash the oil off of your hands and pull the bag up around the dough ball, give it a spin to form the pony tail and tuck the pony tail under the dough ball as you place it into the fridge.

Experiment to see what works best in your application.

Tom Lehmann/The Dough Doctor

3609

[\*\*Newbie Topics / Re: What's your go to pizza sauce recipe?\*\*](#)

Right now it is nothing else than fresh, garden ripe tomatoes from our garden. Thin slice, place between towels to dry, lightly oil the dough skin and add some fresh sliced garlic or crushed garlic out of a jar, then roll up some fresh basil leaves and cut into strips and sprinkle over the oiled skin, add the sliced tomato and dress the pie as desired. A real treat this time of the year for us! When fresh tomatoes are

not available canned whole tomatoes work well, just drain well and tear into pieces and add over the top of the skin as you would the sliced tomato. Our problem is that we like the flavor of the chunky tomato...its different than when made into a sauce.

Tom Lehmann/The Dough Doctor  
3608

#### **Chitchat / Re: If you grow tomatoes...**

We had a very dry and warm spring (garden went in the last week of February) almost unheard of here in KS, but since then rain several times a week, hence our problems this year with fungus but still on "blood suckers". My own theory is that our unusually warm winter allowed for eggs of insects to hatch and then it would get cold again for a few days which would kill the larvae thus contributing to something of a crashed population....don't know.

Tom Lehmann/The Dough Doctor  
3607

#### **Dough Clinic / Re: Bucky Dougs**

Paul;

The buckiness is a precursor to the break down of the dough.  
To see it yourself, just make a dough with a normal amount of instant dry yeast (0.4%) and 4% sugar, then allow it to ferment at room temperature the progression will be soft and extensible, bucky and elastic, then break down.

Tom Lehmann/The Dough Doctor  
3606

#### **Neapolitan Style / Re: Help with Dough and Process**

It would also help to know what your finished dough temperature is.

Tom Lehmann/The Dough Doctor  
3605

#### **Dough Clinic / Re: Bucky Dougs**

It will all depend upon the protein content of the flour as well as the finished dough temperature, also, I don't think you will find many here who would agree that 4 to 5-hours at room temperature would constitute an over fermented dough, but if the protein content of the flour is in the 11.8 to 12.4% range you might be on the cusp of it.

A good procedure would be to make about 10 dough balls all from the same dough and allow them to ferment side by side and then begin opening them at 4-hours and then at 30-minute intervals or you could do 60-minute intervals too but in any case you will need to have enough dough balls to cover whatever time is needed to over ferment the dough. Do not employ high dough temps (90F and more) to speed up fermentation since the temperature impact upon the protein will skew the results.

Tom Lehmann/The Dough Doctor  
3604

#### **Dough Clinic / Re: Bucky Dougs**

Norma;

Can you relate the finished dough temperature to those which were bucky and those which were not? If fermentation is being taken close to maximum the difference of only a few degrees can push it into the bucky stage. Like I said before, it is a precursor to what we would recognize as over fermented so the dough balls

wouldn't necessarily look over fermented. Welcome to the wonderful world of fermentation.

Tom Lehmann/The Dough Doctor  
3603

### **General Pizza Making / Re: Fast bake, but very soft**

When baked fast at a high temperature a very thin crispy crust is formed which quickly loses its crisp due to moisture migration from the top of the pizza into the bottom crust. Many of the pizzas that I see being baked at those temperatures are served with a knife and fork for good reason. Assuming no sugar, milk or eggs in the dough formula and the flour in non-malted.

Tom Lehmann/The Dough Doctor  
3602

### **Pizza News / Re: Pizza Hut's New Pizzas Not Doing So Well**

Look at it like this, PH is searching for something new and different to appeal to the masses...dare to be different is what I always say, when it comes to pizza, that's what keeps it interesting. I've been involved in product development for a good deal of my career, only about 2% of all newly developed products ever make it in the market place....the rest just go away. Product development is a lot like a fishing trip, sometimes you catch fish, sometimes you don't, but one thing is for sure, if you don't wet a line you will never catch any fish. Like everyone else, sometimes I just scratch my head and ask myself "where did they come up with that idea at?" You would be surprised at what comes out of new product think tanks! You win a few and you lose a few, yes, I think it's a loser too, but then I'm not a teeny bopper anymore either, and I've got an idea that that is one of their new target audiences. By the way, putting the shoe on the other foot, we have found it difficult, at best, to get anyone much under 30-years old interested in old world and artisan pizzas, it's a shame, but that's the reality of it.

Tom Lehmann/The Dough Doctor  
3601

### **Pizza News / Re: Pizza Hut's New Pizzas Not Doing So Well**

Peter;

Absolutely! The entire face of retail sales is rapidly changing and taking all of the peripheral businesses with it. Here in Manhattan, KS we are seeing all of the restaurants grouping together in what is fondly referred to as "restaurant row" which is apart from the "mall" and other major retail establishments, or at least far enough to be a destination stop as opposed to a place to eat when at the mall. I believe this might be a similar concept to the "restaurant row" in Dallas, but on a much smaller scale. Sad to say that the "brick and mortar" appears to be crumbling. Our state has been trying to charge tax on all internet sales but haven't yet figured out how to do it I guess. Retail merchants are 100% in favor of the idea as it will help to level the playing field. Right now we can buy off of the internet and unless the company has an office in KS we do not charge any state tax on the purchase so it amounts to an automatic 7% discount right up front and in many cases there is free or low cost shipping on top of that which further erodes the local retail sales, not to even mention the lower item cost too. It has become so bad here that I just bought new tires for two of our vehicles, the dealer agreed to sell me the tires at the same price that I was quoted at Tirerack.com plus shipping (about \$20.00 per tire cheaper than their first quotation for the same tires) they then charged \$10.00 each for dismounting and mounting + balancing the new tires which is a standard fee. Worked out good for us, but not especially well for them.

By the way, we did not have to pay state tax on the tires either. Businesses are doing what they have to in order to survive but like Sears, nothing they do will be enough, things are a changin'.

Tom Lehmann/The Dough Doctor  
3600

### [\*\*Dough Clinic / Re: Bucky Dougs\*\*](#)

Paul;  
One suggestion.....get a good nights sleep. :)

Norma;  
If a dough ball looks lose (over fermented?) do you think it might have been due to a difference in how tight the dough was rounded during the balling of the dough? A dough ball that is not rounded as tight as the others will appear to be more lose after a fermentation period and in fact it will open pretty easily too.

Tom Lehmann/The Dough Doctor  
3599

### [\*\*New Forum Members / Re: Saluden de Guatemala!\*\*](#)

Gabriel;  
Welcome to the site.  
I've visited Guatemala a number of times working with Pollo Campero and their pizzas and calzones.  
Tom Lehmann/The Dough Doctor  
3598

### [\*\*Pizza News / Re: Pizza Hut's New Pizzas Not Doing So Well\*\*](#)

Peter;  
You mention entertainment, our Sears store location in the mall is now an Omni Max theater. Pretty bad when the mall's anchor is a theater.  
What I find very interesting, at least here in rural KS is that the old, town squares and main streets are coming back. Our main street (Poyntz Ave.) is ALIVE with new stores and A LOT of new restaurants where as a few years ago it was empty, now there is empty space in the mall....sure hope they find something to do with it. Here the destination restaurants won't go near the mall. Old Chicago restaurant left the mall a year ago and opened at a new location on the exact opposite side of town, about as far from the mall as you can get (about 4-miles away).

Tom Lehmann/The Dough Doctor  
3597

### [\*\*Dough Clinic / Re: diastatic malt and rising time\*\*](#)

Craig;  
That is correct to a point but all of the starch does not end up being converted to sugar, only a portion of it. We did studies many years ago using the Gasograph to measure yeast performance during extended fermentation periods and what we found is that after about 6-hours malted flour begins to "poop-out" and fermentation slows in response to the depleted sugar for the yeast to feed upon, BUT when diastatic malt is added as an ingredient to the dough it is usually added in MUCH greater quantities so yes, more of the starch will be converted to sugar for the yeast to feed upon...how much more is anybody's guess as it will depend upon the activity of the malt and the amount added. This is why when too much diastatic malt is added to the dough it becomes irreversibly sticky or tacky at the very least. When we go to extremes in fermentation time as we often do when

making pizza, unless we can bake at a sufficiently high temperature the acids formed during the fermentation process will greatly inhibit crust color development so we typically add some extra sugar to the dough to help with the crust color development. The problem with diastatic malt is that if you add enough to produce sufficient sugar to over come the acid effect on crust color the dough is usually too sticky to work with.

Tom Lehmann/The Dough Doctor  
3596

### [\*\*Dough Clinic / Re: diastatic malt and rising time\*\*](#)

Craig;

No, it seems to vary somewhat with the flour, exactly why I don't know. We used to run experimental batches with a new flour and increasing malt levels (20 degree L) until we observed stickiness and then backed off 0.5%. When we were working with a dry malt powder, also 20 degree L, we started at 0.25% and worked up in 0.1% increments and then backed down 0.05% when we detected stickiness.

Tom Lehmann/The Dough Doctor  
3595

### [\*\*Dough Clinic / Re: Bucky Dougs\*\*](#)

Norma:

In one word...ABSOLUTELY. It took us weeks to train a new technician in how to round the dough balls, not so they were correct, but instead so they were like, and of like tightness to the dough balls made by the other techs. Very high on my wish list for all those years was a small bench top dough rounder that would always round the dough in the same manner and of like tightness thus removing one of our greater variables. Now we do have rounders like this....lota good they do me now! :)

Whenever possible, when we would have a project extending over weeks or months, we would assign the project to a technician who would be there to do all of the dough rounding for the duration of the project, at least this gave us a level of consistency in the tightness of our dough balls. I've always said that it really doesn't matter if the dough balls are rounded tight or lose, just so long as they are consistent...that's what counts. With that said, a tight dough ball will typically require more time before it is ready to be opened (something to keep in mind when making an emergency dough, in this case a loose dough ball is desirable). Tight dough balls will hold their shape better when placed into dough boxes preventing them from all flowing together to make one dough mass in the box. Loose dough balls will always flow out more reducing the number of dough balls which can be placed into a box (they need greater spacing to accommodate their increased flow/spread over time). When re-rounding or rounding scrap dough I always like to use a loose round as it will be ready to use sooner.

This is just one of the things that makes judging properly fermented dough and over fermented dough so difficult unless one has the experience to know to see how the dough was rounded before passing judgement...as you well know, there are different fixes for over fermentation v/s a loosely rounded dough ball.

Tom Lehmann/The Dough Doctor  
3594

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Custom pizza cutters\*\*](#)

The only problem I see with it is that it's too pretty to use! :)

Tom Lehmann/The Dough Doctor  
3593

## [Neapolitan Style / Re: Appearance of pizza](#)

Knowing your dough formula and dough management procedure would be helpful. Based on just looking at your pics It appears that your dough might be a bit under absorbed (dough absorption is too low) and fermentation might be insufficient, but that's just a guess based on the pics, with more information we can make a better determination.

Tom Lehmann/The Dough Doctor  
3592

## [Dough Clinic / Re: diastatic malt and rising time](#)

Peter;

You are correct. U.S. flour contain between 6 and 8% damaged starch and I might add that the flour millers go out of their way to ensure it doesn't exceed this because of the long fermentation times employed by our bread making processes here in the U.S. It is actually pretty difficult to damage the starch mechanically so in order to get the starch damage higher in Mexico it is common to use an Entilator (this piece of the milling equipment operates like a hammer mill and is used to break insect eggs present in the flour, when using the Entilator for the purpose of damaging the starch the flour is run through the Entilator several times. We used to damage starch when I was at AIB for research purposes and we used either a hammer mill or a ball mill for that purpose, even then it took quite some time to get the desired results. By far, the easiest way to damage the starch is to simply gelatinize it by making a flour-water suspension and heating it until the starch gelatinizes (about 180F). Presto! Damaged starch! In my younger years it was more than once that I made a dough using a domestic flour in Mexico which had upwards of 20% damaged starch and then tried to ferment the dough more than an hour. Oops! The damaged starch was hydrolyzed to sugar by the amylase enzyme and in doing so it gave up its ability to hold water and the "dough" quickly turned into a wet, sticky mess which could literally be poured out of the mixing bowl. I think I did that two or three times....call me a slow learner.

Tom Lehmann/The Dough Doctor  
3591

## [Dough Clinic / Re: Dough temp before baking?](#)

You want to allow the dough balls to warm to an internal temperature of between 50 and 60F. If you begin using the dough balls at 50F you will have a window of opportunity to use the dough balls of about 3-hours, if you begin using them at 60F this window of opportunity is reduced to about 2-hours. The length of time that it will take for the dough balls to warm to the desired temperature will vary with the room temperature as well as the size/weight of the dough ball.

Tom Lehmann/The Dough Doctor  
3590

## [Detroit Style / Re: Proofing in the pan?](#)

The Lloyd Pans are sized using the bottom dimension and there is 0.250-inch flare/taper on the pan. So all you need to do is dough weight divided by L X W for your dough loading factor. Then L X W for the new pan X the dough loading factor = dough weight for the new pan size.

Tom Lehmann/The Dough Doctor  
3589

## [Detroit Style / Re: Proofing in the pan?](#)

If you're using 280-grams in an 8 X 10 (80-square inches) pan this works out at 3.5-grams per square inch. The 10 X 14 (140-square inches) pan should require 140 X 3.5-grams = 490-grams of dough.

Tom Lehmann/The Dough Doctor  
3588

### **Dough Clinic / Re: Inconsistent crust**

For the starter, I like to target for 75F. For the finished dough temperature I like to go for 75 to 80F. Are you balling the dough and putting it into a closed container when going to the cold fermentation stage of your dough management?

Tom Lehmann/The Dough Doctor  
3587

### **Dough Clinic / Re: Secret to a non bending slice**

Cracker and thin crispy crusts pretty well fit that description, but if you make your pizzas on a par-baked crust you can also get that characteristic on most other types of crusts too. A longer, slower bake is what you need to achieve that characteristic. Using your present dough you might start out by just baking longer at a lower temperature.

Tom Lehmann/The Dough Doctor  
3586

### **Dough Clinic / Re: Food Contact Sanitizer**

Quaternary ammonia aka "quat" is the way to go. You can buy it at any restaurant supply store. It's what the commercial food establishments use to sanitize work surfaces.

Tom Lehmann/The Dough Doctor  
3585

### **Dough Ingredients / Re: how to store Caputo 00 flour**

There are two ways to store flour, at room temperature which is fine for short term storage BUT if there are any insect eggs in the flour they will hatch and soon lead to an infestation in your flour (commonly referred to as "wormy flour" due to the larvae of the flour beetles and/or cigarette beetles). The other method is to freeze it. Freezing the flour will destroy any insect eggs that might be present after 30-days of below freezing storage, so assuming a week to get a bucket of flour down to below freezing, allow 45-days in the freezer and then store at room temperature if you wish or continue to hold it in the freezer...your call. I use nothing more than large Zip-Lock bags to store my flour in because I find it easier to store many smaller bags than one large one in my freezer and all I need to do is to remove a bag or two when I'm ready to bake and allow it to warm up at room temperature overnight. We have effectively stored flour for up to 10-years in the freezer without adverse effects.

I might also add that flour DOES OXIDIZE when stored at room temperature. What this means is that after about 60-days storage at room temperature you might begin to see your doughs exhibiting more strength, generally seen as dough memory or snap-back. This does not happen when the flour is stored in the freezer. A couple of years ago I inherited a full bag of flour (50#) so knowing that I was not going to use it anytime soon as I already had a lot of flour on hand in the freezer, I just placed the 50# bag of flour into a trash bag and taped it up tight and placed it in our chest freezer. As time went on I forgot about it until we were cleaning out the freezer, yep, two years later I found it! I removed the bag from the freezer and allowed it to temper to room temperature for a full week, I then broke the flour

down into my large (gallon size) Zip-Lock bags and placed it back into the freezer. The flour performed just fine. NOTE: Always allow the flour to return to room temperature before using and if you are planning to break down a large bag in the freezer, as I did, allow it to temper back to room temperature for a full week before opening the bag. The reason for this is because there is a high probability that condensation will form on the flour when the frozen/cold flour is exposed to the room air and moisture is the enemy of long term frozen flour storage. When the flour is warm there is little chance of condensation forming on the flour. Yes, it does take pretty close to a full week for a 50# bag of flour to fully reach freezer temperature and also to warm up to room temperature again when removed from the freezer. My gallon size bags warm up in a couple of hours...size DOES make a difference.

Tom Lehmann/The Dough Doctor  
3584

### **Dough Clinic / Re: Suggestions for greater oven spring?**

If when you say "knead" you mean mixing in the bread machine, yes, I would agree with the move (omit the second mixing of the dough).

Tom Lehmann/The Dough Doctor  
3583

### **Dough Ingredients / Re: how to store Caputo 00 flour**

By the way....I might mention that I ALWAYS tape my Zip-Lock bags closed as added insurance that they won't mysteriously come open in the freezer....just trust me on that one! :)

Tom Lehmann/The Dough Doctor  
3582

### **Detroit Style / Re: Proofing in the pan?**

When calculating the surface area of the pan for the dough loading we suggest using only the bottom dimension, in most cases the taper on the pans won't exceed 1/4-inch. If I remember correctly, the larger pan from Lloyds also has a higher side wall dimension than their smaller dimension pan.

Tom Lehmann/The Dough Doctor  
3581

### **Dough Ingredients / Re: how to store Caputo 00 flour**

I just use regular Zip-Lock bags, I inherited hundreds of them from a project when I was at AIB so I'm still working off of my "stash".

Tom Lehmann/The Dough Doctor  
3580

### **Dough Clinic / Re: Why does my dough blow up so much?**

And, allowing the dough to ferment prior to scaling, balling and putting it into the fridge.

Tom Lehmann/The Dough Doctor  
3579

### **New York Style / Re: Flat Dough Ball Problem**

Actually, your dough balls look about right after 24-hours cold fermentation. If you want to go longer than 24-hours CF it is suggested that you use 75F for your targeted finished dough temperature in a home fridge. 80F will work fine for 48-hours in a commercial walk-in cooler, but a home fridge is not as efficient so a

lower finished dough temperature is needed.

Tom Lehmann/The Dough Doctor

3578

**Shop Talk / Re: Help me with equip selection PLEASE**

Take a look at the Marsal ovens [www.marsalsons.com](http://www.marsalsons.com)> , they have a great deck, they're efficient and best of all they are economically priced, and because it's a deck oven you can bake just about anything you want in it.

Tom Lehmann/The Dough Doctor

3577

**Dough Clinic / Re: Dough didn't rise and had weak gluten**

Starters/sours are the great unknown, each one is different so what works for one may not work for someone else. It sounds like you have found the "trick" to using YOUR starter.

Tom Lehmann/The Dough Doctor

3576

**New York Style / Re: Flat Dough Ball Problem**

You DO NOT want full gluten development when making pizza dough, that only applies when making bread dough. Instead, pizza dough is typically mixed just to the point where the dough develops a smooth, cohesive skin, the fermentation time after that will take care of the rest of the gluten development through biochemical gluten development.

Tom Lehmann/The Dough Doctor

3575

**Dough Clinic / Re: If at first you succeed, keep trying until you fail**

I'm guessing, based on the limited information provided, that the yeast level was too low for the cold fermentation so you didn't see much rise BUT the enzymes present in the yeast continued to do their thing (hydrolize starches and proteins) over the lengthy cold fermentation time resulting in the sticky weak dough that you ended up with.

Tom Lehmann/The Dough Doctor

3574

**Dough Clinic / Re: Opening was harder than expected**

They will only if they are deep enough to allow forming the necessary pony tail to tuck under the dough ball. Remember, the bag MUST be pulled snugly around the dough ball for the bag to be effective.

Tom Lehmann/The Dough Doctor

3573

**New York Style / Re: Plz help on dough!**

Since oil is a "tenderizer" you might also consider increasing the amount of oil used in the dough to 3%. What kind of oven do you have, gas or electric? How long are you waiting for the oven to come up to baking temperature? What rack position/positions are you using? From your description it really sounds like more of a baking issue than anything else...but you do need to add some diastatic malt or sugar to support fermentation with your organic flour.

Tom Lehmann/The Dough Doctor

3572

## [\*\*General Pizza Making / Re: To Bulk Ferment or Not, That Is The Question\*\*](#)

ESOP;

Oh gosh! It all depends upon the type of pizza you are making, the dough formulation and the dough management procedure being employed to process the dough. If you want to have a very consistent performing dough and want to have a 3 to 5-day refrigerated life on the dough it is better to mix, scale, ball, refrigerate (cold ferment) 2 to 5-days) remove from fridge, allow to warm to 50 to 60F and open into skins. For a lot of the other applications it is common to mix, bulk ferment, scale, ball, cold ferment, 1 to 10-days, remove from refrigeration and allow the dough to warm to 50 to 60F and open into skins. I could go on and on, as there are soooo many options for different kinds of fermentation/dough management. In my world one does what works best for them in making the type of pizza they want under the conditions specific to their shop or kitchen.

Tom Lehmann/The Dough Doctor

3571

## [\*\*Dough Clinic / Re: simple dough recipie\*\*](#)

My "never fail" dough formulation is:

Flour 100%

Salt: 1.75%

Sugar: (optional) 2%

IDY: 0.375%

Olive oil (Pomace grade) 2%

Water: (variable) 58 to 62% (65F)

Put water in mixing bowl, add salt and sugar, add the flour and mix for about 2-minutes or just until a dough mass BEGINS to form then add the oil and mix one additional minute at low speed, then mix at medium speed for 8-minutes. Take the dough directly to the bench for scaling and balling, place into plastic dough boxes, oil the top of each dough ball, cross-stack the dough boxes in the cooler for 2.5-hours if your dough weight is 16-ounces or less, 3-hours if it is 16.5 to 20-ounces and 3.5-hours if it is over 20-ounces. Note: Another method is to measure the internal dough ball temperature, when it reaches 45F the dough boxes can be down stacked/nested for overnight storage. The dough will be ready to use in 24-hours but it is better to use after 48-hours. The dough will keep in the cooler for 3 to 4-days.

To use the dough, remove from the cooler and allow to temper AT room temperature until the internal dough ball temperature reaches 50F (usually about 2-hours), remove dough ball from box and open into a skin by your preferred method. I have some good videos of making dough that you should find helpful posted on my web site <[www.doughdoctor.com](http://www.doughdoctor.com)>.

Tom Lehmann/The Dough Doctor

3570

## [\*\*Dough Clinic / Re: Tom, what did I do wrong?\*\*](#)

Steve;

TMI (too much information) is not as bad thing when trying to resolve a problem. Please be sure to provide the exact dough formulation, how the dough was mixed, and managed.

We'll do our best to see if we can figure out what might have gone wrong.

Tom Lehmann/The Dough Doctor

3569

## [\*\*Dough Clinic / Re: Tom, what did I do wrong?\*\*](#)

Steve;

The usual malt that we use is only 20L, that is a slug of malt being added to an already malted flour. I'm guessing that the amylase present hydrolyzed most of the damaged starch into sugars thus releasing the water that they were carrying thus creating the overly soft dough condition that you noted. I might also expect that you would have noted some stickiness in the dough too?

As for the sugar in the formulation, it is considered to be an optional ingredient which is why it is mentioned but no amount specified (sorry for the confusion).

To test this theory make another dough but this time without the added malted barley flour to see if the dough is any better.

Keep us posted on your findings.

Tom Lehmann/The Dough Doctor  
3568

## [\*\*Pizza News / Re: The end of checkout lines?\*\*](#)

Our local Walmart keeps adding more self check-out lanes all the time. Grocery store as well as Home Depot too, Menard's still has cashier manned check-out lanes (no self check-out, yet).

Tom Lehmann/The Dough Doctor  
3567

## [\*\*Other Types / Re: Ice cube pizza bites\*\*](#)

Home made version of Gino's Pizza Rolls, only a lot better! Great idea, thanks for sharing.

Tom Lehmann/The Dough Doctor  
3566

## [\*\*Dough Clinic / Re: Dough didn't rise and had weak gluten\*\*](#)

In general, the more raw flour that is added late in the processing stage the stronger and more elastic the finished gluten will be. For example, when making bread or dough in general using a sponge dough process a 50-50 sponge dough process where 50% of the flour is fermented and then 50% flour is added to the fermented sponge to make the dough the resulting dough will typically be quite strong and elastic unless the sponge is fermented for a longer than normal (4-hours) time. When an 80-20 sponge dough process is used only 20% raw flour is added to the fermented sponge so the finished dough will typically have a softer, more extensible characteristic. Of course this is assuming both sponges are fermented for the same period of time.

Tom Lehmann/The Dough Doctor  
3565

## [\*\*Shop Talk / Re: Selling pizza by the slice\*\*](#)

rps50;

Are you planning to use a par-baked crust or are you planning to make your pizzas using raw dough? What can you tell us about the oven that you are planning to use? If you are not planning to use one, are you averse to using an air impingement oven? The reason why I ask this is because when properly set-up that reign supreme at making slices. If you will be a heat-n'-eat much like Sobraro's.

Tom Lehmann/The Dough Doctor  
3564

## [\*\*Dough Clinic / Re: Tom, what did I do wrong?\*\*](#)

If you have a high level of starch damage in your flour the only option you have is to make a normal dough but keep the total fermentation time LESS THAN 60-minutes. I've never found any way to ferment doughs made with flour having a high level of starch damage.

Tom Lehmann/The Dough Doctor  
3563

**Dough Clinic / Re: Tom, what did I do wrong?**

Sure, I've outlined it before, just make a basic dough (flour, water, yeast and salt) Mix the dough long enough to enable forming it into a ball, (target dough temperature: 80 to 85F) then place the dough into a suitable container to ferment. After two hours check the dough, if its beginning to look wet, sticky, runny you have high starch damage (12 to 25%). In some cases you might have marginally high starch damage so while these characteristics will still be present, they will be present to a lesser degree, and this can be addressed by using a lower dough absorption.

Like I've previously said, high starch damage is pretty common in flour used/sold in Latin America. The reason for this is because bakers do NOT practice temperature control so their doughs are HOT, as a result they don't employ much over 30-minutes total fermentation time (think of it like an emergency dough) so the flour millers try to sell their flour on the premise that the baker can get more water into his doughs when using their flour (damaged starch has a high absorption in the dough state) while native/undamaged starch does not exhibit much, if any, absorption until it is heated to its gelatinization point (about 180F). You can clearly see this if you put some corn starch into cold/cool water and stir to suspend it.....no significant change in viscosity, now heat the starch water and as it approaches the gelatinization temperature it will begin to thicken as the starch absorbs the water.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
3562

**Dough Clinic / Re: Looking to make adjustments**

You might try adding 4% oil to the dough formula, that might help.  
Tom Lehmann/The Dough Doctor  
3561

**Dough Clinic / Re: Neo dough is good but I want great....**

You say you take the dough directly from the mixer to the bench for scaling and balling and then directly to the fridge, but what is your finished dough temperature? When you place it into the fridge, what do you put the dough in? Covered or uncovered? Or maybe you plastic bag it?

Depending upon the flavor profile that you are looking for you might also experiment as suggested with room temperature fermentation as well as using a starter/sourdough starter.

Tom Lehmann/The Dough Doctor  
3560

**Dough Clinic / Re: Tom, what did I do wrong?**

Sure, that'll work just fine for the test.  
Tom Lehmann/The Dough Doctor  
3559

**New Forum Members / Re: Hello from Northwest Arkansas**

Welcome! You're from my favorite part of Arkansas, or should I say about 30-miles away. Combs, Brashiers, St. Paul is my favorite part of Arkansas. You are also in the home of a good friend of mine, Rolf Wilkens at Eureka Pizza.

Tom Lehmann/The Dough Doctor  
3558

**Dough Clinic / Re: Defrosting dough**

Actually, you don't need to get the dough much over 55F (65F is more than warm enough). You have to be careful with commercial frozen dough as it has a significantly higher yeast level than regular pizza dough so it is easy to have it get away from you and over ferment if you allow it to get too warm for too long.

The only time when we really try to manage commercially frozen dough is when we want to improve it by giving it some fermentation time (commercial frozen dough is not fermented prior to freezing). In this case we allow the dough to thaw slowly in the fridge over night and then we take it out of the fridge and allow it to warm up to 70F (maybe this is where you came up with the 70 to 75F) and then the dough is placed back into the fridge to cold ferment for 24-hours, it is then handled just as you would any other cold fermented dough.

If you plan to use the dough soon after thawing your procedure is OK.

Tom Lehmann/The Dough Doctor  
3557

**Dough Clinic / Re: Neo dough is good but I want great....**

My preferred procedure is to have the finished dough temperature at something close to 80F for 24 to 48-hours cold fermentation or 70 to 75F for 3 to 4-days cold fermentation. Place the dough into a container but DO NOT cover it, and place in the fridge. After 3.5-hours in the fridge place the lid on the container and find something constructive to do until the dough is finished with the cold fermentation period you have chosen.

Tom Lehmann/The Dough Doctor  
3556

**Shop Talk / Re: Selling pizza by the slice**

No, air impingement ovens are MUCH BETTER for a slice operation as the airflow can be directed more at the top of the pizza with less to the bottom. While regular pizzas are baked from the bottom up, par-baked slices are cooked from the top down. If you P.M. me your e-mail address I'll be glad to send you some pics of a top notch slice operation employing this method.

Tom Lehmann/The Dough Doctor  
3555

**Dough Clinic / Re: Dough didn't rise and had weak gluten**

it looks like you need to use more starter.

Tom Lehmann/The Dough Doctor  
3554

**Prep Equipment / Re: Sigma spiral mixer resources**

Have you visited with your local welding/metal fabricating shop to see if they might be able to repair it?

It might buy you time to contact Sigma at <info@sigmasrl.com> or you can just Google "sigma italian dough mixer" and you will see any number of options.

Tom Lehmann/The Dough Doctor  
3553

## [\*\*Dough Clinic / Re: Flour\*\*](#)

That "yellowish" flour might be nothing more than an unbleached flour and at 12.5% protein content it might make a pretty good flour for making pizza. My advice is to give it a try.

Tom Lehmann/The Dough Doctor  
3552

## [\*\*Dough Clinic / Re: Managing the variables\*\*](#)

Instant dry yeast (IDY) should not be suspended in cold water as this will allow for the leaching of glutathione (a reducing agent contained in the yeast which results in softening of the dough) from the yeast. Instead, it should be suspended and hydrated in 95F water (manufacturer's recommendation). Once hydrated (about 10-minutes, you can pour the yeast suspension over ice if you with with no fear of damaging the IDY. The same holds true for active dry yeast (ADY) but instead of 95F water it is recommended that 100 to 105F water be used. Compressed yeast (CY) can be placed directly into cold water and stirred to make a suspension without any damage to the yeast (this is because CY is already hydrated).

Tom Lehmann/The Dough Doctor  
3551

## [\*\*Dough Clinic / Re: Tom, what did I do wrong?\*\*](#)

Dough does look a bit sticky but from the appearance of the dough ball this might be due to under mixing of the dough. If you had a high level of starch damage the dough would be taking on the appearance characteristics of a milk shake poured out on the bench top. If the flour has only a slightly high level of starch damage you might be plagued with a level of stickiness that you will just have to live with as there is no way to effectively address the problem.

Tom Lehmann/The Dough Doctor  
3550

## [\*\*Dough Clinic / Re: Tom, what did I do wrong?\*\*](#)

You should be able to. I'd suggest keeping the absorption at not more than 60% for now until you know the reason for the stickiness.

Tom Lehmann/The Dough Doctor  
3549

## [\*\*Dough Clinic / Re: Flour\*\*](#)

Why not use the dough formula that you have been using, you're already familiar with it. You may need to experiment a little to find the "sweet spot" for dough absorption, but for now I'd start with 60% and work up from there.

Tom Lehmann/The Dough Doctor  
3548

## [\*\*Dough Clinic / Re: Oh Dough!\*\*](#)

Also, tell us something about the flour you're using, the type of yeast that you are using. Are you scaling your ingredients or using volumetric portions? Scaling the ingredients is vastly preferable to using volumetric portions since it is both accurate and consistent. What do you have for an oven? Do you have a baking stone or steel? If you will be baking in a pan or on a screen or disk, please tell use something about it.

I know it's a lot of questions, but we're either going to be asking them now or later and we can move you along to a much better pizza a lot faster by asking them now.

Tom Lehmann/The Dough Doctor  
3547

### **Dough Clinic / Re: Flour**

Stefanos;

I'm confused, you mention changing the amount of flour used in your dough formula/recipe? The amount of flour used in a dough formula doesn't change with the type of flour, mostly it's just the amount of water added that changes but sometimes the yeast may need to be changed too but more correctly it's the finished dough temperature that gets changed.

As for baking your pizzas, what kind/type of pizzas are you trying to make? Do you use a stone or steel to bake your pizzas on? We've really got to know more about how you are presently baking your pizzas (pan, disk, screen, stone, steel). Gas or electric? How long do you pre-heat the oven?

For generalities, when baking on a stone, 250C/480F is a good temperature to start at. Be sure to allow the oven to heat up for AT LEAST 60-minutes before baking. Use a rack position in the oven just slightly below the center of the oven. Since pizzas are baked from the bottom up this will provide the additional heat to the bottom of the pizza. The dough formulation, type of flour (malted or un-malted), and dough /skin weight will all influence the baking time as well as the position in the oven so you will need to experiment to find out what works best for what you are doing, in YOUR oven.

Tom Lehmann/The Dough Doctor  
3546

### **General Pizza Making / Re: pizza wooden board the culprit?**

A pizza screen slightly elevated also works quite well. Remember, it isn't always just the cooling of the pizza that promotes sogginess, it can also be due to excessive sauce, toppings (a major culprit) with baking time and temperature also being major players too. Pizzas that are baked hot and fast generally do not retain their crisp very well after removal from the oven. A longer, slower bake at a lower temperature will provide the overall crispiest and firmest pizza that will tend to retain the crisp/firmness for the longest time. The one thing that you never want to do is to place the hot pizza onto any flat surface immediately after removal from the oven, the pizza is steaming at that point and placing it on a flat surface, regardless of what it's made of, will just force the steam/moisture back into the crust making it soggy. This is why an elevated screen or cooling rack is preferable to placing the pizza on a flat surface. Most people will allow the pizza to steam off for a minute or so prior to cutting.

Tom Lehmann/The Dough Doctor  
3545

### **Dough Clinic / Re: Flour**

Stef;

The very high absorption required by the low protein (pastry) flour in all probability was the result of a high level of starch damage in the flour (not a good thing). Barring a flour with high level of damaged starch, a general rule is the higher the protein level the higher the dough absorption. To get you started off correctly, can you send us a picture of your pan (actually it sounds like it might work pretty well but also send a picture of the aluminum pan too as I think we can get it to work for you too. Then show us your dough formula/recipe and your dough management procedure (everything you do with the dough from the mixer to the oven) but be sure to include all appropriate times and temperatures. As you have

an electric oven your baking time will be a bit longer than it would be if you had a gas oven but that will not be a problem, it's just something to keep in mind.

Tom Lehmann/The Dough Doctor

3544

### **Dough Clinic / Re: Flour**

If by "blistering" you mean bubbling and burning your pizza is most likely getting too much top heat (pizza is placed in a rack position that is too high in your oven). If you are using fresh mozzarella you might try putting the cheese on in pieces either about 3/4 of the way through the baking process or at the end of the baking process and placing the pizza back into the oven just long enough to allow the cheese to flow out.

Tom Lehmann/The Dough Doctor

3543

### **General Pizza Making / Re: Factors that make pizza chewy**

Some of the more common things that make a pizza chewy:

Flour protein content too high.

Insufficient dough fermentation.

Insufficient oven spring.

Short bake time.

Not elevating the pizza so it can "steam off" immediately after baking.

Too much sauce.

Excessive dough fermentation which results in the dough collapsing under the weight of the topping ingredients.

Tom Lehmann/The Dough Doctor

3542

### **Dough Clinic / Re: Managing the variables**

If you are operating a pizzeria or just cold fermenting it is my opinion that the dough should be scaled and balled immediately after mixing but if you are planning on room temperature fermentation bulk fermentation until a couple of hours prior to using the dough to make skins and then scaling and balling and waiting for the dough balls to loosen up for ease of opening makes perfect sense. I do not advocate allowing the dough to ferment prior to cold fermentation as the as it will be all but impossible to regulate the temperature and control the rate of fermentation with any kind of consistency after the dough has been fermented. The reason for this is due to the reduced density of the dough making for an excellent insulator.

Tom Lehmann/The Dough Doctor

3541

### **General Pizza Making / Re: Factors that make pizza chewy**

Jr07;

In one word: Nope.

3540

### **Chitchat / Re: If you grow tomatoes...**

Big Moose;

Fungus has devastated our tomato plants so it looks like the last picking today but the pepper plants are doing absolutely GREAT! Another comment regarding the lack of insects this year, my wife and I have been processing apples from our apple trees into apple butter and dehydrated apple slices (a never ending task, a week at it and still no end in sight!) we have notices that there is very little insect damage

to the apples this year, almost no worms and very little damage from the apple maggots. I'd say that fully, 1/4 of all the apples we're processing this year are completely blemish free. It sure make our job of processing a lot easier as there is very little trimming needed.

And still NO "skeeters"! No oak midges either (a real blessing).

Tom Lehmann/The Dough Doctor  
3539

### **General Pizza Making / Re: What influences how well a pizza reheats?**

Agreed, if you want crispy go with a thin crispy or cracker type crust.

Tom Lehmann/The Dough Doctor  
3538

### **General Pizza Making / Re: Factors that make pizza chewy**

Better yet, rather than just leaving it out for 90-minutes before opening, why not leave it out until the internal temperature of the dough ball reaches 60F (50F if you're a pizzeria operator)? That's the magic temperature for opening the dough. Since ambient temperatures can vary quite a bit, going by the internal dough ball temperature is the correct way to go.

Tom Lehmann/The Dough Doctor  
3537

### **Dough Clinic / Re: Oil or more water to prevent drying during baking?**

OK, here's my hat in the ring.

The higher the dough absorption (within reason) the softer it is which allows it to expand to a greater degree during the oven spring part of the baking process resulting in a higher, lighter textured edge on the pizza, this also improved the bake-out of the crust edge resulting in a crispier edge crust. With high dough absorption a high oven temperature promotes rapid vaporization of water as well as air and leavening gas trapped within the dough allowing the dough to expand MORE during those few seconds available for oven spring to take place in. So, the higher the dough absorption the higher oven temperature will result in greater crust porosity along with improved crispiness. Low dough absorption doughs do not exhibit these characteristics so they need to be baked at a lower oven temperature to achieve a thorough bake-out of the crust.

An emulsifier is used to hold together the fat and water soluble portions of the dough. If you put an emulsifier into water and shake it an emulsion will be formed and the water and oil will not separate. Every time I've demonstrated this to my students using olive oil and water the mixture of oil and water separated almost immediately after vigorous shaking....I'm not buying it that olive oil is an emulsifier. That said, olive oil, or any oil for that matter does make a dough easier to open, it retains leavening gas and water vapor better for enhanced oven spring, and it helps to retain flavors in the finished crust as well as repel moisture from the toppings as it tries to migrate into the dough during and after baking resulting in improved retention of crispiness or at least a crust which will potentially not be as soggy.

There you have it, three different opinions, take your pick.

Tom Lehmann/The Dough Doctor  
3536

### **Dough Clinic / Re: Problems with Neapolitan Dough Fermentation - Collapsed Dough Balls**

Knowing your dough formula and dough management procedure would help us

greatly. Regarding fresh yeast aka compressed yeast (CY) it should be maintained/stored under constant refrigeration right up until the time it is added to the dough. It should be added just as it is if machine mixing, if hand mixing it should be suspended in the dough water (no need to use warm/100F water as you do with active dry yeast (ADY)). Remember that CY is perishable having a shelf life of only 2-weeks in a home refrigerator (three weeks under the best of conditions) and this is assuming that you got it fresh to begin with. Then CY ages it loses its ability to ferment and under less than ideal storage conditions it will begin to feed upon itself or die off releasing glutathione from the yeast cells which exhibit a softening/weakening effect upon the dough which could cause it to collapse under severe circumstances. I've got a feeling though that your problem might be temperature related so knowing your dough management procedure (complete with all temperatures/if you are not monitoring dough temperatures please indicate so) will help us determine if temperature or some other factor is responsible for the collapse of your dough balls.

Tom Lehmann/The Dough Doctor  
3535

### **Off-Topic Foods / Re: Steam generator / liquid vaporizer device**

Just to add a little insight into adding steam into an oven which was not originally designed for steam. It is one thing to bake in the oven without added steam and it is a totally different thing to bake in the same oven with added steam. Even putting a pan of water in the oven does not really constitute adding steam to the oven, it only increases the humidity in the air which will allow for some condensation to form onto the colder product which is being baked resulting in delayed crust development and better oven spring without shredding (developing break and shred) of the crust. The problems arise when we inject steam into the oven, thus flooding the oven with moisture. As the product is baked the yeast fermentation by-products (carbon dioxide, alcohol, and acids) are released into the oven which are now absorbed by the steam and are carried by the steam into all parts of the oven (including any exhaust vents or stacks), real problem areas are those areas behind the panels lining the oven which require major disassembly to access, as these areas are typically cooler than the actual baking chamber the steam condenses in these areas leaving behind concentrated alcohol and acids which are highly corrosive resulting in the development of unwanted rust and ultimately metal failure. This is well documented in large industrial ovens as well as smaller ovens such as you would find in a small neighborhood bakery. This is not to say that your kitchen oven will collapse, but there is a high probability that the oven will develop troublesome rust and special attention will need to be paid to and ventilation/exhaust stacks which, unless constructed of a SPECIAL grade of stainless steel (formulated to resist the alcohol and acids) will most likely degrade in a fairly short period of time by developing pin hole leaks and ultimately larger holes.

It is better to know what the obstacles are ahead of you than to discover them along the way. Proceed with caution while armed with knowledge.

Tom Lehmann/The Dough Doctor  
3534

### **Dough Clinic / Re: How many times to knead?**

Depending upon how much gluten development you're getting in the KA mixer you might be able to do away with the initial kneading procedure and go straight to bulk fermentation for 24-hours then scale, round and give the dough another 24-hours cold fermentation. This process will give you good gluten development. After

the final CF period allow the dough to warm AT room temperature to between 50 and 60F before opening the dough into skins for your pizzas.

Kneading the dough after machine mixing really doesn't result in that much additional gluten development unless you're planning to knead the dough for quite some time, but kneading after a CF period allows for biochemical gluten development to take place during the 24-hour CF period, then kneading the dough will further strengthen the gluten making for a stronger dough at opening. If you were to knead the dough a few hours prior to opening there is a probability that it would not be sufficiently relaxed for ease of opening when you're ready to make your pizzas. By the method described above the dough balls will be sufficiently relaxed to be used as soon as about 18-hours after balling to as long as 24 to 48-hours after balling. As you can see, this give you a lot of flexibility in scheduling your pizzas. The only time I really advocate kneading the dough on the same day as you are planning to open it into skins is when the dough has been obviously over fermented, in this case the kneading process will strengthen the over fermented dough as well as degas it, but the variable here is just how long you might need to wait until the dough balls can be easily opened into skins. The time required for the dough balls to become sufficiently relaxed will be highly variable depending upon a bunch of different factors such as room temperature, dough formulation, flour strength, dough absorption, and amount that the dough has been over fermented.

Tom Lehmann/The Dough Doctor

3533

### [\*\*New Forum Members / Re: question about Crust pie dough not a pizza dough\*\*](#)

What type of crust are you making? Long, medium, short flake or mealy type crust? Long and short flake crusts are typically used for fresh (non-refrigerated/frozen fruit pies while mealy crusts are used for frozen pies as well as tarts and a lot of the creme and custard pies. The basic ingredients in a pie crust are flour, salt, ice water, and fat. Added ingredients are milk or dextrose (for color) or sometimes dairy whey will be used instead of dry milk solids. If a "preservative" is ever used in pie crust production it is to address any potential mold issues which might crop up with extended shelf life. Sodium Propionate is the "go to" additive for this and while there are a number of other products available, none are as effective except possibly for potassium sulfate. Some of the more "friendly sounding" anti molding agents are nothing more than propionic acid (a byproduct of yeast fermentation) which is supposedly more "consumer friendly" but it is still propionate, just made differently. If you would like to speak to me directly about this please feel free to contact me at 785-537-1037.

Tom Lehmann/The Dough Doctor

3532

### [\*\*Prep Equipment / Re: Countertop Spiral mixer for the price of a KA Pro\*\*](#)

The "thing" about spiral mixers is that it doesn't take a lot of power to operate them. You are only turning the spiral and sometimes the bowl is powered too but in many cases the dough is what spins the bowl (powered bowl is highly recommended for a large size spiral mixer). The spiral is just turning through the dough with just a little pull between the agitator (spiral) and the breaker bar (post), this really doesn't take much power. Planetary type mixers need a lot more power to operate as the dough hook/dough arm has to drive through the dough as it compresses the dough against the side of the bowl. This is where many smaller planetary mixers fail as they don't have enough power to drive the agitator through the dough so the mixer stalls when it is compressing the dough, this is especially

true with low absorption doughs. Spiral mixers don't have this problem due to their design. When all of the cards are on the table I'll take a spiral mixer over a planetary mixer any day of the week, to avoid disappointment, just don't ask it to mix anything but dough cause it ain't gonna happen.

Tom Lehmann/The Dough Doctor  
3531

### **Shop Talk / Re: Looking to open pizzeria - Advice needed!**

Do you mean a Hobart 80-quart mixer? If so give a lot of consideration to the M-802 model as it is the heavy duty version of their 80-quart mixers.  
No walk in? That's going to be tough. I'd recommend going back to the drawing board and look at getting at least a 10 X 10 walk in cooler. You will need it for dough and ingredient storage.....trust me, reach in coolers are problematic at best. OK for a small operation but not a larger one. Pizzas baked fast in a hot, wood fired oven to not transport very well at all, I'd suggest carry out but not delivery.  
Ditch the dough press and go with hand opened dough, the presentation is much better not to mention the finished pizza quality.  
\$100,000.00 is really cutting it close, you also want to have a reserve of a minimum of 6-months living expenses put aside.  
Now for the \$64,000.00 question....what is your experience working in different pizzerias? Do you have any experience managing a pizzeria?  
You might also want to look at posting in the Think Tank at <[www.pmq.com](http://www.pmq.com)> this site is visited mostly by store owners/operators.

Tom Lehmann/The Dough Doctor  
3530

### **Shop Talk / Re: Looking to open pizzeria - Advice needed!**

One of the biggest issues with pizzas that are baked at high temperature for a short time is that they do not retain their crispiness well at all especially when placed into a box and then into a sealed "moon" bag. As delivered, these pizzas have all of the character of wet pasta with pizza toppings. This is not to say that you cannot bake a decent delivery pizza in a wood fired oven, you certainly can, but you will need to bake it longer and at a lower temperature that is typical for wood fired oven pizzas. This is a major reason why a good deck oven is better suited to delivery than a good wood fired oven. The best oven, by far, for DELCO is an air impingement oven as it provides the driest pizza possible and allows for baking the bottom more thoroughly without burning the top however an air impingement oven has all the ambiance of a shoe box which is possibly its greatest downfall. A short time ago I wrote an article on ovens and oven selection for different store concepts. I believe it was published in my Pizza Today column.

Tom Lehmann/The Dough Doctor  
3529

### **Neapolitan Style / Re: Making this Dough Fermentation better**

W.I.;  
Your dough absorption is on the low side at only 58%, so you might consider increasing it gradually (2% increments) to get it up closer to 65% or a little higher. Additionally, what kind of yeast are you using, ADY, IDY, or CY?

Tom Lehmann/The Dough Doctor  
3528

### **Neapolitan Style / Re: Short bulk vs. long bulk**

You also get a shift in crust flavor between bulk room temperature fermentation

and cold fermentation after balling. My own personal preference is for the flavor achieved through cold fermentation.

Tom Lehmann/The Dough Doctor  
3527

### **Neapolitan Style / Re: Making this Dough Fermentation better**

I totally agree with Steve. I don't understand your comment on getting more consistent results with CY. CY is the least consistent type of yeast you can get unless you're receiving it fresh from a distributor and using it in less than a week. It is also important that the yeast is never allowed to drop in temperature below 45F....no need to suspend the CY as it can be just crumbled and added right on top of the flour when machine mixing. ADY when correctly hydrated/activated is more consistent than CY if you look at the performance of the yeast over a several week period. IDY is the king of yeast types when it comes to consistency, plus it doesn't need to be hydrated/activated when machine mixing so it has the one advantage that CY has in that it can be added directly to the flour.

Tom Lehmann/The Dough Doctor  
3526

### **New York Style / Re: Dough**

Holly;

My advice is to pick out a type of pizza that you want to make, master it, then repeat again with a different type of pizza of your choosing. Think of it like juggling, start with one ball, then two, then three and after a short time you will be able to juggle a number of balls all at the same time....it comes with experience.

Above all else, have fun!

Tom Lehmann/The Dough Doctor  
3525

### **Shop Talk / Re: Growth Challenges from 1 to 2 shops**

Matt;

First off, if you're into micro-management, I suggest folding up your tent and going home at this time as you will never make it trying to micro-manage more than one shop. This is my "golden rule", fact is I won't work with micro-managers, I feel that strongly about it.

Identify good people from your present staff to promote into your new store, this includes a manager and assistant manager. I can't speak directly for China but here in the U.S. finding good people to run your second store is a major issue and in many cases this is what keeps some stores from building out and expanding.

If at all possible, detach yourself from both stores as much as possible, continue to do the books and help out at the stores during slam periods but otherwise learn to step back after you get the second store up on its feet (about 12 to 16-months).

With that accomplished you will most likely want to turn your attention to building a third store, repeat the above and you will soon be looking at a fourth store, etc.

One note: As you build new stores, if you have the space and proximity you should consider using one store to provide all of the dough and sauce for another store or stores as this will save you the cost of reinventing a full kitchen at each store while providing improved product consistency between stores. As you grow in number of stores you might even be able to renegotiate the cost of your supplies as you will be using more. We are always negotiating the cost of our supplies and it DOES save us money.

Tom Lehmann/The Dough Doctor  
3524

## **Dough Clinic / Re: Help with Neapolitan Dough**

Two things to keep in mind, 1) Unless the internal dough temperature is at 45F/7.2C when you put it into an air tight container it will sweat, becoming wet and sticky. If you oil the dough ball like the commercial producers/pizzerias do it will eliminate much of the wetness and stickiness. The use of dusting flour on the dough at the time of opening into skins is normal as most of it will come off as the dough is opened into a skin. The dry skin which you have alluded to is not considered a beneficial characteristic as it promotes bubbling of the dough during baking and in many cases it will also inhibit desired oven spring of the dough during the first few seconds of baking making for a thicker, denser crumb structure which can lead to a reduction in the crispiness of the finished crust.

Tom Lehmann/The Dough Doctor  
3523

## **Dough Ingredients / Re: Help with Measuring Fresh Yeast for Starter**

What you are saying is that your scale only weighs in whole gram weight increments, is that correct? The way I do it is to multiply the weight needed by 10 so  $10 \times .36 = 3.6$ -grams. Suspend this 3.6-grams of CY in 10-ounces of cold water (suspend the yeast by stirring vigorously or shaking well) then weigh out 1-ounce of the yeast suspension and you'll have your 0.36-gram weight of CY.

Tom Lehmann/The Dough Doctor  
3522

## **Shop Talk / Re: selling coffee at your pizza restaurant?**

A great question indeed, and I've asked myself that very question many times over. I'm a coffee drinker and I enjoy coffee with my dinner so when pizza is on my dinner menu I like my coffee but very few pizzerias offer it. It's easy to do, holds well and is a low cost item as coffee makers are not particularly expensive....I'm talking just regular coffee, not all of that gourmet stuff. I guess it's just off of their radar. Speaking selfishly, if you have the space and a place to plug in a coffee maker, give it a try, it's not an expensive venture and you can always sell it if it doesn't fly.

Tom Lehmann/The Dough Doctor  
3521

## **Dough Clinic / Re: Help with Neapolitan Dough**

I've not seen them put their dough into air tight containers. When you put the dough into air tight containers the dough WILL sweat if there is a temperature differential between the dough and the outside environment, however if the container is not air tight the dough can breathe, thus preventing the development of the condensation. You have already seen this first hand where your dough ball was stored without the air tight container (no sweating). Contrary to popular belief, dough DOES NOT dry out under refrigerated conditions (cold air holds less moisture than warm air so it is less capable of pulling moisture out of the dough), just keep the fridge door closed at all times or you will be introducing warm air into the fridge which is what causes the moisture loss/desiccation in the fridge.

Tom Lehmann/The Dough Doctor  
3520

## **Dough Clinic / Re: Tom, what did I do wrong?**

It appears that the dough ball was sticking to the plastic bag. I have gotten into the habit of lightly oiling my dough ball prior to placing them into plastic bags. For

some unknown reason the dough will tend to stick to some plastic bags and not stick to others, so I've just gotten into the habit of lightly oiling the dough balls and eliminating the problem regardless of the type of bag used.

Tom Lehmann/The Dough Doctor  
3519

### [\*\*Resources / Re: High Gluten Flour - Chicago\*\*](#)

4-grams of protein per 30-gram serving calculates out at 13.3% protein content which should be just fine.

Tom Lehmann/The Dough Doctor  
3518

### [\*\*Dough Clinic / Re: Really Stupid Question - Best way to get dough to room temparture\*\*](#)

Lid on.

It'll take a couple of hours. You are not looking for room temperature, instead, you allow the dough to temper AT room temperature until it reaches 50F (for pizzerias) or 60F for home pizza making. Once the dough has reached the desired internal temperature it will remain good to use for up to a maximum of 3-hours (pizzeria) or 1 to 1.5-hours if you're making pizzas at home.

Tom Lehmann/The Dough Doctor  
3517

### [\*\*Dough Clinic / Re: Really Stupid Question - Best way to get dough to room temparture\*\*](#)

Because restaurants/pizzerias need to have the option of using the dough over a greater period of time, hence the cooler temperature after tempering. You will also find that the dough is usually easier to open at the higher temperature too.

Tom Lehmann/The Dough Doctor  
3516

### [\*\*New York Style / Re: Deck Emulation: Humidity\*\*](#)

It is a well known fact that gas ovens bake differently from electric ovens due to the fact that heating with electric creates a very dry environment while gas produces water as a by-product of combustion. Since the oven is pretty well a closed baking chamber you have both the moisture from the combustion of the gas as well as the moisture given off by the pizzas as they bake. As a general rule we have found that electric ovens of all flavors, including air impingement, require a longer baking time at a higher temperature and even then the bake is not comparable. Since you didn't mention what variances you noted I can't add much more at this time.

Tom Lehmann/The Dough Doctor  
3515

### [\*\*Dough Clinic / Re: Incorporating Oil When Mixing/Kneading All Trumps Bromated Dough\*\*](#)

The only time when 1 to 2-minutes mixing time is used is when making a cracker type crust, but that a whole different story. Start out adding 70F water to the mixing bowl, then add the salt (no need to stir in) followed by the flour, IDY and any other dry ingredients, mix at low speed JUST until you don't see any dry flour in the bottom of the bowl, then, as directed in the previous post, slowly pour the oil into the bowl. After all of the oil has been added mix one additional minute at low speed, then mix at the next highest speed your mixer will allow until the dough

takes on a smooth appearance, you're now done mixing.

On a different note, I see you are adding GM Soft as Silk (high ratio cake flour) I really don't recommend doing this as Soft as Silk is a whole different type of flour...literally. If it were me, I'd just leave the AT just as it is, you'll be just fine. Don't worry about over mixing AT flour, it is next to impossible to do with a KA mixer. Due to the higher protein content of the AT flour the only thing you will need to worry about regarding over mixing the dough is the punishment your mixer is taking. If you just mix the dough until it appears smooth it will have all the mixing/gluten development needed, the remainder of the gluten development will be provided by biochemical gluten development.

Tom Lehmann/The Dough Doctor  
3514

### [\*\*Shop Talk / Re: Recommend ovens! Switching from conveyor oven to Stonebaked\*\*](#)

Please define your concept of a "stone" oven. When we typically think of a stone oven or "stone deck" oven it's an oven with 4-inches or more of "stone" for the deck. A good example of this type of oven would be a Woodstone oven, or are you referring to a "deck" oven such as those made by Baker's Pride, Blodgett, Marsal & Sons/Middleby-Marshall to name but a few. I wrote an article on oven selection for Pizza Today Magazine some time ago which I think you will find useful. An oven is not just a tool to bake a pizza, it has a great influence on the finished quality characteristics of the pizza of which there are many, just a single example; If you are a DELCO store the air impingement ovens are superior to other types of ovens since they can be profiled to provide the driest pizza for the best DELCO properties when the customer gets the pizza home. This is especially true if you do a lot of vegetable topped pizzas or your claim to fame is a lot of toppings on your pizzas. This is why we need to know more about your store and what you are thinking of oven wise to weigh in on your question.

Tom Lehmann/The Dough Doctor  
3513

### [\*\*Dough Clinic / Re: Incorporating Oil When Mixing/Kneading All Trumps Bromated Dough\*\*](#)

If the finished crust is too tough/chewy, the best way to address it is to go with a lower protein content flour. Using the exact same dough formula and the same dough management procedure, begin replacing the All Trumps flour with different flours having lower protein content. If you go to the supermarket you can find Pillsbury Bread flour which comes in at around 12.2% protein content. General Mills King Wheat flour will come in at around 11% and General Mills H&R flour at about 10.5%. I normally like to use something in the 12 to 12.5% protein content range.

Tom Lehmann/The Dough Doctor  
3512

### [\*\*Resources / Re: What is the best source for local whole wheat flour? \(small mills\)\*\*](#)

If you can get some whole hard white wheat flour be sure to give it a try. I seldom ever use the regular whole wheat flours anymore (made from hard red wheat varieties). Also be sure to go back into the archives either here in PMQ Magazine to find the procedure which I developed to find the correct dough absorption for the specific whole wheat flour or multi-grain blend you're using. If you don't get it right you will probably not be satisfied with the resulting crust

characteristics.

Tom Lehmann/The Dough Doctor  
3511

### **Newbie Topics / Re: Dough balls spreading**

The simple answer is to ball the dough tighter, but it might be more than that so we'll need to know your dough formula and dough management procedure before adding any more than that. Also, please tell us what you can about your flour.

Tom Lehmann/The Dough Doctor  
3510

### **Shop Talk / Re: Recommend ovens! Switching from conveyor oven to Stonebaked**

I don't know what you have available to you in terms of ovens, but one oven that I've had good experience with is the Marra Forni rotating deck oven. I think it might work well in your application. As for 7K a week in sales I can't answer that, possibly someone else will be able to but since it will consist of an assortment of products, not just pizza your oven supplier/manufacturer might prove to be the best bet as they know more about the sales of stores where their ovens are in use. With that said, 7K a week is not a whole lot so my gut response might be to say that I wouldn't expect to see any problems...but that's just my "gut" talking. As to the decision between gas and electric, not even a close call.....gas all the way!

Tom Lehmann/The Dough Doctor  
3509

### **Cracker Style / Re: A new style?**

Huh?

The way I look at it is like this, you can make just about any type of crust that suits your fancy using a laminated dough process of one type or another, laminating is just a procedural step, much like kneading the dough, as that, it is just a means to an end, you laminate the dough in an attempt to achieve some type of a specific finished crust characteristic. There are different ways to laminate the dough, one is with the use of a solid/plastic fat like butter, margarine, or a commercial roll-in fat, by this process layers of fat and dough are constructed which imparts a specific characteristic to the finished crust. If you develop but just a few layers of fat and dough you end up with a pretty common looking crust but with large holes throughout the entire crust. If you develop many (90 to 120) layers you can have a crust that is much more flaky, think Danish pastry. The other process is called dry laminating, by this process no fat is used as a roll-in, instead, the dough is allowed to dry/crust over and then folded back upon itself as a layering/laminating process. This is the process that is used by many of the cracker manufacturers to make saltines and club crackers. This method is difficult to employ in a pizzeria as it requires the application of warm air to the surface of the sheeted dough to dry it in preparation for laminating but it is very well suited to a commercial production line. Lastly, there is what is referred to as the "blitz" method, by this method fat flakes or pieces of refrigerated fat (butter) are incorporated into the dough so that the fat pieces remain in the dough, the dough is then processed in a pretty normal manner for pizza dough. When the dough is baked the fat pieces (about the size of a pea) melt out and leave a void which creates the visual effect of having laminated the dough. If this method sounds familiar it's because it is essentially the same method used to make a flaky pie dough.

Tom Lehmann/The Dough Doctor  
3508

## [\*\*Dough Clinic / Re: Can I reformulate my sourdough dough to bake pizzas on the fly?\*\*](#)

It's been pretty well documented that when you add yeast to a sourdough it completely over whelms the wild yeasts and bacteria which are responsible for the unique sourdough flavors resulting in more of a yeast leavened flavor. You still get the tartness but not the unique flavor of the sourdough. Yes, you can experiment with the amount of sourdough starter you add as well as the amount of yeast added to make a dough which will respond more like a conventional dough but still have some of the tartness associated with a sourdough. I guess it all depends upon what exactly you are looking for flavor wise and what you are willing to settle for.

Tom Lehmann/The Dough Doctor  
3507

## [\*\*Chitchat / Re: Oktoberfest is here!! What's your favorite beer to drink with pizza\*\*](#)

I don't drink beer....only Guiness. Pizza and Guiness, now that's fine dining! :)

Tom Lehmann/The Dough Doctor  
3506

## [\*\*General Pizza Making / Re: Need dough/crust advice\*\*](#)

Without knowing your dough formulation and management procedure the only thing that can be said at this time to address the issue is to par-bake your crust until it is "just set" (doesn't collapse when removed from the oven) If bubbling is an issue try putting about half of your normal sauce onto the skin prior to par-baking, this usually helps a lot. Par-bake at no more than 400 to 425F, finish dressing the par-baked crust with the remainder of the sauce (white sauce?) and other desired toppings and finish baking at 450F. We made pizzas a lot like yours for the U.S. Dehydrated Potato Board, a really good pizza, especially with bacon crumbles.

Tom Lehmann/The Dough Doctor  
3505

## [\*\*Neapolitan Style / Re: Making this Dough Fermentation better\*\*](#)

Woh! Don't mix the IDY with cold water! Two things can happen, 1) you cause the amino acid (glutathione) to flush out of the yeast cells. Glutathione is a reducing agent and it results in doughs becoming soft and extensible much like L-cysteine (PZ-44). 2) Due to the leaching out of the glutathione from the yeast cells the ability of the yeast to ferment is seriously compromised (this can be a real issue where small amounts of IDY are used). The best way for you to add IDY is to just add it directly to the flour, just weigh the IDY and drop it right on top of the flour...it's that easy. If you feel that you ABSOLUTELY must activate the IDY prior to addition to the dough, add the IDY to a small amount of warm (95F/35C) water, stir to suspend the yeast, wait 10-minutes and add the yeast suspension to the cold water in the mixing bowl (yes, it's OK to add the suspended IDY directly to the cold water).

You might want to go back and repeat this keeping the above in mind to see if you get any better results.

Tom Lehmann/The Dough Doctor  
3504

## [\*\*Dough Clinic / Re: Calzone Recipie\*\*](#)

Many operators like to use their regular pizza dough for their calzones and it does work quite well, but to distinguish my calzones from my pizzas I like to use a richer

dough formulation for my calzones. Here is the formula that I regularly use.

Flour (12 to 12.8% protein) 100%

Salt: 1.75%

Sugar: 2%

Butter: 4% (margarine, lard, or olive oil can be used if desired)

Whole egg: 4%

IDY: 0.5%

Water: 58% (variable)

I handle and process the dough the same as I do my pizza dough, roll/sheet the dough balls out to 1/8 to 3/16-inch in thickness, brush water around edge of the bottom half of the dough, add desired filling, fold the top half down over the bottom half with the filling, tightly crimp the crust together (use your fingers or a fork), then transfer to a baking platform (pan, disk, or screen) or a wood prep peel, cut a couple of slits into the top, or if you want to be fancy use a scissors to cut some delta slits (to vent steam), brush with olive oil or egg wash and bake at 450F until golden brown. As soon as the calzone is removed from the oven brush it with a garlic flavored oil and sprinkle with a blend of grated Parmesan and Romano cheese. I make these every year for my son over the Holidays.

Tom Lehmann/The Dough Doctor

3503

### [\*\*New Forum Members / Re: looking for flour options in mexico\*\*](#)

El Rosal "fina", Molinera Del Valle, Mexicali, MX. should work as it is also exported to the U.S. for making a variety of fermented baked goods. Due to their proximity to the border they have access to U.S. wheats for blending into their domestic wheat for producing a higher quality flour. Another option is to see if you can find out who is milling the bread flour for Bimbo Bakeries (there should be a Bimbo Bakery in just about every major metropolitan area of Mexico (at least it seems that way) and buy some of the same flour that Bimbo is using for their bread (pan de caja/pan Pullman/pan blanco) production.

Tom Lehmann/The Dough Doctor

3502

### [\*\*Dough Clinic / Re: Dough doesn't seem right after cold ferment\*\*](#)

I'm guessing that your dough might be over fermented as you noted that the dough is very easy to open and has a tendency to tear (both potential indicators of over fermentation). What is your finished dough temperature (as it comes off of the mixer)? Ideally, it should be between 65 and 70F. You then place the dough balls into plastic containers, do you cover them right away? It is preferable to allow them to remain uncovered in the fridge for at least 2-hours before lidding the containers.

This might help if you are not already doing it.

Tom Lehmann/The Dough Doctor

3501

### [\*\*Dough Clinic / Re: Calzone Recipe\*\*](#)

I like to use a rolling/pastry pin to pin the dough out to size, this does a good job of degassing the dough so you retain a thin crust with an even thickness all around the calzone. I'm normally looking for a thickness of 1/8 to 3/16-inch (at the very most).

Tom Lehmann/The Dough Doctor

3500

## [\*\*Dough Clinic / Re: Dough doesn't seem right after cold ferment\*\*](#)

Two to three days is a very realistic goal, I'd stay with that but make the change of not lidding the containers until they have been in the fridge for at least 2-hours to see if that helps any. One thing I learned in research many years ago is to change only one thing at a time.

Tom Lehmann/The Dough Doctor  
3499

## [\*\*Neapolitan Style / Re: temper cold dough balls\*\*](#)

Pizzerias typically use 50F as it allows for a longer use time for the dough balls once they are removed from the cooler. For home pizza making 60F works better unless you will want to use the dough balls over a 3-hour period of time (then go with 50F).

Tom Lehmann/The Dough Doctor  
3498

## [\*\*Neapolitan Style / Re: temper cold dough balls\*\*](#)

The dough will be softer and because it's warmer it will begin fermenting both of which could be problematic, especially when working with a high absorption dough.

Tom Lehmann/The Dough Doctor  
3497

## [\*\*Dough Clinic / Re: No Yeast dough\*\*](#)

Sure, it's going to be somewhat different and you will need to make the skin very thin. It's called Matzo, Jews consume it during Passover.

We did some development work for a company in South America a number of years ago utilizing unleavened pizza crust for all of their products.

The best product is made using a lower absorption dough (around 55%) and then rolling it out using a rolling or pastry pin to about 1/4-inch thickness, then make a book fold (fold the two ends into the center of the dough piece and then close it as you would a book, hence the name "book fold"). Do this two or three times then wrap the dough in plastic and allow it to rest for 15-minutes, roll/sheet it out one more time but this time to about 1/8-inch in thickness and cut your pizza skins from the dough sheet. Dock the skins and par-bake at 425 to 450F until firm. NOTE: If you want the crust to brown you must add a reducing sugar such as dextrose (corn sugar) as table sugar is a non-reducing sugar so it will not contribute to the Maillard browning reaction for crust color development. If you don't have corn sugar you can also use honey or high fructose corn syrup (available along with corn syrup at most supermarkets). As there is no yeast for flavor development I suggest increasing the salt level to 3%.

Tom Lehmann/The Dough Doctor  
3496

## [\*\*Newbie Topics / Re: What's your go to pizza sauce recipe?\*\*](#)

Right now I'm using garden fresh, ripe tomatoes (variety is unimportant), sliced thin 3/16-inch, and placed over a lightly oiled skin with garlic and fresh basil. The tomato slices will cover the garlic and basil, from that point on dress the pizza as you would any other pizza. For me, nothing beats the fresh tomato flavor and texture provided by using fresh, ripe tomatoes. :)

Tom Lehmann/ The Dough Doctor

3495

**Dough Clinic / Re: Stock with frozen dough. Question about prep**

Since you're using it tonight your best approach is to make sure it's completely slacked out in the fridge, remove it from the fridge now and place it into an oiled container, drape with a piece of plastic, and allow the dough to ferment for 3 to 4-hours. About 3-hours before you want to use the dough remove it from the bowl and re-round it, lightly oil the dough ball and place it back into the oiled container, drape it with a piece of plastic and allow it to continue fermenting. To use the dough just invert the bowl allowing the dough to drop out onto a floured surface and open to the desired diameter, dress and bake.

Tom Lehmann/The Dough Doctor

3494

**Dough Clinic / Re: Incorporating Oil When Mixing/Kneading All Trumps Bromated Dough**

Two things, 1) The 1-minute mixing period after adding the oil is NOT to incorporate the oil it is only to distribute the oil so it doesn't splash out of the bowl. 2) If the agitator was just chasing the dough around in the bowl after adding the oil the oil was added too late or the mixing speed was too low (both are common mistakes). In any case, the dough receives little or no actual gluten development while being chased by the agitator so there is no fear of over mixing the dough, the key is to mix the dough JUST until it takes on a smooth appearance, at that point you're done mixing.

Tom Lehmann/The Dough Doctor

3493

**Dough Clinic / Re: No Yeast dough**

To that point, I have a number of dough formulas posted in the PMQ Recipe Bank <[www.pmq.com](http://www.pmq.com)> for chemically leavened crusts using Wrise. I developed these and posted them in response to a growing interest in take and bake pizza a number of years ago. You might also do a archival search of my articles (In Lehmann's Terms) in PMQ to find some of my articles on take and bake pizza. While many of these articles reference both yeast and chemical leavening (combination leavened crusts) you can just leave the yeast out and still make a decent crust BUT you will have different dough handling properties as well as a different flavor profile. A basic procedure is as follows, mix, scale, ball, rest 15-minutes, open into skins, dress and bake. There is no fermentation period as there is no yeast.

Tom Lehmann/The Dough Doctor

3492

**Dough Clinic / Re: Incorporating Oil When Mixing/Kneading All Trumps Bromated Dough**

Matt;

Yep, yer mixing it too long before adding the oil. The "dough" isn't even cohesive when the oil is added so that's where the issue is at. Let me know if you continue to have problems with the delayed oil addition procedure.

Tom Lehmann/The Dough Doctor

3491

**Dough Clinic / Re: Stock with frozen dough. Question about prep**

Bummer! Here I thought we were going to get some great pizza. :-D  
Let us know how things work out for you.

Tom Lehmann/The Dough Doctor  
3490

**[Dough Clinic / Re: First Sourdough Batch](#)**

You will need to experiment with your sourdough starter to see how much you will need to use as there is no way to ascertain the strength of what you have. "True" sourdoughs will require upwards of 12-hours to leaven the dough (depending upon the crumb porosity desired). I wouldn't promote the crust as being made without yeast as there is most likely some wild yeast strains in your culture, but instead promote it as being made using only a sourdough for the dough leavening. Make DOUBLY, no, make that TRIPLY sure that you back up your starter in multiple remote locations to where you are storing the main starter at. Because starters are "natural" they are much like snow flakes in that no two are alike (if you find two alike save them as I would like to see them :). This way if one is lost you will have more of the same culture to seed/inoculate a new starter with, thus retaining the same flavor, aroma and performance characteristics. Sourdough starters are not just a way to leaven dough, they are almost an art form, which if not handled correctly can be lost (change of micro-flora) so be sure you have VERY SPECIFIC directions for feeding, maintaining and using your starter which should include ALL pertinent times and temperatures. Losing a starter at home is one thing but losing it in a pizzeria is a whole different animal. NOTE: DO NOT ALLOW ANY YEAST IN YOUR STORE....ANY! It just takes a very small amount of yeast in your starter to develop a whole different micro-flora. Be especially aware of any fruiting trees or even ornamental fruit trees (they also set fruit) in your area as they are rich sources of wild yeast (no your friend). The problems crop up in the fall as the fruit remains on the tree or on the ground and ferments and again in the spring as the last of the snow melts and exposes the fruit that was happily fermenting away last fall. When I worked at AIB I found that these were the two most troublesome times of the year for bakeries and pizzerias using sourdough starters as there was a continual stream of calls regarding issues with their starters.

Tom Lehmann/The Dough Doctor  
3489

**[New Forum Members / Re: looking for flour options in mexico](#)**

The bread flour (para pan) is the one you will want to use.

Tom Lehmann/The Dough Doctor  
3488

**[Shop Talk / Re: Recommend ovens! Switching from conveyor oven to Stonebaked](#)**

Take a look at the Marsal deck ovens which are now marketed by Middleby-Marshall. They're hard to beat. You can go to M-M or just Google "Marsal and Sons pizza ovens" to see their ovens and select something you might be interested in. Remember that you will also need to get a few short handle wood prep peels and some long handle metal blade oven peels as well as an oven rake/broom for periodically sweeping/cleaning the oven deck.

Note:

If you have an interest, Marsal ovens can also be had with a brick front so they look "old world".

Tom Lehmann/The Dough Doctor  
3487

**[Shop Talk / Re: Garlic knots technique?](#)**

Scale your dough into 50-gram pieces or whatever weight you want to use. (we scale them from our fermented dough balls) roll each dough piece (like a hot dog), sometimes a light spritz of water on the bench top helps to roll the dough. Form each piece like a hot dog, about the same diameter and same length or maybe a little longer, tie into a single overhand knot and place on a lightly oiled sheet pan to proof for about 20-minutes, par-bake until very light golden color, store at room temperature up to 3-days in a covered dough box. To use, remove what you need, place on a screen and reheat, immediately after you remove them from the oven dip in a commercial garlic flavored oil or butter oil, sprinkle with grated Parmesan and you're good to go.

Tom Lehmann/The Dough Doctor  
3486

### **Pizza Cheese / Re: Cheese Water Content Issue**

We always wrap the cheese in bar towels after removing it from the brine, after about 30-minutes the cheese is ready to use, others may do it differently but that's how we always did it.

Tom Lehmann/The Dough Doctor  
3485

### **Dough Clinic / Re: dough storage**

Everyone does it differently but here is how I usually do it, after mixing take the dough to the bench and scale it into desired weight pieces, form each piece into round balls, lightly oil each dough ball (any kind of oil will work), then drop the dough balls into individual plastic bags, they might be easier for you to get than dough boxes, pull the bag snugly to the dough ball and twist the open end of the bag to form a pony tail, tuck the pony tail under the dough ball as you place it into the fridge. Allow dough balls to cold ferment in the fridge for 48-hours, remove dough balls from fridge, and place at room temperature, allow the dough to warm AT room temperature for at least 2-hours or until the temperature of the dough balls reach 10C/50F, then turn the dough ball out of the bag onto a floured surface, dust the dough ball on all sides with flour and begin opening the dough ball into a skin by your preferred method, once the dough ball is opened into a skin, dress it with sauce or slices of fresh tomato and desired toppings, bake at the highest temperature you can get from your home oven (260C?)

Tom Lehmann/The Dough Doctor  
3484

### **Resources / Re: High Gluten Flour - Chicago**

Can you share with us your entire dough formulation and dough management procedure. Please be sure to provide all times and temperatures.

Tom Lehmann/The Dough Doctor  
3483

### **Dough Clinic / Re: dough storage**

Actually, the wood box does not conserve moisture in the dough but instead it manages the moisture in the dough helping to eliminate stickiness. The type of wood used is important as you don't want to impart a flavor from the wood like pine or cedar will. Maple or ash are good choices with ash being preferred. Once the box is built it will need to be sealed using mineral oil, don't forget to make a wood lid for the box too, but remember the box is going to take up quite a bit of space in your fridge. If your dough weights will be around 350-grams or less you will be able to get away using a box roughly 75-mm deep but if your dough weights

are more than this it is advisable to go with a box closer to 125-mm deep. As for spacing the dough balls in the box size the box to allow for about 50-mm spacing between the dough balls to allow room for dough expansion.

Tom Lehmann/The Dough Doctor  
3482

### **Dough Clinic / Re: dough storage**

Correct. I use Food Storage Bags that I bought at our local supermarket for a couple dollars for a roll of them. I've used reclaimed bread bags with great success too.

Tom Lehmann/The Dough Doctor  
3481

### **Pizza Cheese / Re: Cheese Water Content Issue**

Yes.

Tom Lehmann/The Dough Doctor  
3480

### **Dough Clinic / Re: dough storage**

Mineral oil, aka "white mineral oil" is used by bakeries world wide as a lubricant for their dough dividers and dough rounders as well as all automated bun equipment. It is also the oil of choice for treating/sealing wood bench tops. Since you will be using only a small quantity (less than 500-ml. you can almost always find it at your local pharmacy (people take it as a laxative). If you Google "mineral oil" you will see many options.

Tom Lehmann/The Dough Doctor  
3479

### **Dough Clinic / Re: No Yeast dough**

I don't know if it's still out there yet or not but there is the old Chef Boyardee pizza kits, just add water to the flour mixture to make the dough, spread it out into a pan, add the supplied sauce and your choice of toppings and bake...Hummm, fine dining! The flour mix was nothing less than the dough ingredients but instead of yeast it was leavened with SALP (sodium Aluminum Phosphate) a single acting chemical leavening which was fat encapsulated through the old Durkote fat encapsulation process. You can do something similar by using Calumet baking powder (a single acting baking powder based on SALP) which is mixed into a small amount of Crisco (DO NOT use butter or margarine as they contain water which will prematurely activate a portion of the chemical leavening thus reducing its effectiveness) The amounts of Calumet and Crisco to use are going to be equal WEIGHTS of each, you can blend them together using a fork. The amount to use will be between 2 and 4% of the total flour weight. This provides a finished crust flavor much better than that achieved when using common, double acting baking powder based on SAPP (sodium acid pyrophosphate), MCP (monocalcium phosphate) and soda.

Tom Lehmann/The Dough Doctor  
3478

### **Dough Clinic / Re: No Yeast dough**

For all practical purposes the yeast that we use in baking is all the same, that used in the brewing industry is of the same genus but it tolerates a slightly higher alcohol content.

Tom Lehmann/The Dough Doctor

**[American Style / Re: Press pizza](#)**

Presses create a cell structure that is more like that of bread than pizza which is open and porous, especially true with New York style pizzas. The porosity of the crumb structure has a significant influence on the mastication and crispiness characteristics of the finished crust. Yes, it is possible to achieve a more open crumb structure using a press but it is achieved by allowing the pressed skin time to proof/rise after pressing (much like we proof bread prior to baking), for that reason pressed dough skins are either pressed on an oiled pan (cold press) or placed onto an oiled pan (hot press) for proofing. There are some applications where presses are employed successfully such as in the fast casual concept and in making thick crust and pan style pizzas (the thick crust and pan style pizzas are allowed to proof for 45 to 70-minutes after pressing to achieve the desired finished crust height and crumb structure characteristics.. If you want to see what a cold press crust looks like just go to your local supermarket and buy a couple of frozen pizzas such as Tombstone and turn them over, if you see a series of concentric circles pressed into the bottom of the crust you are looking at a cold pressed crust, for a hot pressed crust look for Home Run Inn or even Digiorno's as they are formed using a hot press.

Tom Lehmann/The Dough Doctor

3476

**[Newbie Topics / Re: Big Question](#)**

While you can make a decent representation of an American style pizza using a press with a heated head, by far the best pizzas will be made by opening the dough into skins manually, this is how Domino's and Papa John's does it (possibly the two most visible American style pizzas on the international market). First you need to determine a location for your store (also known as a marketing region) then you need to study the pizza presently being marked in this area to determine what the people are looking for in pizza (be sure to visit some of the more successful pizzerias), then you will need to learn how to make pizzas and operate a business (sounds easy but it is the most difficult aspect of owning a pizzeria). Be prepared to give your 100%, maybe more, time to the store for at least 12-months to get it up and running while training a staff. Keep in mind that DELCO (delivery/carry out) pizzas are NEVER as good as a dine in pizza regardless of the ingredients used. And foremost, if you are a micro-manager, save your money, find something else to do as you will never make it in the restaurant business, micro-managers burn out in a year or two, losing their shop in the process. Train and delegate is what you want to do.

Tom Lehmann/The Dough Doctor

3475

**[Dough Clinic / Re: KASL vs AT?](#)**

New York state, much like California strongly discourages the use of any flour containing potassium bromate, this is why we don't see bromated flours being used or sold in these two specific states. Aside from that, unless you have some aversion to using bromated flour either bromated or non bromated AT flour will work just fine.

Tom Lehmann/The Dough Doctor

3474

**[General Pizza Making / Re: Storing Flour in a Plastic Barrel/Drum](#)**

Just a cautionary note here. Be sure to go back and revisit the posts regarding storage of flour. Flour should not be stored at room temperature for extended periods of time as it does change due to oxidation resulting in performance as well as potential flavor issues down the road. Additionally, you can also get infestation of your flour too. Any remaining insect eggs in the flour can/will eventually hatch resulting in a breeding population of beetles, the best way to address this potential issue is to freeze the flour for a minimum of 30-days, I use 2-months for my flour, prior to putting it into containers for room temperature/ambient storage. The extended freezing of the flour will kill any intact insect eggs that might be present. Once you have done this all you need to do is to make sure you are storing the flour in something that is approved for direct food contact (I use small plastic bags, both Zip-Lock and food storage) which I store in a couple of metal cans which once held a bunch of popped corn. Still, if you want the best quality flour store in under frozen or refrigerated conditions, we have held flour this way for a number of years without any significant change in performance. If you opt to store the flour at room temperature try to turn it over by 6-months if you can.

Tom Lehmann/The Dough Doctor  
3473

### **Dough Clinic / Re: Bake bread**

Most of the sourdough breads and rolls that we're accustomed to are allowed to rise for 8 to 12-hours after forming prior to baking which give the product greater volume/height, however a lot will depend upon the leavening strength of your sourdough starter too. You might try letting the bread proof longer (overnight) to see if that helps, if it doesn't you will need to experiment with greater amounts of your sourdough starter in combination with the overnight proofing.

Tom Lehmann/The Dough Doctor  
3472

### **Dough Clinic / Re: freezing flour**

Sure, Zip-Lock bags will work just fine. Cold flour is slower to absorb water than warm flour so you will want to bring it out of the freezer prior to using it. What I do is to use the freezer for long term storage (I've got some in there right now that I've had for 3-years) and then bring out a bag that I will use over the next several weeks, I like to remove it from the freezer the day prior to using it and then store the unused portion in the kitchen on the counter top.

Freezing flour DOES NOT change the dough absorption, it just alters the rate of dough absorption while it is cold.

Tom Lehmann/The Dough Doctor  
3471

### **Dough Clinic / Re: Bake bread**

Hey Mitch....I bet that's one good flavored bread!

You do it almost the exact same way that I do it too, except that I let the dough rise in the basement where it's cooler, generally around the mid 60's.

We like to slice it and have it with butter but my wife really favors it when used to make French toast. :)

Tom Lehmann/The Dough Doctor  
3470

### **New Forum Members / Re: looking for flour options in mexico**

Peter;  
The name of the mill is Molinera Del Valle, located in Mexicale, MX.

I've worked with them many time over the years, Ramon Sanchez was in our wedding party (32-years ago today). Cesar Gallego is the mill owner (may have retired by now). I used to do work for the mill with Cesar's father while Cesar was playing in the office (he was about 6-years old at the time. When his father retired Cesar took over operations of the mill.

They are also a major exporter of sesame seeds to the U.S. and they export their flour to the U.S. through San Diego.

Tom Lehmann/The Dough Doctor  
3469

### **Dough Clinic / Re: freezing flour**

Werty;

But don't forget that the flour is "hopefully" still in a sealed bag even after you remove it from the freezer. once the flour has warmed to room temperature you can remove it from the bag and place it into an open container if you wish as once at room temperature the flour will not develop condensation which will increase the moisture content of the flour, at least temporarily. Variance in how the dough feels can be due to a number of things such as scaling error, use of volumetric portions, yeast quality, failure to consistently maintain the desired/targeted finished dough temperature, failure to use the delayed oil addition mixing method and time/temperature variances encountered during the dough management. Any of these will impact the dough as you have described.

Tom Lehmann/The Dough Doctor  
3468

### **Dough Clinic / Re: freezing flour**

Werty;

You're making extra work for yourself, why not do as I do and add the water to the bowl first, then add the salt and sugar (no need to stir), then add the flour and the yeast on top of the flour and begin mixing, mix until you don't see any dry flour in the bowl and add the oil, mix one more minute at low speed to ensure the oil doesn't splash out and then finish mixing at the highest speed possible with your machine. If you insist upon putting the salt and sugar into a portion of the water and adding it later, go ahead, but there is no real advantage to doing so and there is a possibility of forgetting to add the salt and sugar.

Tom Lehmann/The Dough Doctor  
3467

### **General Pizza Making / Re: wooden box for dough**

Most pine that we get today is pretty smelly (pine sap/tar) and there is a possibility of this "piney" aroma being transferred to the dough, especially when the box is still new. This is why less aromatic woods are preferred. If you have some pine that doesn't smell like a pine forest go ahead and use it, just make sure you use plastic implements in the box to prevent gouging or splintering the wood as pine is pretty soft and easily damaged.

Tom Lehmann/The Dough Doctor  
3466

### **Off-Topic Foods / Re: Cold fermenting Bread dough**

Having dealt with refrigerated bread dough for use in in-store bakeries for a good number of years I have seen where bread is made when the shaped loaf is taken directly to the oven from the cooler/fridge. You generally do get better oven spring due to the colder dough baking more slowly, allowing more time for oven spring to

take place but the down side is usually in the crust setting up first and because bread dough is such a good insulator, the internal part of the loaf remains sufficiently cool to support yeast activity so now the crust has formed and set but the internal part of the loaf is still trying to expand and one of two things happen, either a large hole forms in the loaf making for a completely hollow loaf after baking or the internal pressure created by the fermenting yeast causes the crust to break and tear apart with the internal dough oozing out of the fractured crust much like lava oozing out of a fissure in the earth's crust, come to think about the mechanics are exactly the same...except for the yeast part. Additionally, because bread doughs are typically proofed to a much greater extent than pizza skins the bread doughs are much more subject to mechanical shock, this is where the loaf/dough will collapse in bumped or sometimes just placed into the oven, this is the reason why bread doughs are not fermented as long as pizza doughs. The larger the loaf the more dough response there is to mechanical shock, this is why we can make small bread type products from a long fermented dough but not a large type bread such as a pan bread or an Italian or Vienna loaf, round loaves owing to the arch support provided by the shape are the most resistant to mechanical shock but they are not immune to it.

Tom Lehmann/The Dough Doctor  
3465

### **Resources / Re: High Gluten Flour - Chicago**

From what I'm seeing in the pictures, both pizzas are somewhat under baked and the close cell structure would indicate that the doughs were under absorbed too. The bottom crust development appears to be marginal and the top crust color appears to be almost non-existent.

Baking platform is possibly too thin or maybe it wasn't sufficiently preheated? It's the top color that is the most problematic though, maybe baking the pizzas in a higher rack position in your oven will improve the top color characteristics. I believe the flavor issues you're seeing are related to this under baking issue.

Tom Lehmann/The Dough Doctor  
3464

### **Chitchat / Re: Can anyone help me find this shirt?!**

Looks to be a Caputo promo shirt, have you contacted them yet? If you plan on attending the Ohio Restaurant Assn. Pizza Show in February (Columbus, OH) you might visit with their rep, I'm sure they will have a booth there.

Tom Lehmann/The Dough Doctor  
3463

### **Dough Clinic / Re: Effect of water temperature on the gluten formation**

The colder water temperature will slightly inhibit/slow the gluten development so assuming the same mixing time for both doughs the dough made with the colder water will be SLIGHTLY less developed than the one made using the warmer water. There are a lot of contingencies to that statement though, if you mix both doughs for a longer time the difference will be diminished or non-existent where as if the doughs were mixed for a shorter time the difference might be more apparent.

Tom Lehmann/The Dough Doctor  
3462

### **Dough Clinic / Re: Yeast conversion question**

Steve;  
When changing from ADY to IDY you will use 20% (1/5th) less IDY than ADY.

Additionally, you do NOT need to suspend or activate the IDY in warm water as you do the ADY unless you are mixing the dough entirely by hand, in that case you will need to activate the IDY by suspending it in a small quantity of warm (95F) water prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
3461

**[Newbie Topics / Re: Multiple pies - keep warm?](#)**

Use pizza boxes with Pizza Savors or ripple sheets stack on on top of another to help retain heat (possibly cover with a heavy blanket) Moving blankets are reasonably priced and work well in this application. Definitely cover during transport. I think that's about as good as you'll get.

Tom Lehmann/The Dough Doctor  
3460

**[Dough Clinic / Re: Fairly new to pizza making, am I on the right track?](#)**

With the exception of adding some fresh basil and maybe some sliced garlic it sounds pretty good to me. As anyone who reads my posts will tell you I'm very partial to using slices of fresh tomato rather than sauce for dressing my skins.

Tom Lehmann/The Dough Doctor  
3459

**[Dough Clinic / Re: Biga](#)**

Peter and Craig are absolutely correct and to muddy the waters even more remember that any kind of "natural" pre-ferment using wild yeast as well as naturally occurring bacteria in the air of any specific locality can/will vary with the composition of the micro-flora present at the time the pre-ferment was made thus changing the entire flavor profile. To take it yet a step further, it is also entirely possible that a specific "natural" starter was purchased from some outside source which is being cultured and used by them. When a "natural" starter is purchased many times you can buy them like hot sauce with each one producing a different flavor in the finished/baked product. There are some "natural" starters which produce very acidic flavors while there are others which produce a more neutral or even sweet flavor. As a general rule, most "natural" starters do best in a room temperature/warmer environment as that is the type of environment from which they flourished in the wild, but it is also entirely possible to further culture the micro-flora so any which favor a cold environment will become more dominant and thus result in a starter which favors a cold environment....of course you would expect to see a flavor shift at the same time so that is also has to be part of the equation.

The good news though is that you can easily use a portion of any viable dough to seed/inoculate your own starter to make your own biga. Not knowing how the parent culture is being managed you would need to experiment with managing it at different temperatures to determine where it exhibits the most vigorous growth at which in all probability will be the temperature range at which it was cultured. The added benefit is also in knowing that you are working with the same or similar micro-flora which is a huge leap in the right direction. The only thing you need to watch for is the presence of bakers yeast in the dough, I've seen it done many times where the manufacturer will seed the dough with just a small amount of bakers yeast to preclude and further culturing of the micro-flora as the yeast will almost always take over and become the dominant micro-flora when further culturing is attempted. But then one cannot say 100% "natural" pre-ferment is used but I am not aware of any USDA regulations covering "natural" ferments so

anything goes in this arena.  
Tom Lehmann/The Dough Doctor  
3458

**New York Style / Re: Keep getting a line of just sauce on the rim, what's going on?**

Two things we used to teach our students to address this issue are 1) Apply the sauce very thin closer to the edge. 2) we used to say to assemble/dress the pizza much like a volcano with more cheese and toppings out towards the edge of the skin as the sauce and cheese flow inwards during baking thus bringing the toppings with them.

Tom Lehmann/The Dough Doctor  
3457

**Dough Clinic / Re: Bobs Red Mill Diastatic Malt**

In place of All Trumps? Doesn't make sense. Diastatic malt does not form gluten when mixed with water so you couldn't make a dough from it. Adding diastatic malt to the flour is a totally different story from using it in place of the flour. In that case the question is: was the All Trumps or Sir Lancelot flour already malted? What was the degree Lintner (Lintner Value) of the malt used? How much was used? How was the dough managed? All of these will impact the way the dough handles when malt is added to it.

Tom Lehmann/The Dough Doctor  
3456

**Shop Talk / Re: How to Power my electric oven?**

We have used generators to power electric air impingement ovens for a good number of years now, but there is no way I'd ever call any of those generators "portable" unless you have it on wheels to be pushed around. Check with the oven manufacturer to see what their power requirements are and then get a generator which will be able to CONTINUOUSLY provide that power and a bit more. Propane is a much better alternative but it has some issues associated with it, location of propane tank(s) with regard to your store, generators can usually be located closer to a building but MUST be in a well ventilated area. This is something you might want to discuss with the "codes" department.

Tom Lehmann/The Dough Doctor  
3455

**New York Style / Re: Keep getting a line of just sauce on the rim, what's going on?**

We have noticed that when spreading the sauce our students would naturally start in the middle of the skin and work outward pushing a ridge of sauce all the way out to the rim, it is this heavier ridge of sauce that promotes the cheese to "slip" that's what we called it at the time as the sauce was acting as a lubricant allowing the cheese to slide inward as the edge of the crust was rising during oven spring. When using a Spoodle to spread the sauce we had our students flatten the Spoodle onto the skin so the flat bottom was in near full contact with the skin, this prevented the ridge of sauce from forming and allowed for a very thin layer of sauce out towards the edge of the skin which significantly helped to control the issue. Taking it a step further, if you don't sauce the edge at all the problem doesn't occur, and if you put too much sauce on the pizza the cheese seems to be very fluid during baking in that it moves around with the slightest provocation.

Tom Lehmann/The Dough Doctor

3454

**Shop Talk / Re: Mixer recommendation**

If you're planning to mix only dough there has recently been some discussion here on a small size spiral mixer that is priced right and might be a better option than any of those listed...just something to explore.

Tom Lehmann/The Dough Doctor  
3453

**Shop Talk / Re: How to Power my electric oven?**

You will be baking at 500 to 550F/260 to 288C. Just make doubly sure that your generator can provide the necessary power. Most generators are rated at "peak" power aka "starting power" and then there is the continuous power rating, this is the one you're interested in.

Tom Lehmann/The Dough Doctor  
3452

**Shop Talk / Re: Mixer recommendation**

Renchero;  
If you can't find it ask Peter to see if he can locate it for you, he works magic when it comes to locating stuff! It's in a very recent posting so it shouldn't be too difficult to find.

Tom Lehmann/The Dough Doctor  
3451

**Shop Talk / Re: How to Power my electric oven?**

You can contact some of the distributors or go through an import-export broker. You purchase, have it shipped to the broker (U.S. side) and they ship either directly to you or a broker in the U.K. for your pick-up. I don't know about import duties on oven in the U.K. so you will want to look into that first. If there are none you can also pay someone here in the U.S. to buy the oven and ship it directly to you. Look at your options first.

Tom Lehmann/The Dough Doctor  
3450

**Dough Clinic / Re: Predicted progress to completion via Raspberry Pi**

The biggest factor in determining how long it will take to either cool or warm a dough ball is the density of the dough ball. Dough balls that are formed from fermented dough or which are allowed to ferment prior to being placed in the fridge will be less dense than dough taken directly from the mixer, balled and placed into the fridge.

By the way, we target 40 or 45F as the temperature to look for when placing the dough balls into the fridge. 40F is typically used when we are looking for a longer refrigerated shelf life and 45F is used when we are targeting 2 to 3-days shelf life. Your 3-hour finding is very close to what our findings were. We typically recommend 2 to 2.5-hours (75 to 78F dough temperature/dough ball weight 16-ounces and less) for the dough to reach 45F, add another hour to the time for dough ball weights in the 17 to 24-ounce range. Of course dough ball weight does have an influence on how long the actual time will be for the dough ball to reach 40 or 45F so times will vary with weight too, additionally, the shape of the dough piece will impact the cooling/warming time too, a round ball is the most inefficient shape to cool or warm but if you flatten the dough piece into a puck-like shape it will cool/warm more efficiently due to the reduced distance to the core/center of the

dough piece. Soooo many things to consider.

Tom Lehmann/The Dough Doctor

3449

### **Dough Clinic / Re: graduated cylinder**

Werty;

The only thing you can show using the graduated cylinder are differences in dough response/fermentation rate due to variances in yeast or other ingredients such as salt, sugar, pH, etc.

Tom Lehmann/The Dough Doctor

3448

### **Dough Clinic / Re: Crispy Bottom?**

A puddle under the pizza when placed on a cooling rack? Was it water or oil? Do you remove the pizza from the pan IMMEDIATELY upon removal from the oven? A 20-minute bake time in a dark colored pan, even at 450 - 460F should be plenty to achieve a sufficiently thick bottom crust on your pizza. Getting back to that puddle.....there is no way your pizza crust should be giving up water like that so maybe it's coming from the sauce or toppings. Make another pizza but this time with about 1/2 of your normal amount of sauce and make it a cheese pizza only and let's see what happens after baking. If you find that the puddle is fat/oil it is possible that your cheese might be breaking down during the long bake time and oiling out resulting in an oil soaked pizza.

Tom Lehmann/The Dough Doctor

3447

### **Dough Clinic / Re: Crispy Bottom?**

How high is the pizza off of the counter top when it is being cooled for a couple of minutes prior to slicing? A cold counter top (quarts or granite) and a hot pizza just above the counter top will allow steam to condense on the counter top. Try placing a piece of corrugated cardboard under the cooling rack to see if you still get the puddle. The cardboard will insulate the pizza from the counter top thus addressing the condensation issue, but if you still get a puddle under the pizza it most likely isn't due to condensation. I just can't believe at this time that changing the baking time and/or temperature would be the solution.

Tom Lehmann/The Dough Doctor

3446

### **New Forum Members / Re: Pizza Making**

Istanbul used to be my favorite city for regional meetings when I was on the McDonalds International Task Force. I also did a fair amount of pizza work there too.

Welcome to the site!

Tom Lehmann/The Dough Doctor

3445

### **Prep Equipment / Re: Hobart A200 Auction**

It's a steal at that price! Sell the dough hook AKA "J" Hook for scrap and buy a decent reverse spiral dough arm. Might see if you can sell the wire whips too and get yourself a flat beater AKA paddle for mixing sauce.

Tom Lehmann/The Dough Doctor

3444

## **Dough Clinic / Re: graduated cylinder**

Due to the shape of the cylinder and increased support it offers to the dough you cannot accurately assess fermentation (aside from rate of fermentation) using a graduated cylinder as discussed.

Tom Lehmann/The Dough Doctor  
3443

## **Prep Equipment / Re: Hobart A200 Auction**

Barry;

One other thing.....BE SURE TO BOLT IN DOWN!!!!!

The A-120 and A/AS/AST-200 are all top heavy and have a propensity to walk off of bench tops unless securely bolted down. There are provisions for bolting them down on the underside of the legs.

At AIB there are at least two mixers with damaged attachment hubs from when they walked off of the bench top while the students were using them. If for any reason you cannot bolt it down at least use a bead of silicone adhesive under each leg to secure it to the bench/counter top. It ain't no K-5A so forget the portability aspect and secure it properly to protect your investment as well as your own safety. If you just gotta have it portable (which is understandable in a home installation) make a GOOD, STURDY rolling cart for it with locking wheels BUT BE SURE the cart is AT LEAST a foot wider than the mixer in all dimensions to provide the stable platform needed, or the mixer will take the stand with it when it does a dive for the floor. The most popular place to put one of these mixes at home is in the garage on a well supported bench, a friend of mine has his installed there and it works out great, he scales ingredients in the kitchen right into the bowl, then takes it out to the garage to mix the dough and brings it back into the house when finished mixing to further process the dough, after washing the bowl he covers the mixer with a large plastic trash bag until the next time he uses it.

If your mixer has a tin plated bowl as opposed to a stainless steel bowl BE SURE to wipe the inside of the bowl with a little mineral oil after each use to prevent rusting. When you get your reverse spiral dough arm you will most likely need to re-adjust the agitator to bowl clearance. Failure to do this can result in a couple of issues, 1) It can damage the dough arm as it slams into the bowl. 2) It can damage the bowl (dent it) due to the agitator hitting the bowl. 3) It will significantly impact the way the dough mixes/develops. The procedure has been discussed in previous posts.

Tom Lehmann/The Dough Doctor  
3442

## **Dough Clinic / Re: graduated cylinder**

A bowl 8 to 10-inches across the top can be used to determine the time for the first full rise with relative accuracy.

Tom Lehmann/The Dough Doctor  
3441

## **Prep Equipment / Re: Hobart A200 Auction**

Barry;

Anything under \$1,000.00 is a very good deal on that mixer if it is in decent condition. In my opinion, anything at or under \$750.00 would be a great deal. Remember, you're going to pay at least \$400.00 for a "stocking stuffer" (that's what my friend Big Dave used to call them) home type mixer which is no where the mixer that the A-200 is.

Tom Lehmann/The Dough Doctor

3440

**[New Forum Members / Re: Pizza Making](#)**

When you say "Can pizza dough be treated same as Baguettes or any other specialty bread?" Exactly what do you mean? Are you asking if pizza dough is made like the dough for breads? Just need a little clarification.

You came to the right place for pizza dough formulas/recipes. Just let us know what kind of pizza you want to make and maybe tell us something about how you plan to mix the dough, your oven, and something about your ingredients that you have available to you.

Tom Lehmann/The Dough Doctor  
3439

**[Neapolitan Style / Re: Split leoparding pattern](#)**

When short baking times are employed the temperature of the dough can have a significant impact on how it bakes. I'd say your reasoning is spot-on.

Tom Lehmann/The Dough Doctor  
3438

**[Dough Clinic / Re: Weak in the middle](#)**

Jr07;

Can you provide any pictures of your pizzas? It sounds a lot like you are stretching the center of your skins to thin but pics would help to verify if this is indeed the problem or if it might be something else.

Tom Lehmann/The Dough Doctor  
3437

**[Newbie Topics / Re: Frustrating.... Just can't seem to get the dough right](#)**

We really need to see your dough formula and complete dough management procedure to determine what might be wrong. Your fermentation time seems to be OK so based on sheer speculation I'm guessing one of the following:

Yeast level too low.

ADY now correctly activated.

Dough temperature too low.

Not allowing dough to come to 60F before rolling it out.

As you can see, lots of speculation but once we see your dough formula and dough management procedure we can narrow it down considerably.

Tom Lehmann/The Dough Doctor  
3436

**[Newbie Topics / Re: Frustrating.... Just can't seem to get the dough right](#)**

Easy E;

I think your dough needs more fermentation. Try this: Scale the dough into desired weight pieces and ball, oil each dough ball place each piece into individual plastic food bags (not Zip-Lock) twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it into the fridge. Allow the dough balls to ferment for 24 to 48-hours. To use, remove dough ball(s) from fridge, allow to warm to 60F, then turn the dough ball out of the bag onto a floured surface, do this by pulling the bag down around the dough ball and then invert the bag allowing the dough ball to invert the bag as it falls from the bag. Open the dough ball into a skin by your usual method.

By the way: No need to cook the sauce, cooking just reduces the flavor of the sauce. The sauce will be heated/cooked during the baking of the pizza.

Try one dough ball at 24-hours and the other one at 48-hours and let us know if this reduces the dough memory/snap-back you are presently experiencing.

Tom Lehmann/The Dough Doctor  
3435

### [\*\*General Pizza Making / Re: New Haven apizza\*\*](#)

Florida9;  
Welcome to the board!

I've always looked at a New Haven pizza as a New York style pizza but with a crispy crust. I make them in essentially the same manner but adjust the baking slightly to give me the characteristic crispy crust.

Tom Lehmann/The Dough Doctor  
3434

### [\*\*Chitchat / Re: How do Pizza Judges Judge Pizza\*\*](#)

I've been on the judging panel a number of times at Pizza Expo, we are given a list of criteria to judge for such as appearance, bake, presentation, balance of toppings, taste and aroma, crust characteristics as well as correctness of the pizza to the type being judged at the moment, I've probably missed a few but these were the ones I could think of at the moment. The judges are also provided with descriptors for each type of pizza being judged and the pizzas are judged against those descriptors. The results are averaged for all of the judges on the panel for each type of pizza to determine the winner of each class. We are not to let our personal preferences influence our scoring.

Tom Lehmann/The Dough Doctor  
3433

### [\*\*Dough Clinic / Re: Factors that cause dough strength\*\*](#)

Higher protein content flour..the higher the better.

No fermentation.

Dough mixer to full gluten development

5% salt.

Optimum absorption for the flour.

If you plan to use the dough for a crust:

Higher protein content flour.

Limited fermentation (about 6-hours)

Dough mixer to near full development.

2.5% salt.

Optimum absorption for the flour, maybe a little more...

We used to open a 16-ounce dough ball to approximately 36-inches in diameter without it tearing.

It also helps a lot to know how to coax the dough out that far too.

There have been some competitions to see who could open a fixed amount of dough to the largest diameter.

Tom Lehmann/The Dough Doctor  
3432

### [\*\*New York Style / Re: Work surface question\*\*](#)

The two BEST surfaces for working with dough are wood and stainless steel.

Tom Lehmann/The Dough Doctor  
3431

**[Dough Clinic / Re: Weak in the middle](#)**

You use the word "collapse" and when I hear this word in conjunction with a pizza crust it is indicative of a crust that has "collapsed" after baking. The center of a pizza is the last part to bake and if not baked properly it WILL collapse upon removal from the oven. To address this try baking longer (this might mean baking at a lower temperature too) and pay attention to how you are dressing the skin, DO NOT dump the toppings into the middle of the skin and spread them around, instead, dress the skin so the toppings are a little heavier out towards the rim/edge of the pizza and sparse in the center, as the pizza bakes the toppings will flow to the center. This allows for the center to be better baked, all things equal. Too much toppings or sauce can also contribute to the problem. This is where the pics come into play as it allows us to see what the pizza actually looks like so we can more accurately determine what the cause is, once we know what the cause of the problem is it's pretty straight forward to figure out how best to address the problem.

Tom Lehmann/The Dough Doctor  
3430

**[New Forum Members / Re: deep dish pizza](#)**

Please tell us about your oven and the pans which you have to bake them in.  
Tom Lehmann/The Dough Doctor  
3429

**[General Pizza Making / Re: Beer Pies \(pies that make you want to drink beer - a.k.a. bar pies revisited\)](#)**

If you really want to make pizzas that will give you a thirst for beer or anything else for that matter, make your pizzas with L-cysteine (PZ-44) to provide about 90-ppm (parts per million) of L-cysteine. This will relate to about 2% PZ-44. The L-cysteine, in addition to being a reducing agent to reduce dough development time substantially, contributes to a feeling on the lips which mimics thirst. That is how Tombstone pizza got its start.

Tom Lehmann/The Dough Doctor  
3428

**[Dough Clinic / Re: Problems with even cooking](#)**

It's generally not advised to mix the dough to a specific temperature as the best pizza doughs are significantly under mixed. Instead, adjust the water temperature to give you a dough coming off of the mixer at not more than 70 to 75F while mixing the dough JUST until it begins to take on a smooth appearance. More mixing than this is not needed. Your dough temperature may be too high for the long cold ferment in a home fridge so the lower dough temperature may help if the problem is due to over fermented dough. Did you allow sufficient time for the oven deck to become fully heat saturated? If the bricks were not fully saturated placing a pizza skin onto them will quickly reduce the temperature of the bricks resulting in poor bottom baking properties.

Can you provide any pictures of the top and bottom of your pizza?  
Tom Lehmann/The Dough Doctor  
3427

**[Dough Clinic / Re: Unrefrigerated Dough for 24 hours](#)**

If you are asking "Is it safe to use?" The answer is yes, if you are asking "Will it make the pizza I am trying to make?" The answer is maybe, the only sure way to find out is to actually make the pizza. Many time our mistakes taste as good as our successes. :)

Tom Lehmann/The Dough Doctor  
3426

### **Newbie Topics / Re: Dough Tears**

If your finished crust is a bit too chewy your best bet is to ferment the dough longer or use the same fermentation time but increase the yeast level slightly. With a good, strong flour I personally think 24-hours fermentation in the fridge is about the minimum time needed, I normally figure on 36 to 48-hours as the "sweet spot" for my fermentation time. Try to target for 75F/24C finished dough temperature, and after the fermentation period bring the dough out of the fridge and allow it to warm until the core temperature of your dough ball(s) reaches a minimum of 50F/10C, I have been using 55 to 60F/12.7 to 15.5C lately with good success when making pizza at home. When in a pizzeria I still use 50F/10C though.

Tom Lehmann/The Dough Doctor  
3425

### **Shop Talk / Re: Equipment for new business?**

Strange that I should have just opened this question and I just recently submitted a Dough doctor Article for Pizza Today Magazine on exactly the same topic.

DELCO (delivery carry-out) pizzas take a terrible beating form being literally steamed in the box during the period between store and home.

In my opinion, anything gained be using a wood fired oven, or baking at thigh temperatures is totally lost once the pizza goes into the box or goes into DELCO. Air impingement ovens rule supreme in this arena as they offer excellent moisture control on the finished pizza making for a drier pizza to start with which CAN possibly result in a better customer experience once the pizza arrives at the customer's home. With that said, IF your customers have access to a pizza stone AND they re-freshen the pizza using the stone once they get the pizza to their home they CAN have a better experience with a pizza of the type which you describe. Even without a pizza stone a bit of consumer education will go a long ways in making your pizzas all that much better in the eyes of your customers. How to get pizza stones into the hands of your customers? Give them one for free.....well, not exactly free. Have on hand a supply of pizza stones, here's the offer, buy a pizza stone for (\$10.00/your cost or whatever it is) and get \$1.00 off on each of your next ten pizza purchases, or make it \$2.00 off on each of the next five pizza purchases....you see the picture. They will buy the stone, hopefully they'll use it (be sure to provide directions for YOUR pizzas) and then at \$2.00 off on each of their next five pizza purchases they will come back to you for their pizzas, hopefully you can get them "hooked" on your pizzas with five purchases.

Tom Lehmann/The Dough Doctor  
3424

### **Newbie Topics / Re: Dough balls spreading**

Randy;

The reason why you see dough balls made from frozen dough as being softer than dough balls not made from frozen dough is because of the L-cysteine added to the frozen dough to allow for complete gluten development at low dough temperatures (65 to 70F) required to make commercial frozen dough. Additionally, some of the yeast is damaged due to the freezing process and temperature abuse which

naturally occurs between manufacture and use of the frozen dough, the damaged yeast releases glutathione which is very much like L-cysteine (a reducing agent used to make the dough softer and weaken (mellow) the gluten structure. This glutathione is the same glutathione that is present as the active ingredient in "Dead Yeast" used to soften dough and reduce dough memory (snap-back).

Tom Lehmann/The Dough Doctor  
3423

**[Stones/tiles/steel, Pans & Accessories / Re: How to avoid gunking up cast-iron Dutch oven](#)**

After you get it seasoned just don't wash (soak) it in water as this will result in the seasoning lifting off. If you need to wash it do so using a soft plastic bristle brush, immediately followed by a rinse and IMMEDIATE wipe to dry and then heat it to force dry.

Tom Lehmann/The Dough Doctor  
3422

**[Newbie Topics / Re: Can I keep dough in the fridge for 4 days?](#)**

You will also need to add salt to your dough formulation. A good number would be 2%. I would also suggest keeping your finished dough temperature in the 70 to 75F range and plastic bag the dough balls. If you plan on using containers lightly oil the containers and allow the dough to cool in the fridge for about 2-hours before applying the lids (make sure you allow for pressure release by putting a small hole in the lid(s) ) and you should be good to go.

Tom Lehmann/The Dough Doctor  
3421

**[Dough Clinic / Re: Inconsistent results with RT/CF](#)**

Let's look at bulk fermenting the dough v/s dough ball fermentation. In a home setting I'm convinced that there is no such thing as "bulk" fermentation unless you're using something to the magnitude of 5-pounds or more flour to make your dough. Bulk fermentation is indeed different BUT you need to have sufficient dough mass to truly have bulk fermentation, anything less than that is just dough ball fermentation in my books. When using a combination of CF and RF my findings are that the RF provides the dominant flavor profile to the finished crust, meaning that the CF is providing a convenience more than anything else. Yes, there is continued flavor development but the flavor is not the same as 100% CF. The reason for this is due to the MUCH greater microbiological activity in the dough at RT.

As to the slimy dough, I'm putting my money on gluten destruction either due to enzyme activity or acids formed during fermentation. When we're dealing with very long fermentation times the finished dough temperature plays a MUCH more critical role in determining how the dough performs at the end of the fermentation period. Remember, we're dealing with microbiological activity so a change of even just a couple degrees F. can have a rather dramatic impact when projected out over 4 or 5-days, and just because the dough goes into the fridge doesn't mean that it is actually being cooled. Due to heat of metabolism the yeast is generating heat (as much as 1 F. per hour) which further complicates things as a fermented or fermenting dough is changing in density (becoming less dense) which further insulates the dough (especially the core) from any loss of temperature. This is why I do not recommend doing a RF prior to CF, it's a crap shoot as to what you'll have going into the CF period (even re-balling really doesn't help any in this regard). If you want to work with a combination of CF and RF my advice is to do the CF first followed by the RF and I think you will achieve more consistent end results as long

as you do your part at achieving a consistent (targeted) finished dough temperature.

Tom Lehmann/The Dough Doctor  
3420

### **Dough Clinic / Re: Inconsistent results with RT/CF**

You certainly want to control the temperature of the poolish, keeping it constant. As for using ice water in the dough, you only need to adjust the water temperature to give you your desired/targeted finished dough temperature (70 to 75F?).

Immediately after mixing scale and form the dough balls, done right this will also serve as some stretching and folding., and place into lightly oiled containers (the oil is to aid in the removal of the dough from the containers (once you see what biochemical gluten development does for you you will question the need to knead the dough). When I mix my dough by hand, which is pretty common as I seldom ever use a mixer, I just mix the dough using a wood spoon and then turn out of the bowl onto a lightly floured surface and then proceed to knead the dough a few times just to get it more cohesive, I then scale and ball it, oil the dough balls and drop into individual plastic bags, twist the open end to form a pony tail, tuck the pony tail under the dough ball as I place it into the fridge and kiss it goodnight. I usually use the dough after 24 or 48-hours. To use the dough just remove from the fridge and place on the counter top, allow to rest in this manner for 90-minutes, then strip the dough ball(s) out of the bag(s) allowing the dough ball to fall onto a floured surface, turn the dough piece over to get the entire piece floured and begin opening the dough into a skin.

If you wanted to give the dough additional RF, instead of dropping the dough ball onto a floured surface you would just allow it to fall into a lightly oiled bowl of sufficient size and allow it to continue fermenting at room temperature for whatever period of time you elect to incorporate into your dough management procedure (I like to lightly oil a piece of foil to cover the bowl in which the dough ball is fermenting) just LIGHTLY crimp the foil over the bowl and you're good to go. When the RF is completed just invert the bowl over a floured surface allowing the dough to fall whit a pleasing "plop", then turn the dough piece over so it's completely floured and begin opening it into a skin.

Tom Lehmann/The Dough Doctor  
3419

### **Dough Clinic / Re: no raise**

7C is actually too low to see much, if any, yeast activity (it's the temperature of the fridge), whereas 22 to 24C is the temperature at which we typically mix our doughs to so we get much better yeast activity at that temperature. Additionally, 3% salt with 0.16% IDY is most likely exhibiting a suppressing effect upon yeast activity, especially at 7C/44F.

Tom Lehmann/The Dough Doctor  
3418

### **Dough Clinic / Re: Inconsistent results with RT/CF**

What's a few hours out of several days? :)

Shouldn't hurt at all.

Tom Lehmann/The Dough Doctor  
3417

### **Dough Clinic / Re: Inconsistent results with RT/CF**

Many times that roughness will come out with fermentation time, but even then, I

like to mix the dough a bit longer, just enough to smooth it out.

Tom Lehmann/The Dough Doctor

3416

**[Stones/tiles/steel, Pans & Accessories / Re: How to avoid gunking up cast-iron Dutch oven](#)**

When I was a kid I remember washing the cast iron frying pan.....just once!!! Let me say that my mother was NOT a happy camper! She ended the episode by giving me firm and easily understood (even by me) instructions on how to clean that prized, well seasoned frying pan. In short, when you're finished using it allow it to cool a little and then just wipe it out with a clean towel or piece of newspaper. We always had plenty of newspaper laying around as it served double duty in the outhouse. Come to think of it, bacon/pork fat/lard was the main fat we had for cooking. As a kid, and even today, I think bliss is a piece of dark rye bread slathered with cooking lard (and I do mean "slathered") and then salted and consumed with a few garden fresh green onions :chef:

Tom Lehmann/The Dough Doctor

3415

**[Prep Equipment / Re: 24in; 1/2x48in; 1/2 stainless steel table help.](#)**

Just one...why haven't you bought it?????

It's a treasure and a steal at that price! Great for opening your dough balls into skins on, or use as a prep table.

I wish I found that at our thrift store! :)

Tom Lehmann/The Dough Doctor

3414

**[Newbie Topics / Re: Can I keep dough in the fridge for 4 days?](#)**

It all depends upon how well the dough is managed.

Tom Lehmann/The Dough Doctor

3413

**[Prep Equipment / Re: 24in; 1/2x48in; 1/2 stainless steel table help.](#)**

John;

If you should find that the top is too springy for your liking flip the table over and glue a piece (1/2 sheet) of 3/4 or 1" plywood to the underside of the top.

Tom Lehmann/The Dough Doctor

3412

**[Dough Clinic / Re: no raise](#)**

For a typical dough formulation made with 3% salt (too salty for me :( ) and 48 to 72-hours at 7C I would opt for 0.5% IDY. But depending upon the actual temperature of the fridge (they do vary) this might need to be adjusted by 0.1% in either direction. This is assuming the dough is properly managed too.

Tom Lehmann/The Dough Doctor

3411

**[Prep Equipment / Re: 24in; 1/2x48in; 1/2 stainless steel table help.](#)**

Aluminum or stainless steel flat stock 2.5 to 3-inches wide by 1/8-inch thick bolted to the edge should work well but might be expensive. A lower cost alternative might be a few pieces of Formica covered wood either screwed or glued onto the table would also work well and be a lot cheaper to boot. You could get fancy and make the back high enough to hold some of your tools or make shelves for dusting

flour, scrapers, cutters, etc.  
Tom Lehmann/The Dough Doctor  
3410

### **Shop Talk / Re: Number of decks?**

If it were me, I'd go with two of the large decks for the added capacity to accommodate future growth. You can leave one deck turned off if not needed. You will also be glad you have two decks when you begin getting special orders on top of those from your dine-in.

Tom Lehmann/The Dough Doctor  
3409

### **Shop Talk / Re: Relying on manager**

!0: Failure to adequately train the manager(s).

15: Owner's habit of micro-managing.

Tom Lehmann/The Dough Doctor  
3408

### **Shop Talk / Re: Relying on manager**

My personal belief is that you don't hire a manager, you train a qualified person for the position. If you are not delegating to a manager within the first year, in all probability you're not going to make it for five years and for sure you are going to be locked into 1 store, the second store will burn you out....three is out of the question. I have a very good friend who has been in the pizzeria business for 10-years now, he has three stores which are all very successful. Did I fail to mention that he was getting away from the shop for a week or more a little over a year after he opened his first store, now he steps out whenever he feels the urge unless there is some dire issue he has to address at one of his stores, in fact right now he is in NYC getting ready to run in the marathon tomorrow.

Tom Lehmann/The Dough Doctor  
3407

### **Dough Clinic / Re: Bread Proofer Cabinet**

Andy:

If you use a walk-in cooler or even a reach-in cooler all you will need to do is to work at maintaining a CONSTANT finished dough temperature throughout the year. I don't know of any pizzeria that changes its dough formulation to accommodate seasonal changes in temperature. At one time we used to see them changing the amount of yeast used but anymore the only adjustment they make is to the water temperature which is adjusted accordingly to give a finished dough temperature which is CONSTANT throughout the year. Most pizzerias target a finished dough temperature in the 75 to 80F range when they are planning to use the dough within a 24 to 48-hour period after mixing.

Procedure:

Mix.

Immediately scale and ball.

Place into dough boxes.

Lightly oil the top of the dough balls.

Cross-stack in the cooler walk-in or off-set stack in a reach-in cooler.

Depending upon dough ball weight cross-stack time will range from 2 to 4-hours.

Down-stack and kiss the dough goodnight.

To use the dough, remove from cooler and allow to warm until the CORE temperature of the dough balls reaches 50F.

Dough can be used over the next 3-hours.

Tom Lehmann/The Dough Doctor

3406

### **Sicilian Style / Re: Looking for light and airy.....help**

After pressing the dough out into the pan set it aside to rise (proof) for 45 to 60-minutes. A temperature humidity controlled cabinet (proofer) operating at 95F and 85% R.H. is best but many times I've used a wire tree rack to hold the pans and cover with a food contact approved plastic bag to retain humidity thus preventing drying during the proofing stage. Once the dough has proofed and is about 1-inch thick, par-bake in a deck oven placing the pan on a pizza screen to hold it up off of the deck. Baking temperature should be between 400 and 425F. Bake time will be right around 5-minutes. As soon as the crust is sufficiently par-baked immediately remove it from the pan and place it onto a pizza screen for cooling. If you should see what appears to be oil spots in the par-baked crusts, these are NOT oil spots, they are areas of dough collapse due to insufficient baking, meaning that you will need to bake your par-baked crusts a little longer.

Tom Lehmann/The Dough Doctor

3405

### **Dough Clinic / Re: Pizza oven question**

How thick is the deck material?

Tom Lehmann/The Dough Doctor

3404

### **Dough Clinic / Re: Inconsistent results with RT/CF**

Actually, quite a bit is happening during the CF period, it may not look like it but bacteria is thriving and acids are degrading the proteins both of which are major flavor contributors. Is it possible that the flavor you are looking for is due entirely to either CF or RF? An easy way to find out. Make several dough balls form a single dough (finished dough temperature 75F) ball, oil and bag the dough balls and place in the fridge, allow to CF for 48, 96 and 120-hours. Test one dough ball at each time interval to see if you like the flavor profile being developed. Then repeat using RF for 24 and 48-hours to see if you like that flavor profile. Fine tune the CF or RF to optimize handling and flavor characteristics. Whichever one you like begin incorporating some CF or RF into the procedure and monitor the flavor as it develops with an increase in time.

Tom Lehmann/The Dough Doctor

3403

### **Sicilian Style / Re: Looking for light and airy.....help**

Three days, four at the max (mold development is the issue here). Best way to store them is at room temperature. Allow to cool thoroughly, plastic bag and store as you would a loaf of bread.

Tom Lehmann/The Dough Doctor

3402

### **Dough Clinic / Re: Inconsistent results with RT/CF**

JPB:

But remember the poolish is a constant so the RF and CF are the test variables which really set the stage for flavor development several days out.

Tom Lehmann/The Dough Doctor

3401

## [\*\*Sicilian Style / Re: Looking for light and airy.....help\*\*](#)

It's only really needed for the thin crust types which have a propensity to cross the line from pizza into pita. Thick crust and pan style typically does not need the sauce application or docking if the dough has been fermented properly. I do like to invert the par-baked crusts though immediately after baking for cooling as this helps to flatten the top making for a better final presentation.

Tom Lehmann/The Dough Doctor

3400

## [\*\*Dough Clinic / Re: no raise\*\*](#)

Werty20;

With 0.3% IDY and 24-hours at room temperature with an 80F finished dough temperature and NO RISE your yeast is "kaput". Freezing bad yeast won't make it any better. To save unused IDY, leave it in the original bag, roll the bag down tightly onto the yeast and secure with a rubber band and store at room temperature.

Tom Lehmann/The Dough Doctor

3399

## [\*\*Sicilian Style / Re: Looking for light and airy.....help\*\*](#)

Jeff;

As long as the dough doesn't collapse due to fermentation or during baking the protein content is OK with that said, the higher the flour protein content the greater the POTENTIAL crispiness of the finished crust....but keep in mind with thick and pan style crusts the higher the protein content the tougher/more chewy the finished crust will be with a single baked pizza, however with a par-baked crust the good news is that the impact of the higher protein flour is only minimal on the finished crust with regard to chewiness/toughness.

Tom Lehmann/The Dough Doctor

3398

## [\*\*Dough Clinic / Re: 80 degree end mixing temp\*\*](#)

The finished dough temperature is a reflection of the dough management procedure being used. You are correct in that the higher the temperature the more rapidly fermentation will progress and a lower finished dough temperature slows/retards the rate of fermentation.

If you were to use a 60F finished dough temperature and manage the dough properly you would find that there was insufficient fermentation to make a decent pizza after 24-hours and only marginal after 48-hours but you would begin to see better results after 3-days with a "sweet spot" at 4 or 5-days. With a 75 to 80F finished dough temperature and effective dough management the dough should be "just" ready to begin using after 24-hours with a "sweet spot" at 48-hours and a useful life of 72-hours. So, it all depends upon what you are looking for and how you are managing your dough. Of course if you have a high yeast level or low salt level or poor dough management practices a colder dough temperature will always be a good default temperature option.

Tom Lehmann/The Dough Doctor

3397

## [\*\*Dough Clinic / Re: no raise\*\*](#)

Your finished dough temperature was 80F, what was at 7C (44.6F)? Is this the temperature of the cooler/fridge? Even then, after 24-hours you should be seeing

some increase in the size of the dough balls and the dough should open pretty easily. If the dough is tough and elastic when opening there is a problem with the yeast.

Tom Lehmann/The Dough Doctor  
3396

**[Dough Clinic / Re: Pizza oven question](#)**

Remember, if you go with a Marsal and Son's oven you do not need to add a gas pressure regulator as the oven already has one installed internally. If you add an external pressure regulator in addition to the on-board one the oven will not operate correctly.....that's the number one problem I've encountered with the Marsal ovens, NOBODY READS THE INSTRUCTIONS, otherwise it's one of my favorite ovens.

Tom Lehmann/The Dough Doctor  
3395

**[Pizza Ovens / Re: Looking for Built in countertop pizza oven - Wood](#)**

Built-in counter-top?  
Tom Lehmann/The Dough Doctor  
3394

**[Prep Equipment / Re: Pizza press.](#)**

It looks like an early model Dough-Pro hot press. Only the head is heated, the platten swings out for placement of the dough ball and removal of the pressed skin, the platten is not heated. Typically the head temperature is set at around 200F and a seven second dwell time is used. A very soft and extensible dough ball is needed to be pressed or it will snap-back as the head is raised. In some cases the use of a dough relaxer such as PZ-44 or "dead yeast/RS-190 is required to address the snap-back issue. The press produces its own unique finished crust characteristics, not like hand tossed/slapped/stretched, or sheeted.

While the hot press is typically used for thin type crusts it really shines when used to make thick crusts (thick skins) where the heat applied to the dough serves to help jump-start the yeast activity when the dough is panned and allowed to rise prior to dressing and baking.

Don't forget to oil the dough ball as well as the platten when using this type of press. The head is flat so it will produce any size skin up to the diameter of the platten. The adjustment on the top is used to adjust the desired thickness of the pressed skin. Pressed skins are almost universally docked after pressing (thin crust skins only), thick crust skins do not need docking if properly pressed.

There has been some previous discussion here on pressed crusts. I've also written on it in PMQ Magazine if you want to learn more about it.

Tom Lehmann/The Dough Doctor  
3393

**[Dough Clinic / Re: Dough formulation with Mexican flour](#)**

A "true" N.Y. style crust is made using All Trumps flour (14+% protein content) and the resulting crust IS somewhat tough/chewy so if you are looking for a more tender eating finished crust a lower protein content flour will work well for you. Adding vital wheat gluten will just make the finished crust tougher and more chewy. Your flour just as it is with 12+% protein content should work fine. Adding 1 or 2% sugar to the dough formulation will result in faster crust color development during baking but normally a longer baking time results in a more thorough bake and a more tender and crispy eating crust. N.Y. style crusts are not crispy, but

instead they are more on the tough and chewy side. You didn't mention anything about how you make your dough or how you manage the dough. Toughness is many times due to an under fermented dough. If you will share your dough making process and dough management procedure we can see if there is anything you can do to address the issue and achieve a more tender eating finished crust. Just for the record, I see that you are only using 0.5% compressed yeast, this is about 1/2 of where I normally see the compressed yeast level at when making a N.Y. style crust. If you have dough problems with higher yeast levels this might be due to a finished dough temperature that is too warm. For home baking we usually see a finished dough temperature in the 70 to 75F range combined with 2 to 3-days of cold fermentation. In a commercial pizzeria setting the finished dough temperature is usually in the 75 to 80F range combined with 1 to 2-days cold fermentation time.

Tom Lehmann/The Dough Doctor  
3392

### **Sauce Ingredients / Re: Whole Peeled Tomatoes - Puree vs Juice packing?**

The most flavorful part of the tomato is in the "velvet" which is located immediately under the skin, for this reason I only use unpeeled tomatoes for my sauce whenever possible as my default, but when I have the option I always elect to use fresh, ripe, whole tomatoes sliced sliced about 3/16-inch thick and placed on the skin instead of a traditional sauce resulting in superb flavor and texture not to mention appearance. But that's just me.

Tom Lehmann/The Dough Doctor  
3391

### **Pizza Ovens / Re: Looking for Built in countertop pizza oven - Wood**

So, not just a counter top oven but one that's rated to withstand the outdoor elements...right?

Tom Lehmann/The Dough Doctor  
3390

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Is it just me or do the dough "balls" look awfully flat? The dough might be a little over absorbed, I don't know if I could get my dough balls that flat or not. In any case, I'm betting that those thin dough "disks" or patties are being cooled too fast resulting in insufficient or less fermentation during the 20 to 22-hour CF period. Putting the dough into "balls" and placing into bread type bags (pulled snug but NOT tight to the dough ball) will slow the cooling rate of the dough and allow for more actual fermentation to take place during the 20 to 22-hour period of time. Within reason, the longer the dough is fermented, the more tender eating the finished crust will be.

Tom Lehmann/The Dough Doctor  
3389

### **Pizza Ovens / Re: Looking for Built in countertop pizza oven - Wood**

An interesting option is the Pizzarette (Home Depot) for under \$200.00, or the Waring WPO 500 for about \$900.00.

Some places you might want to peruse ovens at are: Restaurant Supply.com; Webstaurant Store.com; and Home Depot.com.

Tom Lehmann/The Dough Doctor  
3388

### **Dough Clinic / Re: Dough formulation with Mexican flour**

It looks like the bag might be too small for your dough balls, even then, it really isn't all that difficult to make a round skin from the dough balls you have shown, but if you're really into having a round dough ball after fermentation try using a round bowl with a round shape bottom (think Tupperware) and leave the containers uncovered for the first 3-hours in the fridge, then cover BUT be sure to put some kind of small hole into the lid(s) as a pressure release. Be sure to oil the dough balls prior to placing them into the bowls for easier removal.

Tom Lehmann/The Dough Doctor

3387

### **Newbie Topics / Re: Questions about raw sausage**

In Chicago the sausage is always added as raw sausage to both thin as well as deep-dish type pizzas. To do this you MUST bake the pizza sufficiently long to get the sausage completely cooked, this is done by baking the pizzas at 475 to 500F and this explains why thin crust pizzas have a 30-minute wait time and the pan style pizzas have a 40 to 45-minute wait time. If you feel the need to bake faster at a higher temperature you will need to use pre-cooked sausage or experiment with putting the sausage on the top of the pizza as the last topping ingredient.

Tom Lehmann/The Dough Doctor

3386

### **Sauce Ingredients / Re: Pizza sauce become incredibly thick overnight**

That's absolutely correct, the garlic and onion will cause the pectin in the tomato to gel resulting in the thickening which you are seeing. You can either add the onion and garlic at the time of serving or you can "nuke" the onion and garlic in some water and then add it to the sauce as you presently are. The heating of the onion and garlic to 180F or above will deactivate the enzymes responsible for the thickening. I usually tell people to heat the onion and garlic until it boils so you know for sure that you reached a minimum temperature of 180F. The heating process will also serve to release (pop) the flavors from the onion and garlic too.

Tom Lehmann/The Dough Doctor

3385

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Luis;

I would increase the fresh yeast/levadura fresca/compressed yeast to 1% as I think 0.5% may be too low. I looked at the information on the instant yeast that you provided but the use level of 11-grams per 250-grams of flour calculates at 4.4% while 11-grams per 500-grams flour works out to 2.2% both levels are significantly higher than what we typically see for IDY which is 40% of the fresh yeast level. I wouldn't let this keep me from testing with it though. If you can get a bag of it and provide us with the use directions (how to add it to the dough as well as how much to use when replacing levadura fresca we might be able to provide you with some insight in its use. Lacking that, I'd suggest starting at 1/2 (50%) of the amount of levadura fresca normally used (add it directly to the flour just as it comes out of the bag) and bench mark from there.

Tom Lehmann/The Dough Doctor

P.S.

When I was working in Mexico we had a brand of IDY called Montana...are you familiar with this? It may have been bought by another company and re-named.

TDD

3384

## **Dough Clinic / Re: Dough formulation with Mexican flour**

That's IDY, the constituent ingredients are correct and the suggested method for adding it is pretty correct too, I just don't understand the high recommended use level, but that might be due to a difference in activity or possibly they are trying to establish a use level based on what they have found consumers to be doing. In any case, start at 0.5% and see how that performs.

Tom Lehmann/The Dough Doctor

3383

## **Shop Talk / Re: new pizzeria advice**

Are you planning to include DELCO (delivery and carry-out) in your store concept? What kind of pizzas do your customers (anticipated customers) like, crispy, chewy, etc.? How many pizzas will you need to make to break even (estimate)? What we really need to know is what your store concept is, and if possible what kind of space will you have available (approximately), or will you be building a new structure from the ground up? With this information there are plenty of us here who can help you fill in the blank spaces.

Tom Lehmann/The Dough Doctor

3382

## **Newbie Topics / Re: Questions about raw sausage**

If you are using an air impingement oven there should not be an issue however if you are using a deck oven or a home oven you need to remove the larger pieces of sausage from a number of baked pizzas and pick them apart to make sure they are fully cooked, then you need to begin REDUCING the baking time in 30-second increments and do the same thing again until you find that the sausage is showing some pink (especially in the larger pieces), now, look at the pizza and ask yourself if the pizza is visually under baked. If it is you can now say, with a high level of assurance, that so long as the pizza is baked (as determined by appearance) the sausage is being fully cooked. The problem with home ovens is the great variability in how they bake pizza which is a function of oven design and how/where the pizzas are placed in the oven. This might seem like a lot of fuss over nothing but when you consider how many people get sick (those are the "lucky" ones) from eating improperly cooked ground meat every year you'll feel better about eating your pizzas after this little exercise.

Tom Lehmann/The Dough Doctor

3381

## **Shop Talk / Re: new pizzeria advice**

Stone hearth ovens as you are considering may not be your best option where carry-out is involved as the pizzas notoriously do not hold-up all that well when stuffed into a box. The air impingement ovens such as what Domino's used are much better suited to a DELCO application.

You really need to be talking to people to find out what they like as far as pizza is concerned, if you want to make something like a Domino's I'd suggest going with a conventional deck oven, if appearance is important to you they are available with a brick facade making them look a lot like a wood fired oven, or if this option is not available to you I'm betting that with a little ingenuity you can construct your own brick or tile facade to get the look you want. Just in case you're wondering...Domino's got their start using deck ovens.

Tom Lehmann/The Dough Doctor

3380

## [\*\*Shop Talk / Re: new pizzeria advice\*\*](#)

When properly set-up they will do a pretty decent Neo style pizza. The problem is that most operators using air impingement ovens are only interested in making "pizza", not a specific style, their only distinction is in the level of crispiness and thickness. You would be amazed at how few operators actually have a working concept of air impingement baking. That's one of the things that allows me to "keep the lights on".

Tom Lehmann/The Dough Doctor  
3379

## [\*\*Dough Clinic / Re: Yeast amount\*\*](#)

Joe;

Your dough formulation looks good as does the IDY. I suggest using between 0.375 and 0.5% for the IDY level in most of my pizza dough formulas. A couple of comments on the photo though that might shed some light on your last question. The crumb structure is quite close/dense, especially for a par-baked crust and it also appears that the bottom of the crust might be pretty dark. This might indicate that the dough is not being sufficiently proofed in the pan prior to baking, so you might try letting the dough proof for an additional 15-minutes to further open the crumb structure which will allow for a better bake both as a par-bake and when baked from raw as a pizza. The dark bottom crust color would indicate that the pizza is possibly being baked on a deck/stone surface which can result in short bake times further compounding the close/dense crumb structure issue mentioned above. Try baking both your pizzas and par-baked crusts with a pizza screen under the pan if this is the case or just place the pan directly on the oven rack without anything under it. The pizzas might also be baked at too high of an oven temperature or too low in the oven (where the pizza gets more bottom heat). Pan pizzas (made on a raw dough skin) are best baked at not more than 450F. Par-baked crusts are best baked at 400F to not more than 425F. In my home oven I find it necessary to bake the pizzas (on raw dough) for the better part of 20-minutes and move the pizza from a lower rack position to a middle rack position about half way through the baking cycle (whole pizza made on raw dough). When par-baking you can just place the proofed dough in a middle rack position and bake right on the rack or with a screen between the deck/stone and the pan. Keep in mind that these are only estimates as you will need to determine exact times and temperatures for your specific oven, pan color, pan weight/thickness and material. One final note: When baking your pizza using a par-baked crust do not bake on the deck/stone, bake in a center to slightly high rack position, and bake at 450F, the baking time will usually be around 10 to 12-minutes.

Let me know how this works for you.

Tom Lehmann/The Dough Doctor  
3378

## [\*\*Shop Talk / Re: new pizzeria advice\*\*](#)

All of the EarthStone ovens that I've had the opportunity to work with were great baking ovens. If you plan to use this type of an oven you might want to develop the habit of "doming" all of your pizzas for a few seconds just before removing them from the oven. The reason for this is to help dry off the top of the pizza which will be a critical aspect of having a decent carry-out pizza.

Tom Lehmann/The Dough Doctor  
3377

## [\*\*Dough Clinic / Re: graduated cylinder\*\*](#)

You can use it but it won't give you a very accurate idea of the first full rise time or how the dough performs with extended fermentation time. There must be some type of round cooking bowl at least twice that diameter??? 11-cm is just over 4-inches which is actually smaller than our cereal bowls. I don't know what you have available, but a pasta bowl ( 8.5"/21.5-cm diameter X 1.5"/ 3.75-cm high) would be close to perfect. The cost is very reasonable for one of these too, only about \$5.00 each is what we paid for ours.

Tom Lehmann/The Dough Doctor  
3376

## [\*\*Chicago Style / Re: Important Dates in Chicago Pizza History\*\*](#)

And don't forget October 8-10, 1871.....a lot of things got cooked during that time period in Chicago. :-D

Tom Lehmann/The Dough Doctor  
3375

## [\*\*Dough Clinic / Re: Flat pizza balls\*\*](#)

It might be the starter that's to fault. If the starter is more acid than usual the acidity will break-down the protein causing the dough to become more slack (softer) than usual which would allow the dough balls to flow out rather than hold their shape. Dough temperature? Amount of mixing? Any one of these will also have an impact of how well the dough ball holds its shape during the CF period. Try re-rounding the dough balls to see if that works, if it doesn't I'd be suspicious of the sourdough starter.

Tom Lehmann/The Dough Doctor  
3374

## [\*\*Prep Equipment / Re: Decent mixer suggestion for around 1000\\$ or under?\*\*](#)

Also, just recently there have been a number of posts on small size (counter top) spiral mixers which were VERY reasonably priced, might go back and check them out, I was impressed with them.

Tom Lehmann/The Dough Doctor  
3373

## [\*\*Starters/Sponges / Re: another cold fermented sour dough experiment\*\*](#)

Ditto! Not much not to like there!  
Tom Lehmann/The Dough Doctor  
3372

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Lloyd pan issue - help\*\*](#)

After thoroughly cleaning the pan oil it for the first two or three uses, after than use it as you normally would. Even Lloyds recommends that you wash the new pans and then oil it for the first use, afdter that there is no need to oil it for each use.  
Tom Lehmann/The Dough Doctor  
3371

## [\*\*Newbie Topics / Re: crust soggy wet and raw even after baking for double the amount of time.\*\*](#)

Dough weight? Dough temperature when you open it into a skin? Diameter?  
Thickness? You say you roll it out for as thick crust, do you allow the shaped skin to proof/rise prior to dressing and baking? If not, place the dough onto an oiled pan and tent it with a large bowl or piece of foil, allow it to proof/rise for a minimum of

30-minutes then dress and bake. (60-minutes might be better). An old trick that we use a lot of times when a LOT of toppings are used is to apply the toppings so they are VERY sparse in the center section of the pizza and heavier out towards the rim/edge, this will allow the center to get a better bake and as the pizza bakes the toppings will flow back into the center. When all is said and done though the pizza is still going to be "swampy" due to the overloading of the sauce and toppings. Those toppings are approximately 90% water and as the pizza bakes they release the water which drains down into the crust where it makes everything wet and soggy...sound familiar?

Like Mitch said, we really need more detailed information.

Tom Lehmann/The Dough Doctor  
3370

### **Dough Clinic / Re: Flat pizza balls**

Try to get a temperature of the dough immediately after mixing, if the temperature is above 80F that might be contributing to the problem, also how do you store the dough balls in the fridge? Plastic bag, bowl, box? Do you leave the container (except for the bag) open for a couple of hours or do you lid the container right away? This can have a significant impact upon the dough.

Tom Lehmann/The Dough Doctor  
3369

### **Dough Clinic / Re: graduated cylinder**

Same issue applies as with the graduated cylinder. When measuring fermentation first full rise is the bench mark that we look for as everything is based on FFR (it is a constant for any specific flour), so fermentation is always expressed as FFR plus or minus a specific period of time which when you add up the FFR and the +/- time you get the fermentation time that you see recommended for a specific product using a specific flour. To measure the FFR you don't need anything graduated, you just need a clock, but as stated previously, if you are wanting to only measure the RATE of fermentation then a graduated cylinder works fine.

Tom Lehmann/The Dough Doctor  
3368

### **Dough Clinic / Re: Flat pizza balls**

Are the dough pieces sticky when you first open the dough box?

Tom Lehmann/The Dough Doctor  
3367

### **Dough Clinic / Re: Flat pizza balls**

They're sticky because the dough boxes were covered right away (which is also the most likely reason why the dough balls are flattening out), instead of covering them right away, immediately after you place the dough balls into the box, wipe them with a little salad oil and place the box into the fridge UNCOVERED, this will allow the dough balls to cool much more efficiently and at a MUCH more consistent rate. After 3-hours place the lid on the box and you're good to go to whatever CF time you elect to use. To use the dough, remove from the fridge and leave in the covered box until the INTERNAL temperature of the dough balls reaches a minimum of 50F (55 to 60F works well in a home environment), then remove the dough balls from the box and open into skins by your preferred manner. A good finished/mixed dough temperature to target for is in the 70 to 75F range. This is achieved through adjustment of the temperature of the water that you are adding to the dough (usually a water temperature between 60 and 65F provides a finished dough in this

temperature range. Following this procedure you should find that the dough balls are not sticky and they will probably hold their shape much better too while providing more consistent crusts at the same time.

Tom Lehmann/The Dough Doctor  
3366

**[Dough Clinic / Re: Dough tears](#)**

Kinda hard to tell from the photo but it looks like it might have been due to the dough being too elastic, that dough just doesn't look very relaxed to me. Was the dough ball well floured before you began opening it?

Tom Lehmann/The Dough Doctor  
3365

**[Stones/tiles/steel, Pans & Accessories / Re: Lloyd pan issue - help](#)**

While the Lloyd Pans will stand-up to washing without a problem they really don't like to be washed, we always just wiped them out with a clean towel for the next use.

Tom Lehmann/The Dough Doctor  
3364

**[Newbie Topics / Re: crust soggy wet and raw even after baking for double the amount of time.](#)**

Those pizzas need to be baked as long as possible to help control the moisture issue, we have found that baking on a stone helps with a "normally" dressed pizzas but when loaded/over loaded with toppings the stone works against you in that it creates a bottom crust color that is too strong or many times actually burnt given the longer baking time. The trick is to allow the extra baking time to help get rid of some of that moisture with the longer baking time we have never experienced any problems with getting the crust thoroughly baked with a moderate amount of toppings, but when the water begins to filter down into the dough from an over abundance of toppings it's all but impossible to achieve a properly baked crust. I think par-baking the crust is probably the best option in this case as that will address the unbaked crust issue, and then as stated earlier, a "swamp pizza" is not an issue. Baking with some kind of airflow in the oven would definitely help with getting rid of some of the moisture too...great idea!

Tom Lehmann/The Dough Doctor  
3363

**[Dough Clinic / Re: Dough tears](#)**

It might also be the technique you're using to open the dough balls, there were some good videos here showing this recently. One thing that I used to teach my students for opening the dough balls was to use a rolling pin/pastry pin to open the dough to about 75% of the finished diameter and then finish opening it to full diameter by either table stretching, hand stretching or hand tossing or any combination of these (I like to use both table stretching and hand tossing to open my dough into skins)

Some other possible causes might include:

Flour too weak (insufficient protein content)

Insufficient gluten development.

Insufficient fermentation time.

Dough to warm or too cold when opening the dough balls.

Dough over fermented resulting in a soft, weak dough which has become overly extensible.

The type of work surface that you're opening the dough on can also impact the way the dough handles during opening, this was also discussed here quite recently. I think the consensus was that wood and stainless steel were the best materials.

Tom Lehmann/The Dough Doctor  
3362

### **[General Pizza Making / Re: Pz44](#)**

PZ-44 is what is referred to as a "reducing agent". It breaks the gluten forming protein chains at specific (S-H) bonding points on the protein chain. In plain language, it weakens the dough making it more extensible. It has some application in no-time doughs aka emergency doughs but its main use is in pressing skins where it creates a sufficiently relaxed dough so it doesn't snap-back immediately after pressing. You DO NOT want to use it in doughs which will be fermented for any period of time much over about two hours as the dough has the potential to become excessively slack/extensible and weak. The same effects of PZ-44 can be achieved using sufficient fermentation with the added benefit of vastly improved flavor in the finished crust due to the fermentation.

The two ingredients in PZ-44 are dairy whey (used as a diluent and carrier) and L-cysteine hydrochloride (the active ingredient). The amount of L-cysteine present in PZ-44 at a 2% dosage provides about 35-ppm (parts per million based on the flour weight) of L-cysteine. One major advantage of L-cysteine in commercial frozen dough is that it significantly reduces the total dough mixing time (commercial frozen doughs are mixed to full gluten development), this is one reason why commercial frozen dough is typically quite extensible after slacking-out (thawing).

Tom Lehmann/The Dough Doctor  
3361

### **[Dough Clinic / Re: sourdough not rising. can I still use it?](#)**

It all depends upon the strength (acidity) of your starter, your flour strength, and how much sourdough starter you're adding in total. You might be better off just adding a little yeast to the dough and enjoy some pizza for dinner, then make sure the starter is ready to be used before adding it to the dough the next time. We all learn from our mistakes and get to enjoy a few good pizzas along the way too. :)

Tom Lehmann/The Dough Doctor  
3360

### **[Dough Clinic / Re: Dough formulation with Mexican flour](#)**

Luis;

First off....let me say that your pizzas look great! Don't worry about the rims, that's pretty normal for pizza. Try baking at a lower temperature, around 525 to 550F to reduce the bubbles in the rim, but if it were me, I wouldn't change a thing! The dough balls look great too! You cannot have a dough ball temperature that is any colder than the coldest part of your cooler....yep, you really do need a new thermometer. As for the "ideal" CF temperature, it is the specified temperature that is required to be considered "refrigeration" which puts us between 33 and 40F. Since there is too much of a probability of freezing the dough when you're operating at 33F most operators run their coolers at 36 to 38F, it sounds like that beer cooler might be just the ticket for holding your dough for CF.

Normal mixing time for a pizza dough is best defined as mixing the dough JUST until it achieves a smooth appearance, more mixing than that is not needed nor desirable. I normally figure on mixing a dough for around 8 to 10-minutes so your 9-minute mixing time looks to be OK.

Again, great looking pizzas!  
Tom Lehmann/The Dough Doctor  
3359

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Lloyd pan issue - help\*\*](#)

Both of you are making Detroit style pizzas though which admittedly poses some issues with the Lloyd pans. Other types of pan pizzas do not suffer the same fate.  
Tom Lehmann/The Dough Doctor  
3358

### [\*\*Resources / Re: sourcing flour in Atlanta area\*\*](#)

What kind of pizza/pizzas are you trying to make that you need a higher protein content flour for?

Tom Lehmann/The Dough Doctor  
3357

### [\*\*General Pizza Making / Re: Pz44\*\*](#)

In one word, yes, but you will need to decide if the flavor is right for you as the dough will not have nearly as much fermentation on it (only something between 60 and 120-minutes).

Tom Lehmann/The Dough Doctor  
3356

### [\*\*Shop Talk / Re: Number of decks?\*\*](#)

A special order is the person who walks in and orders five pizzas or more for a party or ten or more for an office party, and then you have a kids soccer team coming in after practice or a game ordering five or ten pizzas, and don't forget about the catering event where a food caterer contacts you to provide pizzas for a "special" event, I've seen these orders come in at 20 or more pizzas, mind you.....this is all in addition to your regular pizza production. For the operation as you have described it so far I would estimate that, behind the counter, you will need one person opening skins and dressing skins and one person as an oven tender and one person plating or boxing the pizzas and a cashier. You will also need a wait staff to take care of the table service on the other side of the counter, and if you don't have a commercial dishwasher you will need to have an additional person behind the counter for washing dishes.

Tom Lehmann/The Dough Doctor  
3355

### [\*\*Resources / Re: sourcing flour in Atlanta area\*\*](#)

Vital wheat gluten is indeed an option and no, it doesn't add anything unsavory to the finished crust if used correctly. With your flour coming in at about 12.7% protein content (you are correct) and All Trumps coming in at approximately 14.2% protein content you will need to increase the protein content of your flour by 1.5%. Each 1% VWG that you add to your flour will increase the protein content by 0.6%, so if we divide 1.5 by 0.6 we get 2.5 which means that you will need to add 2.5% VWG to the flour you have to get a protein content equivalent to All Trumps. Two things to remember (1) Dry blend the VWG into the dry flour before adding any liquid, this is to prevent the VWG from pilling/clumping when you add the water. (2) For each percent VWG you add you MUST add additional water to compensate for the absorption properties of the VWG. The amount of water you will need to add is 1.75% for each 1% VWG, so in this case you will need to add  $2.5 \times 1.75 = 4.375\%$  additional water along with the VWG.

The main reason why All Trumps is used for N.Y. type pizza is because it provides the desired chewiness to the slice. If you do not want to have the chewiness best to stay with the flour which you are presently using.

Tom Lehmann/The Dough Doctor  
3354

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Luis;

You're doing the right thing in finding out what your prospective customers want in their pizzas. As you well know there are many different types of "salsa picante" in Mexico, use what the local tastes dictate as they will be able to relate to it better. I do not recommend making a spicy sauce unless you want to offer it as an option which is very easy to do since it keeps for several days under refrigeration. Instead, you might think about placing bottles (squeeze bottles) of the spicy sauce at the tables which the customer can add themselves to their liking, but if you will go into the DELCO side of the business the two sauce option makes better sense. Keep in mind that what you are presently doing is just practice in making pizzas and getting a feel for what your market wants in a pizza, when you go to a commercial pizza oven the pizzas will bake entirely differently and the learning curve will start all over again but hopefully it will be a bit shorter.

One of the most popular items that I made when in Mexico was a dessert pizza made using mango.

Cream cheese (queso crema) 500-grams

Huevos: 2

Azucar en polvo: 250-grams

Crema acida o crema Ricotta: 250-grams

Procedure:

Blend the above ingredients together until smooth, thin out with cream to give the mixture a soft spreading consistency.

Spread onto a pizza skin not more than 2 to 3-mm thick, add slices or pieces of mango and bake as you do your regular pizzas. You can modify this by adding other fruits and coconut. After the dessert pizza has cooled for about 5-minutes apply a powdered sugar - water icing (azucar en polvo y agua) just place the powdered sugar in a bowl, add a small amount of water and stir, keep adding water VERY SLOWLY just until the icing has a "just" pour-able consistency, then transfer to a plastic squeeze type condiment bottle. to apply to the pizza just squeeze a portion of the icing onto the pizza in a decorative pattern. Pizzas can be served hot or cold. We used to make them beforehand (without the icing) and store in the fridge, then cut into slices for serving. To serve we would ask if they wanted it hot or cold. If hot just place into the oven for a minute or so to reheat the slice, add the icing and serve, if cold just add the icing and serve, for a little extra profit offer it warm with a scoop of ice cream...really good! Remember...DARE TO BE DIFFERENT!

Tom Lehmann/The Dough Doctor  
3353

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Problem solved with the oven and learning curve!

Looks like all you need to do now is to keep practicing your techniques and working to maintain consistency in time and temperature controls...that's a good place to be as it appears that you have all the hard stuff behind you now. :)

Tom Lehmann/The Dough Doctor  
3352

## [\*\*Resources / Re: sourcing flour in Atlanta area\*\*](#)

The General Mills Full Strength flour comes in at about 12.6% protein content, while the ADM Commander comes in at 13 to 13.3% protein content. The Full Strength flour is right about where you're presently at. The store brand VWG should work well, just be sure you're buying Vital WHEAT Gluten. There is also corn gluten which is just another word for corn protein....they're not the same and they're not interchangeable. Of the three flours being discussed here I really don't see any difference in performance between them.

Tom Lehmann/The Dough Doctor  
3351

## [\*\*Shop Talk / Re: Number of decks?\*\*](#)

Most likely you will need a person for plating and boxing.  
Tom Lehmann/The Dough Doctor  
3350

## [\*\*General Pizza Making / Re: Pz44\*\*](#)

That's the best part of making YOUR OWN PIZZA. You can make exactly what YOU want and what YOU like. Everyone has different tastes so no one is offended that you have a preference for crusts made without much fermentation time.

Fermentation develops acids which impart a level of tartness in the finished crust and sourdough is the epitome of this, you said that you do not like the flavor from a sourdough starter so you probably have a sensitivity to tartness which causes you to prefer crusts made with short fermentation times where there isn't much development of acidity. You might also look into trying a commercial frozen dough to make your pizza skins/crusts as these are made with essentially no fermentation time at all and probably come fairly close to what you are presently doing with PZ-44.

Tom Lehmann/The Dough Doctor  
3349

## [\*\*Newbie Topics / Re: Can someone tell me why dough recipes call for dividing into multiple balls ?\*\*](#)

Filtered;

In addition to all that's been said, the ingredients can be more accurately scaled for a larger dough than a small one like would be used for a single pizza. This is due to the accuracy of the scales most of us have. Using bakers percent and a laboratory balance (very accurate for weighing amounts much smaller than 0.1-gram) you can easily put together a dough with a total weight of only 50-grams (just under 2-ounces), I've done it many times when doing research on different types of doughs. The scales that most of us have will weight to either 1-gram or preferably 0.1-gram which makes it much more accurate when weighing amounts of 0.1-gram and more. Look at it this way, if my dough requires 227.2-grams (roughly 8-ounces) of flour to make a single 12-ounce dough ball and the amount of IDY needed is 0.375% the amount that you will need to accurately scale will be 0.852-grams. Easy if your scale weighs to the tenth of a gram but next to impossible to do accurately using volumetric portions. However, if we were to make the same dough for 3 dough balls at 12-ounces each the amount of flour needed would be  $227.2 \times 3 = 681.6$ -grams and the IDY at the same percent would equal 2.556-grams which is easier to accurately scale in view of the fact that our scale will not weigh to the second, much less third decimal place so we will need to round off those numbers and while there is always an error when rounding, the error has less impact upon

the dough/crust when working with larger dough sizes. This does not mean to say that you cannot make a dough based on volumetric portions or sized to make just one pizza, indeed you can, it is just harder to replicate that dough for future pizzas which explains why so many people ask what ingredient changes need to be made to double a "recipe" in size. When converting a recipe to a "formula" based on bakers percent you can manipulate the dough to any size you want with precision accuracy and repeat ability with no special changes, think of it like counting money, if you have five dimes and you want to double the amount, how many dimes would you need?

Additionally, that pizzeria that you ordered your pizza from didn't make just a single pizza dough for your order, their dough size was probably based on 50-pounds of flour weight and they made upwards of 100 dough balls from that dough, one of which was used to make your pizza. As for the steak, that's precisely what my wife and I do, we buy a 16-ounce steak and divide it between us (8-ounce steaks are hard to come by here and when you do find them they're much too thin for use to grill properly). Try your hand at making some great bread sticks or garlic knots, or how about making a calzone or a loaf of bread from the extra dough, that's what many of us do with any surplus dough, or you can keep it in the fridge for another go around at making pizza on the following day, that's the fun of making your own dough. Great food, and you can say that you made it yourself, just as YOU like it.

:chef:

Tom Lehmann/The Dough Doctor  
3348

### **Dough Clinic / Re: Dough formulation with Mexican flour**

After you rolled the dough and cut it into individual pieces and panned the dough pieces how long did you allow the dough to proof (rise) for before baking?

Tom Lehmann/The Dough Doctor  
3347

### **Dough Clinic / Re: resting time after mixing is complete**

There are many differing opinions on this but in my world it accomplishes nothing at all except to make the dough more difficult to cool and to cool at a consistent rate which upsets the entire dough management procedure which I use. For others using a different dough management procedure they may/will have a different opinion. The issue lies with the dough beginning to ferment prior to going into the fridge which results in a change in dough density which in turn affects how the dough cools down in the fridge, especially the rate at which it cools this is further compounded by any variances in the finished dough temperature so you never really know what the dough density will be after the rest period hence you don't know the rate at which the dough is being cooled add to that the fact that the dough is warming up as a result of fermentation taking place (heat of metabolism) so under some conditions the heat being generated combined with the insulating properties of a less dense dough can result in the dough blowing or becoming over fermented, then to address that the yeast is sometimes reduced to a point where there is insufficient leavening power during the oven spring period of baking to support the weight of the toppings resulting in collapse of the dough which in turn manifests itself as a "dreaded gum line" (development of a pasta like layer just under the sauce in the baked pizza) which contributes to a tough, chewy eating characteristic as well as loss of crispiness in the crust.

Tom Lehmann/The Dough Doctor  
3346

## [\*\*Dough Clinic / Re: Dough formulation with Mexican flour\*\*](#)

Lets talk about making some procedural changes before changing dough formulation.

- 1) Allow the dough to warm to 60F (internal ball temperature) before beginning to open the ball into a rectangle.
- 2) After rolling and cutting into individual rolls allow the dough to final proof (rise) for 45 to 60-minutes (be sure to allow enough space between the individual rolls on the pan).
- 3) After final proofing, brush the rolls with melted butter.
- 4) Bake at 375 (not more than 400F) until lightly browned.
- 5) Brush baked rolls with melted butter as soon as they are removed from the oven.
- 6) Allow to cool for 15-minutes and apply a powdered sugar-water icing, make it thick so it can be applied much like creamy peanut butter.

If the rolls are still too tough after this you have two options, 1) increase the fat content of the dough to at least 15% or 2) Change to a lower protein content flour.

Tom Lehmann/The Dough Doctor

3345

## [\*\*Dough Clinic / Re: no raise\*\*](#)

Can you provide any pictures of the dough balls just as they are going into the fridge and just as you take them out? This might help in figuring out what is going on. Also any information and/or pictures of the IDY container would also help.

Tom Lehmann/The Dough Doctor

3344

## [\*\*Dough Clinic / Re: no raise\*\*](#)

I find it interesting that they recommend using 1 to 2% of their IDY. Here in the U.S. our IDY is used at between 1/3 and 1/2 of the compressed yeast level. This means that we are typically looking at 0.25 to 0.5% in pizza dough. Possibly your IDY needs to be used at a higher level? You might try using your IDY at a higher level the next time as well as capturing some pictures.

Tom Lehmann/The Dough Doctor

3343

## [\*\*Dough Clinic / Re: Dough formulation with Mexican flour\*\*](#)

About 20-minutes.

Tom Lehmann/The Dough Doctor

3342

## [\*\*Dough Clinic / Re: resting time after mixing is complete\*\*](#)

In a "big operation" the objective is to get the entire dough scaled, balled/rounded, into the dough boxes and into the cooler within a 20-minute period of time beginning when the dough mixing cycle is completed. The reason for this is because yeast exhibits a 20-minute lag period after which fermentation will begin to change the density of the dough, making it less dense and more difficult to cool. Normally, when someone mentions allowing the dough to rest (correctly referred to as "intermediate proof") prior to scaling and balling they are referencing much longer periods of time (an hour or more), hence my previous response. A ten minute intermediate proof time is completely within good dough management guidelines.

Tom Lehmann/The Dough Doctor

3341

## **Dough Clinic / Re: burned dough**

I tend to agree with csnack but without knowing the thickness of the tiles I cannot say for sure but I can say this, if the bottom of your pizza was charred black after only 6-minutes, and on a screen to boot, I'm betting that the actual temperature of the ceramic tile was a lot hotter than 600F. This is where an infrared thermometer comes in handy as it allows you to adjust your grill flame to get the tile temperature to, in your case, 600F. This is assuming that your dough formulation didn't have and sugar, milk or eggs for whatever reason.

Tom Lehmann/The Dough Doctor  
3340

## **Dough Clinic / Re: Parbaking Thick Crust**

Thank you for reading my articles and putting the knowledge to good use. For deep-dish pizzas you really don't need to use a "high gluten flour", whatever that is (there is no definition for it). You can use any good flour which has a protein content in the 12 to 12.8% range (think General Mills Superlative/Full Strength). To answer your questions:

- 1) If the par-baked crusts are made from a fermented dough it WILL have a perfectly good flavor. The idea that par-baked crusts are devoid of flavor or have a poor flavor stems from the commercial practice of using a no-time or short-time dough for making the par-baked crusts which is pretty typical for commercial par-baked crusts...just try a crust from one of those frozen pizzas with a par-baked crust and you will see what I mean.
- 2) Your dough formula, as shown, should work just fine for making par-baked crusts.
- 3) Par-baking with not more than 1/2 of the sauce applied will help to control moisture loss during the baking process but presents challenges in how to store the crusts as they will need to be stored either flat or stacked in a vertical wire tree rack (my preferred method). There is no need to refrigerate the baked crusts as they are perfectly room temperature stable even with the sauce added. If the crusts are to be baked without the addition of sauce it will be necessary to include a fiber material to help retain moisture in the par-baked crust (Ticaloid Lite, TIC Gums Company). The advantage here is that you can wrap or stack the par-baked crusts which has a distinct advantage for a pizza chain or retail sales where distribution of the crusts must be addressed.

Tom Lehmann/The Dough Doctor  
3339

## **Dough Clinic / Re: no sugar**

Lou;

As long as you are using a normally malted flour you should be OK. As there will be no sugar in the dough formulation, as the dough slowly ferments during the CF period it will acidify which inhibits crust color development so you will need to make sure your oven is hot enough to achieve crust color development or your finished crust might end up looking more like sourdough bread (very light in color).

Tom Lehmann/The Dough Doctor  
3338

## **Dough Clinic / Re: Use of Bread Improver for Pizza Dough**

Well, let's pick it apart;

The "improver" is intended for bread (in which the dough is managed very differently than the way we manage pizza dough). The amylase is hydrolyzing a

portion of the starch in the flour thus releasing the water it is holding while creating sugar at the same time, this is why the dough is becoming softer and tacky or possibly a little sticky, especially after a couple of days. The ascorbic acid is a moderately fast oxidizing agent in the dough which helps to reduce initial stickiness and the DATEM is there to enhance the oven spring properties of the dough. The dough softening due to hydrolyzing of the wheat starch continues over several days (even under refrigeration but at a slower rate than at room temperature) so this is why you see the dough becoming progressively softer with time.

As for #2, this might be nothing more than drying of the dough...what is the temperature of the dough when you are rolling it out?

#3 would be using the improver more along the lines for which it is designed to be used (within about 6-hours of mixing), if you leave it ferment at room temperature until the following day the dough "could" become so soft as to be unusable. A lot woyld depend upon how your flour holds up as well as the finished dough temperature (temperature after mixing).

My feelings on using this "improver" are that it is probably a waste of money and as far as performance is concerned you are probably not getting much, if any, benefit from using it. With that said, if you want to use the dough within the same day that it is made you will probably see some benefit from the improver since that is the type of dough system that it is designed to be used in. As far as flavor is concerned you aren't getting any benefit from it at all. You're going to find that you get the biggest "bang for your buck" flavor wise through fermentation and temperature control (dough management). Within reason, the longer the dough is allowed to ferment the more flavor you will notice in the finished crust BUT you MUST be able to control the dough temperature throughout the process (effective dough management) or your crust flavor will be all over the board (inconsistent) as will the handling properties of the dough.

Tom Lehmann/The Dough Doctor

3337

### **Dough Clinic / Re: Humidity During Dough Proofing/Fermentation**

The effects of relative humidity are well documented in books such as Baking Science and Technology (E.J. Pyler). Time has no effect upon fermentation BUT the time that a dough is exposed to fermentation or proofing (fermentation after the product has been formed from a piece of dough) has a significant impact upon the finished product. Relative humidity has essentially no impact upon the rate of fermentation as its only effect is to keep the dough soft and pliable/extensible allowing for expansion without bursting as well as maximum dough expansion properties during proofing and oven spring. It has been well established that a relative humidity of 84 to 86% is ideal for breads and rolls, yeast raised donuts are typically proofed at 75 to 78% R.H. as this helps them retain their shape and the skin formed during proofing is what gives the donuts their characteristic "inner-tube" appearance which is necessary to control fat absorption during the frying process. In reality, it is not necessary to control relative humidity as the dough will regulate the R.H. to a point where evaporation from the dough is stopped through the development of a carbon dioxide blanket over the dough when fermented in a container of correct dimensions for the size of the dough. This is almost universally done in commercial bakeries where the dough is fermented in "troughs" which are size appropriately so the dough will rise to within about 12-inches of the top of the trough at full rise, thus retaining a blanketing cover of carbon dioxide throughout the fermentation process (carbon dioxide is the main leavening gas produced by the yeast during the fermentation process, since it is heavier than air it collects on

top of the dough creating a blanket which protects the surface of the dough from both heat and moisture loss, you might know it as the "green house" effect. In commercial practice the dough troughs are wheeled under a suspended shelf about 4-inches above the top edge of the troughs which helps to retain the carbon dioxide by eliminating any drafts which might disrupt the blanket of gas over the dough. This leaves us with temperature as the main driver of fermentation. In dough systems optimum yeast fermentation rate is achieved at a temperature of between 95 and 100F. At this temperature you will get optimum yeast fermentation rate resulting in the most fermentation in the shortest time period. At one time the baking industry USED to use temperature - humidity controlled rooms for fermenting their doughs but the humidity was next to impossible to control over the fermentation period resulting in inconsistent fermentation rates as well as the occasional development of a tropical rain forest within the fermentation room (dripping of water from ceiling, walls and puddling on the floor) due to condensation resulting from temperature differentials between the room and the structure. Add to this the fact that the other by-products of fermentation are alcohol and acids (acetic, lactic and propionic) and when the moisture within the room condenses it creates a form of acid rain which literally eats away at the floor and the entire structure (yes, even stainless steel). These are the reasons why fermentation shelves are in common use today. The shelf itself is made from black iron as is the dough trough though occasionally you do see stainless steel troughs in use. The troughs are not as prone to acid attack since there is no condensation forming inside of the troughs which due to evaporation concentrates the acids which create the problems. With the fermentation shelf approach there is no condensation in or around the troughs....problem solved, no need to replace expensive troughs and fermentation rooms every few years, the fermentation shelf approach seems to last forever.

Tom Lehmann/The Dough Doctor  
3336

### **Dough Clinic / Re: Humidity During Dough Proofing/Fermentation**

Time, by itself, has no impact upon the rate of fermentation (time is not a driver for fermentation) the rate of fermentation is pretty constant over time unless influenced by an outside stimuli such as temperature. At some point in the fermentation process the rate of fermentation will begin to diminish due to lack of nutrient for the yeast to feed upon or the creation of sufficient alcohol (at about 12% alcohol bakers yeast will begin to shut down). The amount of time that a dough is exposed to fermentation has a great effect upon the dough and finished product characteristics.

I hope this clears things up.  
Tom Lehmann/The Dough Doctor  
3335

### **Dough Clinic / Re: Humidity During Dough Proofing/Fermentation**

I used to explain it to my students like this: Putting your foot on the brake pedal will not stop your car (time), it's the pressure applied to the pedal (length of time dough is exposed to fermentation) that actually stops the car. These are two different actions, putting your foot on the brake pedal is one and the other is applying pressure.

Tom Lehmann/The Dough Doctor  
3334

### **Dough Clinic / Re: Humidity During Dough Proofing/Fermentation**

Well put Steve. :)

Tom Lehmann/The Dough Doctor  
3333

### **Dough Clinic / Re: Parbaking Thick Crust**

In response to your questions:

Increasing the absorption level will NOT decrease the moisture loss in the finished crust. The easiest way to apply oil to the surface of the dough prior to baking is to use a spray bottle and spray the oil onto the dough.

2) You must allow the crusts to cool to AT Least 90F/32.2C prior to wrapping, failure to do so will result in the crusts becoming excessively soft and most likely mis-shapen.

3) Contrary to what some might believe, par-baked crusts are actually FULLY BAKED, if they are not fully baked they will collapse upon cooling. The idea behind baking a par-baked crust is to bake it JUST until the structure is FULLY SET aka fully baked, it just hasn't been baked to the point of developing much, if any, crust color.

4) Most thick crusts/deep-dish pizza crusts can be par-baked in 5-minutes or a little less. Keep in mind though that a lot will depend upon the weight of the pan, the color of the pan, the amount (weight) of dough in the pan, and the size of the pizza pan (diameter) as well as the type of oven being used and the overall baking efficiency of that oven.

5) Yes, guar gum can be used but since guar gum is a raw material it is almost always quite inconsistent in quality which is why it is standardized by extensive blending of different lots of guar gum to blend out the inconsistency or reduce it to a tolerable level. Use the guar gum at 1% of the flour weight and disperse it in the cold dough water prior to addition. As there is no way for me to know the viscosity of the guar gum that you are planning to use keep in mind that you will need to experiment with both the total dough absorption as well as the amount of guar gum used.

Tom Lehmann/The Dough Doctor  
3332

### **Dough Clinic / Re: Parbaking Thick Crust**

I used to have some old P.H. pan which had a mark stamped into the side of the pan which indicated the height that they were to allow the dough to proof to prior to placing the pans into the cooler to stabilize for use during the course of the day. I works well but you've got to be on your game to achieve consistent results...GIGO is what it boils down to.

Tom Lehmann/The Dough Doctor  
3331

### **Dough Clinic / Re: Thin Dough for Deep Frying**

Use a thin crust dough formula with a little extra sugar for color: Flour 100%, Salt:1.75%, Sugar 4% (variable), Oil 2%, IDY 0.15%, Water 60% (variable).

Mix dough 3-minutes past where the dough becomes smooth. Targeted finished dough temperature is 75F.

Scale and ball dough into desired weights and allow dough balls to rest on a lightly floured surface covered with a sheet of plastic for 90-minutes. Roll/pin out to size, place meat and fillings into the center and fold over so the fillings are enveloped in the dough skin, place seam side down and allow to rest for an additional 20-minutes, deep fry at 365F (preferable submerged), place on screen to drain and serve hot.

Seems to me that Taco Bell was doing something like this not too long ago but using their tortilla wraps.

Tom Lehmann/The Dough Doctor  
3330

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Luis;

Those cinnamon rolls are really looking good! :chef:

The next time you make them, after the dough is rolled, use the heel of your hand to press the end of the curl into the body of the roll, this will give you a seam which should pretty well stay closed which will get rid of the "pig tail" on each of the individual rolls.

As for the bubbles, my advice is to make yourself a simple bubble popper, a piece of stainless steel rod or aluminum rod between 3/16 and 1/4-inch in diameter, bend a 90-degree angle on one end so the short leg of the angle is about 1 to 1.5-inches long, put a point on this as it will be the "bubble popper" trim the other end so it is long enough to reach into the far reaches of your oven and fashion a handle for the rod, now you have a bubble popper, most pizzerias have one. Those pizzas are looking GREAT! :chef:

Tom Lehmann/The Dough Doctor  
3329

### **General Pizza Making / Re: Pumpernickel or rye dough**

Big Dave (Ostrander) used to make a killer Ruben pizza. When we made it during our pizza seminar we made the dough using 70% regular pizza flour and 30% dark rye flour plus caramel coloring (the color of rye bread without the coloring is a muddy gray color). In calculating the dough absorption use 60% for the white flour and 70% for the rye flour. Hopefully your rye flour has been stored in the freezer or fridge, as rye flour loses flavor very quickly when stored at room temperature.

Remember, rye flavor is a unique flavor not to be confused with caraway which is commonly used in rye bread.

Tom Lehmann/The Dough Doctor  
3328

### **Shop Talk / Re: Keeping pizza's warm**

It's either the top of the oven or a heated/warming shelf. I've never seen anyone putting anything between the box and the top of the oven. If it's hot enough to cook the pizza or cause the box/bag to burn you might need to look into a new oven or oven insulation.

Tom Lehmann/The Dough Doctor  
3327

### **Thick Style / Re: Some help for recalculate Spontini recipe**

Well, let's see;

50 cm = approximately 20-inches and a 20-inch pan has 314-square inches of surface area so 2530 divided by 314 = 8.057-grams per square inch of pan surface area (this is the dough loading factor).

A 12-inch pan has 113-square inches so using this dough loading factor you will need  $113 \times 8.057 = 910.441$ -grams of dough for a 12-inch diameter pan. You want to make two pizzas  $910.441 \times 2 = 1,820.882$ -grams of dough needed.

Formula :

Flour: 1500.....100%

Water: 1000.....66.6%

Yeast: 15.....1%  
Salt: 15.....1%

Total percent = 168.6%

Divide total dough weight (1,820.882-grams) by 1.686 (total percent divided by 100) = 1080-grams total flour weight needed for your new dough weight.

New Dough Formula:

Flour: 100%.....1080-grams  
Water: 66.6%....719.28-grams  
Yeast: 1%.....10.8-grams  
Salt: 1%.....10.8-grams

There's your new dough formula correctly sized for 2-12-inch pizzas.

Did I miss something in the formula which you provided? This is an awful lot of dough for a pan of this size. I am assuming that the formula given was for a single pizza as it only called for one pan.

Properly managed (finished dough temperature 75 to 80F) this dough should perform reasonably well at 24-hours but 72-hours might be pushing it with only 1% salt so I would suggest increasing the salt to 2% and the dough should be fine for use at 24 and 72-hours. Just be sure to follow good dough management practices. Peter has a copy of my Dough Management Procedure posted here if you want to get an idea of what I mean by "good dough management practices".

Tom Lehmann/The Dough Doctor  
3326

### **Dough Clinic / Re: no raise**

If what you are saying is that again, the dough did not rise at 7C (44.6F) during a 24-hour period but the dough balls doubled in size within 2 to 3-hours at 20C, (68F) this is VERY strange 7C is high for refrigerated dough storage and 20C is low for such vigorous yeast activity. If your yeast is not tolerant to low temperatures then it would not be performing as it is at 20C. This leads me to believe that something is being overlooked with regard to either the finished dough temperature or the temperature of the fridge.

Tom Lehmann/The Dough Doctor  
3325

### **Dough Clinic / Re: no raise**

As I indicated in my earlier post there is a possibility that the specific yeast that you are using is less active than what we are used to using here so my advice is to use 1% of your yeast and let's see what happens. Please be sure to take a few pictures of the dough ball just prior to placing in the fridge and then take a couple more pictures of the dough ball after 24-hours in the fridge. Target your finished (mixed) dough temperature for between 75 and 80F.

On a side note: How long are you mixing the dough? IDY should receive a minimum of 4-minutes mixing into the dough. If you are making a yeast suspension of the IDY please let me know exactly how you make the yeast suspension.

Tom Lehmann/The Dough Doctor  
3324

### **Thick Style / Re: Some help for recalculate Spontini recipe**

I'm in agreement with Peter, the amount of yeast given (1%) is even correct for compressed yeast (CY).

While there are different types of instant dry yeast (IDY), one is for breads, rolls, pizza, etc. This one is typically packaged in a red colored package. The other form of IDY is designed specifically for high sugar products like pastries and is usually packaged in a gold colored package. The "high sugar" version is intended for use where the sugar level will exceed 18% of the flour weight BUT it has poor tolerance for salt. If the salt level exceeds 1% the yeast will ferment VERY SLOWLY so if you are making a high sugar product with a salt level much over 1% you are better off using the red packaged IDY but if you are making a high sugar product with a salt level of 1% or less, the gold packaged product might perform better. This is a carry over from the baking industry in Europe (where the IDY yeast brands originally came from) as it is a common practice in Europe to reduce the salt to very low levels when high sugar levels are used and vice-versa.

Tom Lehmann/The Dough Doctor  
3323

### **Sauce Ingredients / Re: Sauce Recipe 1**

If you plan on holding your sauce from one day to the next you might consider "nuking" /microwaving the onion and garlic powder in a small portion of the juice from the tomatoes. Nuke it until it just comes to a boil, this will denature the enzymes in the garlic and onion which are responsible for catalyzing the pectins in the tomato causing them to gel which can turn your pizza sauce into tomato jelly overnight.

Tom Lehmann/The Dough Doctor  
3322

### **Shop Talk / Re: Almost dead in the water**

Walter;  
When I was at AIB our maintenance guys installed a simple gadget (I think they got it at Radio Shack at the time) that would monitor the temperature of the cooler as well as the freezer and if the temperature fell outside of the preset range it would automatically send a signal to whatever cell phone number you had it programmed for. That thing saver our bacon more than once!

Tom Lehmann/The Dough Doctor  
3321

### **Shop Talk / Re: Almost dead in the water**

We had two 8 X 10 walk-in freezers, one 15 X 20 walk-in freezer and two 10 X 20 walk-in coolers (retarders) that we stored materials in for both our various baking classes and our research group so if we lost every thing in any one of them it would put a big hurt on us.

Tom Lehmann/The Dough Doctor  
3320

### **Dough Clinic / Re: Yeast amount**

Joe;  
The pizza looks great! To address the bottom bake issue try par-baking the crust with a screen under it. The bottom color you want to target for on the par-bake is probably best described as a "sand" color. If the par-baked crust has too much bottom crust color you will always be fighting a dark bottom crust color on the finished pizza.

Tom Lehmann/The Dough Doctor

3319

**Pizza News / Re: Is gluten off the hook??**

Strange that you should be trying Turkey Red in a gluten intolerant scenario. I had proposed exactly the same thing about 6-years ago, I wanted to see if the gluten intolerance issue is due to one or more of the wheat proteins or if it is due to changes to the protein which may have been introduced through the extensive breeding programs that wheat is exposed to. My proposal was to do a blind panel using Turkey Red from a certified grower and a modern day winter wheat variety. The majority of the wheat breeding that has taken place over the past 50-years or so, has been focused on increasing and/or strengthening the protein so as to achieve a stronger dough and I've always been curious as to whether the changes to the protein might have something to do with the gluten intolerance issue? As a kid growing up I don't recall any kids with any kind of reaction to gluten.

Tom Lehmann/The Dough Doctor

3318

**Dough Clinic / Re: Best method to add IDY to 35-37% hydration dough?**

I've had good luck making dry, cracker type crusts using IDY in the dough. Just suspend the IDY in about 5-times its weight of 95F water, stir well, allow to hydrate/activate for 10-minutes, stir once again and add it to the dough water. The dough will ferment but you won't see much, if any, rise due to the tightness of the dough. I've always used a sheeter/roller to open the dough ball/puck into a skin.

Tom Lehmann/The Dough Doctor

3317

**Dough Clinic / Re: What on earth is an "air-deck"??**

Sure, used one for quite some time a number of years ago when they first came out, in fact I did all of the preliminary testing on the oven.

Think of it as an air impingement oven without a conveyor. They're pretty nifty and work quite well providing the advantages of both a deck oven and an air impingement oven. If you make a pizza with a lot of vegetable toppings and need the flexibility of a deck oven the Garland Air Deck oven is hard to beat.

Tom Lehmann/The Dough Doctor

3316

**Resources / Re: Pillsbury Best Bakers Patent Flour**

I've seen flour at Sam's Club priced lower than you can buy it from a distributor. Look for Pillsbury Bread Flour aka Pillsbury Bread Machine Flour. It comes in at around 12.6% protein content. You can also use General Mills Rex Royal, Washburn's, Full Strength or Superlative as they are all very similar in protein content but the treatment does vary so keep that in mind.

Tom Lehmann/The Dough Doctor

3315

**Dough Clinic / Re: What on earth is an "air-deck"??**

Steve;

That about describes it. Garland came out with the oven many years ago, it seemed to catch on for a time but you don't see too many of them now, the last I knew they still had a presence at Pizza Expo.

Tom Lehmann/The Dough Doctor

3314

## [\*\*Resources / Re: Pillsbury Best Bakers Patent Flour\*\*](#)

Flours in the 12.2 to 12.8% protein range are probably the most common that I see being used in pizzerias across the country so it is no surprise that your local pizzeria is using something similar.

Tom Lehmann/The Dough Doctor  
3313

## [\*\*Dough Clinic / Re: Air holes size in bread\*\*](#)

Bert;

By "wheat flour" I assume you are referring to "whole wheat flour". Since whole wheat flour has a higher absorption than your regular white flour and you said you used the same 80% absorption, your dough which was made with 20% whole wheat flour was actually under absorbed which resulted in a stiffer dough that did not expand during baking as readily as the dough made without whole wheat flour. You did not see this due to the slower absorption properties of the bran present in the whole wheat flour so the dough appeared normal at first but with time (about 30-minutes) the bran absorbed water and resulted in a slightly stiffer dough which is characterized by a smaller, tighter/closer crumb structure.

Tom Lehmann/The Dough Doctor  
3312

## [\*\*Dough Clinic / Re: Best method to add IDY to 35-37% hydration dough?\*\*](#)

Peter;

You are correct in that more yeast is typically used when short fermentation times are employed (think Emergency Doughs). The reason for this is because yeast is the only variable which can be increased in the dough to provide an increase in flavor in view of a short fermentation time. While salt and sugar both impact flavor, you can only go so far before the finished crust begins tasting salty or sweet, but you can go amazingly high in the yeast level while imparting an acceptable flavor to the finished crust.

Tom Lehmann/The Dough Doctor  
3311

## [\*\*Dough Clinic / Re: What on earth is an "air-deck"??\*\*](#)

Nope, no stone deck, just an open grid deck that you bake on, yes, some form of baking platform is required such as a pan, disk or screen.

Tom Lehmann/The Dough Doctor  
3310

## [\*\*Dough Clinic / Re: So many questions\*\*](#)

Daybreak0;

The application of the oil to the top of each dough ball indeed protects the dough from drying out during the cross-stack period, failure to apply the oil can result in a crust or skin forming on the top of each dough ball. After the dough boxes are covered/lidded and down-stacked the oil is slowly absorbed into the dough. The dough management procedure referenced is designed to provide the most consistent quality dough possible over a 3 to 4-day period (with modification this can be easily changed if desired). The process which you outlined is extremely critical regarding finished dough temperature, especially out at 48 to 72-hours. The reason for this is because dough temperature is the driver of fermentation (the higher the temperature the more fermentation you will get within any given period of time), this is further compounded by your fermentation of the bulk dough which is then bagged (cannot use plastic garbage bags in a pizzeria, must be food contact

approved), and placed into another container which further insulated the dough resulting in a very lengthy and inconsistent cool down of the dough, add to that the fact that the dough is continually warming (even while in the cooler) due to heat of metabolism/fermentation to the tune of about 1F per hour. When the dough is subdivided into smaller pieces and formed into balls these dough balls are much easier to cool than a large bulk dough, and they cool at a much more consistent rate which means the dough will be more consistent in both performance and crust quality characteristics out beyond 24-hours. There are a bunch of other advantages to using dough balls as opposed to bulk fermentation in a pizzeria but time and space do not permit me to cover all of them.

By the way, baking soda will not give greater rise/height to your dough, just the opposite can happen as the soda (depending upon the amount added) can create a pH environment which is not conducive to vigorous yeast activity/fermentation (yeast is an acid (low pH) loving organism while baking soda is an alkali (raises the pH). Even the use of baking powder is ineffective in a dough as the chemical reaction resulting in the generation of carbon dioxide is much too fast (much of it is lost during mixing) and that which isn't lost during mixing will have its soda component neutralized by the acids formed during fermentation so when it comes time for the pyro (heat) acting portion of the baking powder to generate leavening gas (carbon dioxide) there is no soda for it to react with so no leavening gas can be produced, add to that, the unreacted acid component of the baking powder, sodium acid pyrophosphate, sodium aluminum phosphate, or mono calcium phosphate (the most commonly used) can impact the flavor of the finished crust.

As for dough conditioners and volume enhancement, about the best you will get is about a 15% volume/height increase using DATEM, how thick is your crust? 1/4-inch thick? This is 6.5-mm and 15% of that will be 0.975-mm, let's be generous and call it 1-mm, I'm betting good money that your standard of deviation in crust height/thickness is more than 1-mm. That's why they don't work well in pizza for volume enhancement, they are designed for use in pan breads where the height might be as much as 5-inches(122.5-mm) and 15% of that is 18.375-mm or about 3/4-inch, you can see that, and that is why these additives are important to bread bakers.

Tom Lehmann/The Dough Doctor  
3309

### **Dough Clinic / Re: Parbaking Thick Crust**

CMC will work just fine, but since there are different strengths for the CMC be sure to get a recommendation from the supplier on how much to use in your dough for moisture retention. OR, if you want, you can just par-bake the crusts with 1/2 of the sauce applied and then apply the remaining half when you dress the crusts. As for your flour, it should work OK. As for potato starch, it is typically used at 2.5% of the total flour weight, or if you want, you can use dehydrated mashed potatoes, reconstitute according to the package directions and add directly to your dough at 7 to 10% (DO NOT ADD ANY SUGAR MILK OR EGGS WITH THE POTATO STARCH/MASHED POTATOES AS THE POTATOES WILL SIGNIFICANTLY CONTRIBUTE TO CRUST COLOR). You must allow the par-baked crusts to cool to at least 105F/40.5C prior to wrapping or you will have a wet, soggy crust which might collapse in the package.

Tom Lehmann/The Dough Doctor  
3308

### **Dough Clinic / Re: Dried out skin?**

No, when you open the dough balls just place the skin side (top) down and you will

be fine.

Tom Lehmann/The Dough Doctor  
3307

### **Dough Clinic / Re: Don't hate me because...**

There are a couple of things at play here, 1) they're two entirely different doughs so they will be hard to compare. 2) Without knowing the strength of your sourdough starter you will need to experiment with yeast levels. 3) Yeast and sourdough starter are two very different animals, your sourdough starter is comprised of different strains of yeast and bacteria while your yeast is a relatively purified strain of *saccharomyces cerevisiae*, designed to provide leavening power to yeast leavened doughs add to that the fact that your sourdough starter is highly acidified. The acidity of the starter can make it more active than regular baker's yeast, and in many cases the acidity will weaken the gluten structure to some extent making for a more extensible dough which will expand more readily thus appearing to be more fermented.

Tom Lehmann/The Dough Doctor  
3306

### **Dough Clinic / Re: Dough formulation with Mexican flour**

Spraying/spritzing water onto the dough for hard, crusty breads is a common practice when steam is not available in the oven.

Tom Lehmann/The Dough Doctor  
3305

### **Dough Clinic / Re: So many questions**

No, a freezer will not work the same for cooling the dough balls as a walk-in or reach-in cooler. As for making your non flour based crust more crispy, there is no defined technology that I'm aware of and dough formulations are all over the board using a multitude of different ingredients so there is no way I can suggest any ingredient which would result in a crispier finished crust. The only thing whey protein whey protein concentrate (80% protein content) or isolate (92%+ protein content) will provide is additional protein content. Straight whey which contains about 13% lactose will provide crust color due to the lactose but it is only about 10% in protein content so protein contribution would be negligible. Wheat protein concentrate (WPC) only provides protein and the bulk of the proteins in WPC are non-gluten forming.

Tom Lehmann/The Dough Doctor  
3304

### **Dough Clinic / Re: Pros and Cons of this recipe**

Big Dave has been around for a long time, he is best known by pizzeria owners as his forte is store operations/marketing. You are correct in that the very low yeast level and dough absorption are most likely the result of not cross-stacking, I hope he doesn't mind working with wet and sticky dough which will do its best to exhibit its inconsistencies in performance, especially if he holds the dough past 24-hours. As for the formulation and DELCO, not necessarily, with only 1% salt flavor will be compromised and with 1.5% sugar he won't be baking the pizzas to their full DELCO potential and with 0.25% ADY he may or may not get sufficient oven spring to achieve a thorough bake-out which is so necessary for a DELCO pizza.

Tom Lehmann/The Dough Doctor  
3303

## [Dough Clinic / Re: Pizza dough](#)

That wet, sticky dough that you are experiencing after the fermentation period is because you covered the containers of dough right away as you put them into the fridge, instead of covering them try lightly oiling the dough balls and place them into your containers BUT do not cover them, instead, allow them to remain uncovered for 3-hours, then cover. That should address the wet, sticky dough issues. You only state that you are using "dry yeast" but you did not indicate if it is instant dry yeast (IDY) or active dry yeast (ADY). With the dough mixing process you've described both types of yeast really need to be suspended in a SMALL (4 to 5 times the weight of yeast as 95 to 100F water) and allowed to activate for about 10-minutes, it can then be added directly to the remainder of the dough water. With regard to your "recipe" I would highly encourage you to convert it to a "formula" based on weight measures rather than volumetric portions as this is much more accurate and will give you repeatable and consistent results.

Tom Lehmann/The Dough Doctor  
3302

## [New Forum Members / Re: Hello from Illinois](#)

Welcome Jeff! There are plenty of us here who can help you, additionally, if you have not already done so, I'd suggest tuning in <[www.pmq.com](http://www.pmq.com)> and go to the Think Tank. The think tank is dedicated to pizzeria owners and operators as well as "newbies" as yourself. There's plenty of help out there, you just need to know where to find it....once again, welcome aboard!

Tom Lehmann/The Dough Doctor  
3301

## [Dough Clinic / Re: Large batches using a sourdough starter](#)

The total amount of starter needed to make 50 pizzas using 95-grams in each pizza is calculated at 2.375-Kg.

What I need to know is what is the formula for your present starter for two pizzas, or whatever size you make?

Tom Lehmann/The Dough Doctor  
3300

## [Dough Clinic / Re: Large batches using a sourdough starter](#)

Please provide the amounts of ingredients that you are presently using to make your starter for your two pizzas. Please use weight measures as opposed to volumetric portions, we can then put the starter into "true" percent which will allow you to formulate any specific amount of starter you want to use.

Tom Lehmann/The Dough Doctor  
3299

## [Dough Clinic / Re: Dough Challenge Indeed](#)

If you go to [www.pmq.com](http://www.pmq.com) and go into the Recipe Bank you can search out my formulas for bake to rise pizza dough/crust. These can be made 100% without the addition of yeast by just doubling the amount of WRISE (fat encapsulated chemical leavening) but rest assured that the flavor will not be anything like that achieved using all yeast or a combination of yeast and coated chemical leavening. The combination of yeast and coated chemical leavening produces a crust similar to that used for the DiGiorno pizzas as well as the Papa Murphy's pizzas.

Tom Lehmann/The Dough Doctor  
3298

## [General Pizza Making / Re: tangzhong water roux pizza for higher hydration](#)

In wheat flour it is the protein and the fiber which carry the water, this is why dough absorption is tied to the protein content of the flour rather than just "flour". You can use a poolish to maximize the absorption but the difference in total absorption between a high and low protein flour will still be there.

Tom Lehmann/The Dough Doctor  
3297

## [General Pizza Making / Re: tangzhong water roux pizza for higher hydration](#)

What you have described is just making pre-gelatinized starch, it will allow you to add more water to the dough BUT the resulting bread or crust will also have a higher finished moisture content which can be tolerated in bread but in pizza crust it results in a soft, soggy crust soon after baking the pizza.

Tom Lehmann/The Dough Doctor  
3296

## [General Pizza Making / Re: tangzhong water roux pizza for higher hydration](#)

Oh yes, using a poolish will allow you to get the maximum amount of water into the dough.

Tom Lehmann/The Dough Doctor  
3295

## [Dough Clinic / Re: Dough management question](#)

Joeborg:

To answer your questions:

- 1) At least 50 par-baked crusts would not be too many.
- 2) If you mean how long can the dough be left to rise (proof) in the pan prior to baking, the answer is no longer than necessary to give you the finished crust you are striving for. If you leave it proof for a longer time the finished crust will be texturally different, ditto for short proofing the dough.
- 3) I'm confused? 20 skins out of the cooler in the dough boxes? We normally DO NOT bring the dough to room temperature (whatever that might be), instead, when we remove dough balls from the cooler we temper them AT room temperature until they reach an internal temperature of 50F before we begin opening the dough balls. Yes, once the dough balls have been tempered to 50F they do need to be used not just in the same day, but within a 3-hour period of time. It sounds like you are talking about doing a mix of fresh bake and par-baked....don't do it, do either one. Once the dough balls have been opened and the dough fitted to the pan, allowed to proof for the necessary amount of time and then par-baked, the crusts should be allowed to cool on a wire rack until they reach an internal temperature of 100 to 105F, at that point the par-baked crusts can be packaged, and stored at ROOM temperature for use over the next 4-days.

Tom Lehmann/The Dough Doctor  
3294

## [Dough Clinic / Re: no raise](#)

It looks like your IDY might have a very LOW tolerance to salt (like the SAF or Fermipan Gold Label) which is intended for use in high sugar products.

Tom Lehmann/The Dough Doctor  
3293

## [\*\*Dough Clinic / Re: Pizza dough\*\*](#)

When you place a warm dough into a cold environment you will get condensation forming inside any sealed container, if your dough is 80F and the room is 75 or 80F you can lid the bowl without getting excessive condensation (not much temperature differential to cause condensation), but remember to put a vent hole in the lid to bleed off excessive gas pressure.

The Dough Doctor

3292

## [\*\*Dough Clinic / Re: Dough management question\*\*](#)

Unopened: a year or more.

Opened: not more than 24-hours. Transfer it to a plastic pail/container for storage in the fridge for up to 4-days.

The Dough Doctor

3291

## [\*\*Dough Clinic / Re: Bake bread\*\*](#)

Years ago I had some fun with my students, I gave them unidentified bags of dough mix and told them to add 0.5% IDY and as much water as needed to make a pizza dough, at the end of the exercise everyone had pretty good pizzas on the table.

What was so different? Each group of students was given a bag of dough mix formulated to make a different product: French Bread, Vienna Bread, Bagels, Kaiser Roll/Hard rolls, Pretzels and Pizza Dough. The number one question asked was "How can you make such a good pizza from a bagel dough?" The point I was making was that all of these doughs are what we called "ancient" doughs made using typical formulas which, by the way, are all VERY SIMILAR, this is why pizza dough is so versatile in making different kinds of baked goods, dip it in boiling (actually near boiling) water and bake to make a bagel, or brush it with an alkali (dilute sodium hydroxide / 2% solution) , sprinkle with pretzel salt and slow bake to make a pretzel, the rest are nothing more than forming techniques....like I said, pretty versatile.

Tom Lehmann/The Dough Doctor

3290

## [\*\*Dough Clinic / Re: Is microwave-extracted garlic safe to use in pizza sauce that sits in the fridge for days?\*\*](#)

The crushed tomatoes SHOULD be sufficiently acidic to control the growth of clostridium...I say "should" because today we have some low acid tomatoes which are not sufficiently acid to control growth if clostridium....this is a very important point to remember if canning pizza sauce.

Tom Lehmann/The Dough Doctor

3289

## [\*\*Dough Clinic / Re: autolyse\*\*](#)

It depends upon the type of crust you're trying to make.

Tom Lehmann/The Dough Doctor

3288

## [\*\*General Pizza Making / Re: tangzhong water roux pizza for higher hydration\*\*](#)

Probably not. Flour is quite variable in protein quality and quantity and there are quality characteristics specific to the wheat used to make the flour that can/will

affect the dough absorption this is why I always say "pick a flour, any flour, then optimize the dough absorption and you're good to go". This sure beats trying to keep the dough absorption at a fixed amount. They do it in dry mixes all the time but instead of manipulating the flour they add ingredients which can be used to increase or decrease the mix absorption, these ingredients include things such as gums, soy flour, potato flour and sometimes pre-gelatinized starch or fiber.

Tom Lehmann/The Dough Doctor  
3287

### **Dough Clinic / Re: Parbaking Thick Crust**

As you increase or add gum to the dough formulation you will also need to increase the dough absorption but gums are all over the board when it comes to absorption. This is why we blend the gums to achieve a better uniformity between different lots of the same gum. When working with "raw" (unblended) gums you will need to experiment to find the correct absorption adjustment when using the gum, for the most part you will probably want to start at about 2.5% absorption for each 1% gum added but keep in mind that since you are dealing with "raw" gums this absorption adjustment, once identified, will, in all probability, change again with a new lot of the same gum.

The procedure is to make a fresh baked crust without any gum, allow to cool on a rack for EXACTLY 20-minutes, then wrap in a polyethylene film and set aside to equilibrate for 20-minutes before adding measuring the moisture content in the crust portion. Make a note of this moisture content as it is your goal to achieve this same moisture content using a par-baked crust made with gum(s). The par-baked crusts are to be baked, cooled for 20-minutes, wrapped in polyethylene film and set aside to equilibrate overnight they are then unwrapped, a standardized sauce at a standardized rate/amount per crust with standardized toppings are applied, bake for a standardized length of time at a set temperature, allow pizzas to cool for 20-minutes and measure the moisture content on ONLY the crust portion. Once you have a moisture content on the control pizza you can begin working with the gum(s) and increasing dough absorption following EXACTLY THE SAME PROTOCOL for determining the final moisture content. Once you have achieved the same finished moisture content with a par-baked crust as compared to the fresh baked crust/pizza you have accomplished your mission.

Tom Lehmann/The Dough Doctor  
3286

### **Dough Clinic / Re: autolysis with NY style dough**

Lou;

Using a dough mixer with All Trumps flour and 60% absorption I don't really see any benefit unless you want to catch up on some reading during those 30-minutes. If you are mixing the dough by hand it will help to give you a more manageable dough during the kneading process.

Tom Lehmann/The Dough Doctor  
3285

### **Dough Clinic / Re: Marsal and Sons**

I got a SD-448 (single deck) to replace an aging Bakers Pride oven and we couldn't have been happier with our new oven. As I've mentioned before:

1) DO NOT install an additional gas regulator. Unless things have changed, the Marsal ovens come with an internal gas pressure regulator already installed, the addition of a second gas pressure regulator will prevent the oven from baking as it should (in a big time way I might add). Check the installation instructions sheet

just to make sure they haven't changed.

- 2) Regardless of what they say, you DO need to move the pizzas around on the deck during baking UNLESS you put the pizzas into the oven, close the door and don't open it until the pizzas are done, which seldom happens in an active pizzeria.
  - 3) Look at their Firebrick option to if you want to achieve a brick oven type of bake.
- Tom Lehmann/The Dough Doctor  
3284

### **Dough Clinic / Re: PLEASE HELP pizza dough**

Carlos;

I'm not sure about your dough management procedure so here's an outline.

- 1) Remove dough from breadmaker, scale to desired weight and form into a ball.
- 2) Oil the dough ball and place it into a plastic bag (like a bread bag), twist the open end to close and tuck it under the dough ball as you place it into the fridge to cold ferment.
- 3) Allow the dough to cold ferment (CF) for 24 to 76-hours.
- 4) Remove dough ball from fridge, place on counter top and allow to temper AT room temperature until the dough ball warms to 50F/10C.
- 5) Turn the dough ball out of the bag by rolling the bag down onto the dough ball and inverting it allowing the dough ball to fall out of the bag onto a floured surface.
- 6) Pick up the dough ball and flour the entire piece (don't get carried away with the dusting flour, a little is all you need).
- 7) Begin opening the dough ball into a pizza skin by your preferred method. If you don't know how to open a dough ball into a pizza skin this has been covered many time here before in previous posts.
- 8) Once opened, the skin is now ready for dressing (sauce and toppings).

Note:

As no information was provided on dough formulation, type of pizza being made or how you are baking your pizza I cannot comment on those aspects.

By the way, dough (prior to forming/shaping) is referred to as being fermented but after final forming/shaping it is referred to as being proofed. In the case of pizza production the dough might be bulk fermented (as the whole dough) or it might be subdivided into individual dough balls which are then fermented either at room temperature (RF) or in the fridge (CF) this is all referred to as "fermentation" BUT after the dough has been opened into a skin any further resting or fermentation of the dough is referred to as "proofing" unless you're British, then you refer to is as "proving". Thick crust and pan style skins are always proofed as are some types of thin crust pizzas, especially where a thicker finished crust is desired.

Tom Lehmann/The Dough Doctor  
3283

### **Chicago Style / Re: Deck oven temperature**

I'm not at liberty to discuss pizzerias or specifics but as a rule, those pizzerias using reel type ovens are baking their pizzas at 450F to 500F. with baking times approaching 30-minutes.

Tom Lehmann/The Dough Doctor  
3282

### **Dough Clinic / Re: PLEASE HELP pizza dough**

An infrared thermometer will work fine for measuring the mixed dough temperature but for all other temperatures, such as measuring the temperature just prior to opening the dough balls, will require the use of a stem/dial type

thermometer as you will be looking for internal temperature as opposed to surface temperature.

Tom Lehmann/The Dough Doctor  
3281

### **Dough Clinic / Re: Marsal and Sons**

Recovery time???? :-D What are you talking about??? :-D Ain't no recovery time, trust me, we kept ours 100% full for a minimum of 3-hours and never saw any difference in bake. As for warm-up time if I remember correctly it was about an hour.

Tom Lehmann/The Dough Doctor  
3280

### **Dough Clinic / Re: Changing the flour in my starter**

Mitch is "spot-on", that's what we used to do when experimenting with starters.  
Tom Lehmann/The Dough Doctor  
3279

### **Chicago Style / Re: Deck oven temperature**

A "reel" oven is one where the shelves rotate like a Ferris Wheel. To see what they look like you can Google Fish Ovens or Reed Oven Company. Many Chicago shops use the Middleby-Marshall reel ovens which they get from Cobblestone Ovens (they rebuild/refurbish the Middleby-Marshall reel type ovens).

Tom Lehmann/The Dough Doctor  
3278

### **Dough Clinic / Re: Marsal and Sons**

As a bonus, the Marsal ovens are generally a bit cheaper (in cost, not quality) than comparable ovens from other manufacturers.

Tom Lehmann/The Dough Doctor  
3277

### **Chicago Style / Re: Deck oven temperature**

One and the same.  
Tom Lehmann/The Dough Doctor  
3276

### **Dough Clinic / Re: Bread Machine instant Yeast**

Assuming your "normal" yeast is IDY?  
Tom Lehmann/The Dough Doctor  
3275

### **Dough Clinic / Re: Pre-ferment without yeast or starter**

Brent;  
It's called an "autolyse", it is typically used in high absorption doughs to help the flour absorb more water without becoming a soupy mess. The main enzymes present are amylase and some protease. The amylase breaks down (hydrolyzes) starch into sugar for the yeast and bacteria to feed upon while the protease enzymes break down proteins making the dough soft and extensible. The enzymes are, for the most part, triggered into action by a lowering of the pH resulting from the onset of yeast or bacterial fermentation.

Since there are already yeast spores in the flour (unless your flour has been irradiated) you might see a slight amount of fermentation taking place due to

the presence of those yeast spores. If you want to encourage the bacterial fermentation side of the equation adjust the finished dough temperature to 90F/32.2C and maintain it at that temperature for the duration of the fermentation time BUT DO NOT eat any of the raw dough as you will have no idea of what bacteria you have cultured....not all bacteria present are "good" bacteria. The use of yeast in the dough creates a yeast rich environment which acidifies the dough to effectively prevent the growth of these other less desirable organisms.

Tom Lehmann/The Dough Doctor

3274

### **Dough Clinic / Re: Whole wheat mix**

I would start with a 70/30 blend of white and whole-wheat flour. To arrive at the correct dough absorption it must be calculated separately for both the white flour (65%) and the whole-wheat flour that you are planning to use. To find the absorption of the whole-wheat flour tare a small bowl on your scale, add 10-ounces of whole-wheat flour, Add 70% absorption to the whole wheat flour and stir well (DO NOT MIX). Allow to hydrate for 1-hour and check the consistency, you want to see a consistency about like that of stiff oatmeal, add additional water in 15-gram/ml increments, stir in and allow to hydrate for 1-hour. Repeat this until the dough doesn't tighten up during the 1-hour hydration period. Divide the weight of water that you added (in ounces) by the weight of the flour (in ounces) and multiply by 100, now subtract 5 from that percentage and that is the percent absorption to use with that particular whole-wheat flour. So now all you need to do is to use that number to calculate the amount of water to add for the amount of whole-wheat flour you've opted to use and add that to the amount of water added for the white flour and that is your total dough absorption. Keep in mind that doughs made with whole-wheat flour, either in total or in part, will be slightly tacky immediately after mixing, this is normal and it will diminish as the bran portion of the whole-wheat flour absorbs the water. If you do not do this the bran WILL absorb water after mixing and give you a finished crust which is dry and has a poor mouth feel.

If you go back in the archives you will be able to find where I've covered this in detail before. I've also written an article on it in PMQ Magazine.

NOTE: If you wish to work in metrics I suggest using 300-grams of flour (or any amount you wish to use), the math will be the same.

Tom Lehmann/The Dough Doctor

3273

### **Dough Clinic / Re: Pre-ferment without yeast or starter**

If we are talking about a commercial application here my advice would be to use between 40 and 50% white flour to hold the dough together and provide finished crust characteristics your customers will be able to relate to. As for which grains to use, I think I've used them all at one time or another, but due to increased consumer interest lately I've been doing a lot of work using a blend of "ancient" grains.

Tom Lehmann/The Dough Doctor

3272

### **Sauce Ingredients / Re: Tomato pizza sauce tummy attack**

You have been discussing canned tomato products but how do you handle eating a fresh, ripe tomato...skin and all? Remember, tomatoes are an acid fruit and this does give some people stomach problems but when we get into canned or commercially prepared tomatoes additional acid (citric acid) is sometimes added as an additional preservative step which will make the tomatoes even more acid. How

well you handle eating fresh, ripe tomatoes would establish a base line for you.  
Tom Lehmann/The Dough Doctor  
3271

### **Dough Clinic / Re: Reballing as salvage**

Bill;

With a regular yeast leavened dough you could have most likely gotten away by just re-ball the dough and waiting for it to loosen up again for opening but with a sourdough one never knows for sure so here is what I like to do when trying to save an old sourdough from the trash bin.

Gather up the dough and weigh it. calculate 15% of the dough weight and use this for the amount of fresh flour that you will weigh out and add to the mixer, then add water at the rate of 1/3 of the amount of flour you just put in the mixing bowl, stir together for a few seconds and add your old sourdough, then mix the dough JUST until the dough begins to smooth out a little....DONE MIXING. Immediately scale and ball, RF for use on the same day or CF for use on the following day.

Tom Lehmann/The Dough Doctor  
3270

### **Dough Clinic / Re: Whole wheat mix**

What I mean by "when the dough doesn't tighten up" it will look a lot like wet, soupy oatmeal. When it tightens up it will have a congealed appearance. This method yields a good, working dough absorption for making most types of pizzas but like everything else, you can adjust the total dough absorption for specific applications. The accepted industry definitions for absorption and hydration are as follows. ABSORPTION: A characteristic property of flour to take up and retain water or other liquid. Absorption is determined by measuring the quantity of liquid needed to produce a dough of desired consistency. It is expressed as a percent. The percent is the number of pounds of water or other liquid needed per pounds of flour. HYDRATION: The absorption or uptake of water by solid materials, e.g. flour. In bread making , two aspects of hydration are important: the total amount absorbed (hydration capacity) by the flour and the rate at which it is absorbed (rate of hydration). A good example of this is in comparing a regular, patent grade white flour (which has a fairly fast rate of hydration) against a whole-wheat flour (which has a much slower rate of hydration). This is why I don't like to use the terms interchangeably.

Tom Lehmann/The Dough Doctor  
3269

### **Dough Clinic / Re: Reballing as salvage**

The GMFS (General Mills Full Strength) will work just fine. The reason for using only 33.3% absorption on the added flour is to help address the softer dough condition resulting from the old sourdough. If you find that the dough is a little too tight/stiff for your liking don't hesitate to add a little more water. Hand mixing is fine but you might want to make sure you chop/cut the old sourdough into smaller pieces to ensure a more uniform dispersion in view of the hand mixing.

Tom Lehmann/The Dough Doctor  
3268

### **Dough Clinic / Re: A little more crisp...**

You have several options available to explore;

1) Increase the dough absorption a couple percent, this will give you a dough that might be better suited for your baking temperature and what you are trying to

achieve.

2) You could reduce the oven temperature and shoot for a 90-second baking time.

3) I would delete the oil from the dough formula.

4) When you described your dough mixing you used the words "nice and soft", to me this could mean that you are actually over mixing your dough, remember, you want to mix it JUST until it takes on a smooth appearance.

Tom Lehmann/The Dough Doctor

3267

### **Dough Clinic / Re: Whole wheat mix**

I DO NOT recommend an overnight poolish at room temperature, a couple/few hours is ok but I don't recommend overnight as you have no idea of what you might be growing in there, nothing wrong with putting it in the fridge for use on the following day, this will "kill two birds with one stone" it will allow for complete hydration of the whole-wheat flour and it will be sufficiently cold to help control your finished dough temperature after mixing. Bread and pizza doughs made with whole-wheat flour should be mixed a little on the cool side anyways. I always target for a 70 to not more than 75F finished dough temperature when making a dough with whole-wheat flour.

Tom Lehmann/The Dough Doctor

3266

### **Dough Clinic / Re: A little more crisp...**

Weight wise you're spot -on.

The oil is referred to as a tenderizer with regard to ingredient performance.

Deleting the oil will enhance moisture loss (bake-out) during the baking process which should result in a crispier finished crust. Without the oil though you might find that the finished pizza has a little less flavor and will tend to absorb moisture from the sauce and toppings faster than if oil were used in the dough formulation.

Tom Lehmann/The Dough Doctor

3265

### **Dough Clinic / Re: Whole wheat mix**

When we use a poolish using whole-wheat flour we typically use no more than 0.05% IDY. The idea here is to allow the flour time to fully hydrate, you really don't want to allow the whole-wheat flour to ferment very much at room temperature as this will allow for enzymatic activity as well as bacterial activity (whole-wheat flour tends not to be as clean as a patent type bread flour). This is due to the presence of the outer seed covering aka bran. One other thing to keep in mind is to use only freshly milled whole-wheat flour as it contains the germ portion of the wheat berry which is not very stable and turns rancid quite fast. This is why in previous posts I've highly recommended that if you open a freshly milled bag of whole-wheat flour the remainder should be frozen for best keeping properties. The baking industry considers the shelf life of whole-wheat flour to be not more than 2-weeks from time of milling. This is one of the reasons why it is commonly reported that freshly milled (home milled) whole-wheat flour provides a better flavor to the finished crust than commercially purchased whole-wheat flour which by the time it has gone through the distribution channels might be a month or more old.

Tom Lehmann/The Dough Doctor

3264

### **Dough Clinic / Re: No knead "foolproof" pan dough.**

For what you are doing I think your dough absorption might be a little high at

68.75%, I would suggest dropping it back to maybe 62%. Also, you don't indicate what the finished dough temperature is. It should be between 75 and 80F for what you are doing. The pictures which you provided show a very undeveloped dough. Biochemical gluten development is used to develop the gluten in doughs like this BUT you need to allow sufficient time for this to take place. Typically, you will need a minimum of 6-hours to get sufficient gluten development. After 6-hours bulk fermentation at room temperature scale and ball the dough then set the dough balls aside to continue fermenting until the dough is sufficiently relaxed to be opened easily to fit the pan. Then lightly grease the pans and then add your oil...yes, use both shortening (grease) and oil. once the dough has been opened and fitted to the pan set it aside for about 20 to 30-minutes and re-fit the dough to the pan (it will have most likely pulled away from the sides of the pan), allow the dough to proof in the pan for about 20-minutes (time will be variable) then put the panned dough into the fridge (uncovered) to cool for about 1-hour, cover or place into a wire tree rack and cover with a food contact approved plastic bag to prevent drying. The dough can easily be held for the better part of a day in this manner. I have a dough formula and procedure for making this type of dough in the Recipe Bank at PMQ. It's shown under pizza dough/home made.

Tom Lehmann/The Dough Doctor  
3263

#### **Chitchat / Re: Pizza Size - bang for your buck**

When our boys were MUCH younger than they are now we used to visit Pizza Hut twice a month to get a large (16") deep-dish pizza. I discovered if we went there on Friday night (our usual pizza night out) after 7:00 p.m. they would be out of 16" dough ready to use (remember, this is when they mixed the dough, panned it and proofed it all right in the store) so they would substitute two regular deep-dish pizzas (12") for the 16". Let's see....16" pizza = roughly 201 square inches and two 12" pizzas = 113 square inches each for a total of 216 square inches. For the same money the two 12" pizzas gave us about 8% more pizza. Remember, we can use the same math to estimate dough weights for different size pizzas as well as sauce and cheese weights too.....ain't math GREAT?!!!!

Tom Lehmann/The Dough Doctor  
3262

#### **Dough Clinic / Re: No knead "foolproof" pan dough.**

Absorption is the amount of water that you add to the dough to achieve a desired dough consistency. The math looks like this: 12500 X 62 (press the "%" key and read the amount of water to add in the display window (the answer will always be in the same weight units as the flour is shown in) so in this case the answer is 7,750 g.

Those holes are nothing more than gas bubbles resulting from the fermentation process. If you want to use a different process try this one:

- 1) After mixing the dough allow it to rest for 30-minutes.
- 2) Turn the dough out of the tub and scale into desired weight pieces.
- 3) Form into balls.
- 4) Oil each dough ball and place into individual plastic food bags (DO NOT USE ZIP-LOCK BAGS).
- 5) Twist the open end of the bag to form a pony tail and tuck it under the dough ball as you place it into the cooler (they can be placed on a sheet pan for easier handling)
- 6) Allow the dough to cold ferment for 24-hours. It can be fermented for as long as 48-hours if kept in the cooler.

- 7) To use the dough, roll the bag down to the dough ball and invert the dough ball allowing it to fall free from the bag onto a floured surface. Bags can be reused.
- 8) Lightly oil your hands and carefully open the dough to fit into your pans.
- 9) Place opened dough into pan and fit to the pan.
- 10) Set pans aside for 30-minutes (cover with a sheet of plastic) to further relax.
- 11) Final fit the dough to the pan and set aside again to final proof to the desired height, dress and bake.
- 12) If you want to hold the pan proofed dough in the fridge only PARTIALLY proof the dough (DO NOT GIVE IT FULL PROOF) as it will continue to proof in the cooler for some undetermined time. Every shop is different so you will need to experiment to find the correct amount of pan proof for YOUR shop. After the dough has been partially proofed (normally around 20 to 30-minutes) place the pans of dough in the cooler (UNCOVERED) for one hour, then cover to prevent drying. Placing the pans in a wire tree rack and covering with a plastic bag is an excellent option for covering the dough. The dough will keep for the remainder of the day or if made at the end of the day it can be used FIFO on the following day.
- 13) To use the panned dough just remove from the cooler, dress and bake.

NOTE:

Those "bright" silver colored pans are not the best for a deep-dish or pan style pizza, they really need to be seasoned to achieve a darker color which will absorb heat rather than reflect it during baking.

Tom Lehmann/The Dough Doctor  
3261

**Dough Clinic / Re: No knead "foolproof" pan dough.**

There is no benefit to trying to refrigerate a bulk dough mass much over 2-Kg. in total weight as it will literally take days in the cooler to stabilize the rate of fermentation. My suggestion is that you handle a few dough balls in this manner from your next dough just to see if you like what it provides for you, then you can decide if you want to make a change and buy another cooler or stay with what you are presently doing.

Tom Lehmann/The Dough Doctor  
3260

**Dough Clinic / Re: A little more crisp...**

Actually, it is more effective than using oil/fat in the dough formula since it puts less oil into the dough and it puts the oil exactly where it's needed to prevent moisture migration from the sauce and toppings into the dough/crust.

Great point, I'm glad you brought it up. :)  
Tom Lehmann/The Dough Doctor  
3259

**Dough Clinic / Re: mixing dry ingredients with food processor**

Lou;

Keep in mind that if you use IDY or ADY it MUST be hydrated/activated prior to addition when the total mixing time is less than 4-minutes. Even when we use CY (compressed yeast) in a VCM (vertical cutter mixer) I like to suspend the CY in a portion of the dough water prior to addition. CY can be suspended in cold water BUT ADY or IDY MUST be hydrated/activated in 100F water for ADY or 95F water for IDY (about 5-times the weight of the dry yeast as warm water is sufficient).

Tom Lehmann/The Dough Doctor  
3258

### **Dough Clinic / Re: A little more crisp...**

Only if one were to get over zealous with the application of the oil. If you can see a shine on the surface of the skin you have enough oil applied. Too many people try this using a brush as it they're painting a house, or worse yet, they spray the oil on, you just want to "dry" brush the oil on, try to oil the skin while using as little oil as possible. We do this all the time and never have any problems....except when someone gets carried away with the oil addition, then the problem is oriented around the toppings slipping on the baked pizza, we have never seen a gum line result from excessive (within reason) oil addition.

By the way, this is the secret to making French bread pizza while keeping the sauce from being absorbed into the crumb of the bread.

Tom Lehmann/The Dough Doctor

3257

### **Dough Clinic / Re: Extended autolyze for Square pie**

Since the purpose of an autolyze is to allow time for the flour to fully hydrate if the flour is being fully hydrated in 1-hour you most likely won't see any real difference after 10-hours. If you hold it at room temperature you conceivably could be making a petri-dish out of the autolyze and growing? This is especially true when no yeast is used. When yeast is used there is also fermentation which impacts the flavor of the finished crust as well as potentially impacting the handling and performance characteristics of the dough and the acids formed by the yeast during fermentation help to control any unwanted microbial growth. A way to get around this is to place the autolyze in the fridge where temperature will help to stabilize it.

Tom Lehmann/The Dough Doctor

3256

### **Dough Clinic / Re: A little more crisp...**

One could sauce all the way out to the edge? If bubbles and char are the issue I would look more closely at how the pizza is being baked, maybe lower the temperature a little, or experiment using a screen under the pizza for part of the bake, then to look at the dough formula, maybe deleting any sugar, milk, eggs or other ingredient which would encourage crust browning would help. A number of years ago I consulted with a fellow who wanted to develop a pizza with a lot of sauce (maybe similar to yours) but he objected to the sauce rolling off of the pizza during baking. Our solution was to begin baking the pizza in a well seasoned cutter pan (40-degree raised shoulder on the pan) and then transfer the pizza to the deck to finish baking, it worked well as the now raised edge was off of the deck so it didn't get too much color but the bottom was nicely browned. Do I see some experimenting in your future? :chef:

Tom Lehmann/The Dough Doctor

3255

### **Dough Clinic / Re: mixing dry ingredients with food processor**

Lou;

Personally, I like to add it to the water.

Toim Lehmann/The Dough Doctor

3254

### **Dough Clinic / Re: Metal dough retarding tins**

Adam;

I'm sorry but I can't help you on this one as I have relegated myself to using only plastic food bags/bread type bags for storing my dough in. Nothing to clean and

nothing to store, plus one size fits all. I'm sure others here will be able to direct you to the dough storage tins you have requested.

Tom Lehmann/The Dough Doctor  
3253

**Dough Clinic / Re: Extended autolyze for Square pie**

Mixed with cold water, stored at room temperature or under refrigeration? How many hours?

Tom Lehmann/The Dough Doctor  
3252

**Dough Clinic / Re: NY Pizza Dougg**

Don't forget to include your dough formulation too.

To add to what "the1mu" said, sometimes we get desensitized to flavor after a while (it happens to the experts too) and we lose track of where we're at with regard to developing the flavor we're looking for, this is where a good base line comes into play as it can be used as a reference point in determining exactly where one is at flavor wise. Then too, maybe you need to go the sourdough route to get the flavor profile you're looking for??

Tom Lehmann/The Dough Doctor  
3251

**Newbie Topics / Re: Hydration %**

Irishboy;

The only similarity between oil and water in a dough application is that they are both liquids at "normal room temperature". Water combines with the proteins in the flour (glutenin and gliadin) which when agitated, forms that rubbery stuff which we call "gluten", oil on the other hand can soak into the flour and the proteins but gluten will not be formed no matter how much the dough is mixed. Water is lost during the baking process (bake out) but oil is not lost so any oil added to the dough is still there after baking regardless of how much the dough/pizza is baked. So how does oil get tossed into the dough absorption bag? Remember, they're both liquids and as such both contribute to the viscosity of the dough, so if we are talking ONLY about the viscosity of the dough you might say that oil and water are similar and part of the absorption picture but that's where all ends, beyond that if you add too much water to the dough it isn't catastrophic as some of that water will be baked out. Actually, the average finished moisture content of a thin pizza crust is about 30% regardless of the amount of water that is added to the dough (absorption) but as oil is not baked out it also serves to make the finished (baked) crumb portion of the crust softer and if too much is added it will make it down-right gummy (pasty). In dough formulation oil is known as a tenderizer and also as a crumb softener, due to the fact that it repels water it also impacts the mouth-feel and mastication properties of the crust making it seem less dry and more tender eating (tenderizer). The ability of the oil to repel water also reduces the ability for moisture from the top of the pizza to migrate down into the dough both during and after baking and in that manner help to mitigate the development of that old "dreaded gum line" in the finished pizza, especially if we pre-sauce or pre-dress the pizzas in advance of baking. This is why I do not consider oil as part of the dough absorption value, it just has too many other functions in the dough which are very unlike those provided by water. Additionally, when formulating a dough in bakers percent flour is ALWAYS 100% then we decide how much water we want/need to use and divide that amount by the total flour weight to show it as a bakers percent, then we do this with each of

the other ingredients, including the oil, and show the amount used in bakers percent.

I might also add that as oil will soak into the flour (proteins) rendering them unable to create "gluten" we developed the delayed oil addition method of dough mixing where the dough is mixed without the oil just until the flour has absorbed all of the water, we then add the oil and continue mixing until the dough is "just" smooth. This allows the flour to "hydrate" on only the water to give consistent gluten development.

Tom Lehmann/The Dough Doctor  
3250

### **Dough Clinic / Re: Parbaking Thick Crust**

After baking allow the crusts to cool to between 95 and 105F / 35 and 40.5C before wrapping them. Due to the HUGE surface area of the edges you will always see more moisture loss from the edges during the baking and cooling period. There isn't much you can do about the bake loss but by wrapping them within this temperature range you will do a lot to help retain some of that water the gums are carrying for you in the dough. This is why we do the same thing with sliced bread and hamburger/hot dog buns, to help retain moisture.

Tom Lehmann/The Dough Doctor  
3249

### **Dough Clinic / Re: Extended autolyze for Square pie**

When I was at AIB we once had a Director in our Food Safety Group that used to say "If it wasn't for the oven, bakers would have poisoned mankind thousands of years ago" People get sick (the lucky ones) eating raw cookie dough and raw cake batter (had a case in the news resulting from eating raw cookie dough last year) but ever notice that no one ever gets sick eating the baked cake or cookies.....unless they eat too many, but that's a different story. Fire is indeed our friend when it comes to food safety!

Tom Lehmann/The Dough Doctor  
3248

### **General Pizza Making / Re: 0.06% IDY**

If anybody is interested in learning a lot about fermentation, function of ingredients and different commercial bread making processes (many of which are very similar to what is used in making bread and pizza at home) look into getting a copy of Baking Science and Technology by E.J. Pyler. You should be able to find it on Amazon or even in your local library. This book was required reading by our Baking Science and Technology (resident) students when I was employed by the American Institute of Baking (AIB).

Tom Lehmann/The Dough Doctor  
3247

### **General Pizza Making / Re: The dreaded sliding cheese.....**

I agree with Andy, you are probably using too much sauce. The use of a sauce that is too watered down can also contribute to the problem too. The next time you make pizza use only half as much sauce on your pizza(s) to see if that works for you. If it does and you still want more sauce begin increasing the amount of sauce on your pizzas until you find the "sweet spot" where you have the maximum amount of sauce but the cheese doesn't slide off with the first bite. Since all pizzas are different the amount of sauce for any one size pizza will vary, you just need to find the amount that works for YOU.

Tom Lehmann/The Dough Doctor  
3246

**Chitchat / Re: Pizza Expo**

I'll be at Pizza Expo as I'm on the program...stop in at my presentation and say "Hello".

Another excellent, though not as large, but cheaper to attend and it is pretty well open to anyone, is the show sponsored by the Ohio Restaurant Association. Since I'm not participating in that show I don't have any particulars but you can get the show details directly from the Ohio Restaurant Association web site. Their show is coming up real soon. I believe that Norma may have attended the show a few years ago?

Tom Lehmann/The Dough Doctor  
3245

**Dough Clinic / Re: Best method to add IDY to 35-37% hydration dough?**

Being a "south sider" I grew up on Ed and Joe's pizza (still in business today) in Tinley Park (175th street/south). Another good place to see this type of pizza is at one of the Beggar's Pizzerias (the one we used to go to was located at about 150 south on Cicero Avenue in Oak Forest.)

Tom Lehmann/The Dough Doctor  
3244

**Dough Ingredients / Re: Flour repackaging ideas solicited**

The bay leaf approach might work if we were concerned over insect infestation from the outside but what we are really concerned about is infestation from the inside. Most home flours have been sitting in a storage depot or on the shelf for some period of time so they are exposed to conditions ripe for infestation, plus there is also the probability that all of the existing insect eggs were not destroyed during the milling/processing of the wheat into flour, these eggs will hatch within a month or so at warm temperatures to produce the larvae that is commonly referred to as "worms", these mature into adult, breeding insects which then lay eggs and the cycle begins. A common infestation, aside from flour and cigarette beetles is the Indian Meal Moth, this little critter forms a web in the flour causing it to clump or have the appearance of clumped flour, when you see this you know you have a problem. Aside from insect infestation we also have flour oxidation to contend with, this is a very real phenomenon which results in a change in the flavor profile of the flour as well as a change in the way it performs. In this case the oxidized flour performs as a much stronger flour which could be good or bad. In home pizza making this flour acts like an over bromated flour which when made into a dough exhibits excessive memory/snap-back characteristics. This characteristic is even present in some freshly milled flour which was milled at the end of the crop year (spring wheat flour is planted in the spring and harvested in the fall so the end of the spring wheat crop year is in June, July and August for the most part) this is because the wheat used to make the flour has been in silo storage since harvest and has already oxidized to a great extent, then when the wheat is milled into flour the surface area increases tremendously opening the door for even more oxidation to take place between milling and final use.

Can you buy a small chest freezer? I've got a small one that I picked up a couple of years ago at a thrift store for only \$50.00. It's smaller than the desk that I'm typing this from but it stores all of my pizza making supplies with some room to spare. Right now I've got about 35-pounds of flour in there (portioned into plastic bags) with 5-pounds in each bag, Some cheese that I picked-up recently on sale, frozen

tomatoes as well as dehydrated tomatoes from our summer garden and a few containers of sauce from when I made calzones for the family over Christmas (a tradition in our house). Because I'm not into the freezer all the time the top of it also serves as a storage space for a couple of plastic milk crates containing my pizza making utensils and a bunch of old towels for clean-up and an assortment of pans, screens and disks.

Tom Lehmann/The Dough Doctor  
3243

**General Pizza Making / Re: The dreaded sliding cheese.....**

Nice looking pizza! Great bake on it too!

Tom Lehmann/The Dough Doctor  
3242

**Dough Clinic / Re: New KitchenAid Mixer Dough Hook Question**

If you are constantly cutting the dough off of the agitator just go up to the next higher speed. Variations in dough absorption as well as dough size are what have the greatest influence on ability to mix at the higher speeds.

Tom Lehmann/The Dough Doctor  
3241

**Shop Talk / Re: Fork mixers**

Angelo;

Google "ARTOFLEX DOUGH MIXER" this is a type of mixer that emulates hand mixing much in the same way as a "fork" type mixer does.

Tom Lehmann/The Dough Doctor  
3240

**Shop Talk / Re: Fork mixers**

Planetary mixers by design have a difficult time mixing stiff doughs due to the fact that the agitator is being driven through the dough whereas the spiral design mixers are only mixing a small portion of the dough at any one time so there is much less force applied to the mixing agitator (spiral), this is also why they can be had in large capacities (for a bowl type mixer) and they are possibly the most trouble free of all the mixers.

Tom Lehmann/The Dough Doctor  
3239

**Dough Clinic / Re: sour taste + oven rise, how can we have both ?**

Something you might want to try, we have done this commercially with sourdough and it works reasonably well. When you open the dough into skins place it into a lightly oiled pan, a cutter pan works quite well for this (be sure the pan is well seasoned) and set it aside to proof for an hour or more, then dress the skin in your normal manner and bake just long enough so you can slide the pizza out of the pan to finish baking on the oven deck/stone. The proofing time won't give you tons of oven spring (I don't know what your expectations are) but it will help to open the crumb structure producing a "lighter" textured finished crust.

Tom Lehmann/The Dough Doctor  
3238

**Shop Talk / Re: Space between pizza table and electric oven.**

If that will be your prep area it is much too small. Can you tell us what your product mix (other products aside from pizza) is going to be? What size pizzas are

you planning to make? Will you be using a baking platform or baking right on the deck?

Tom Lehmann/The Dough Doctor  
3237

### **Shop Talk / Re: Fork mixers**

All planetary mixers are NOT created equal, some are better suited to mixing tough doughs than others, if I was going to look for a planetary mixer for mixing a tough pizza dough I would limit my search to either of two Hobart mixers, the P-660 (40-qt.) or the M-80 (80-qt. and scarcer than hens teeth) or the newer model of the M-80, the M-802. These mixers have the guts to mix doughs based on up to 50-pounds of flour weight, any other mixer in my opinion is really just a light duty or medium duty mixer. Keep in mind that the M-802/M-80 mixers can also be fitted with smaller size mixing bowls using a bowl saddle and correct agitator. Make sure you get a reverse spiral dough arm too if you look to buy a used mixer.

Tom Lehmann/The Dough Doctor  
3236

### **General Pizza Making / Re: Nwin's pizza journey**

To answer the question on why the sauce became watery after an extended frozen storage period this is most likely due to the effects of a frost free freezer on the cells of the tomato product used in making the sauce. Slow/static freezing results in a very large ice crystal formation which destroys the cells in the tomato which hold the juice (some refer to these as "juice sacks"), similar to what we see in citrus fruits (remember that the tomato is a fruit). The simple act of just slow/static freezing the tomato will destroy many of those juice sacks, but when you add in the impact of defrost and freezing MANY times such as is the case with a frost free freezer (the higher the Energy Rating the worse it is) the sauce becomes almost like water and you can see this in the syneresis that take place if you put a spoon full of sauce on a china plate and wait about 15-minutes. This is why those of us who grow our own tomatoes in an area where freezing temperatures signal the end of the growing season ALWAYS pick the last of our tomatoes prior to the first frost of the season.

Tom Lehmann/The Dough Doctor  
3235

### **Shop Talk / Re: Space between pizza table and electric oven.**

While some may combine dough balls to make different size pizzas I don't like to do it because it always results in variations in the dough as it is more difficult to open than a single dough ball of the correct weight, the biggest issue we have seen is in getting an even thickness across the dough skin. My recommendation is to make dough balls of specific weight for each size pizza you intend to make. When properly managed you can make and use the dough after 1, 2 or 3-days without any problem, if you don't intend to use the dough balls prior to the first or second day after mixing the dough you can extent the holding time out to 4 or 5-days. It just depends upon how much refrigerated space you have for dough storage and how you want to manage the dough.

Hamburgers and hot dogs with pizza? We have found that these items are in direct competition with pizza so what you end up with is doing three times the work and equipment investment for (pizza, hot dogs and hamburgers) the same in sales as you would get from just the pizza alone or depending upon your customers, either one of the other two. If it were me, I'd do just the pizza, mighty fine pizza too, but that's just me.

Tom Lehmann/The Dough Doctor  
3234

**Dough Clinic / Re: What am I doing wrong with my dough?**

Need more information:

- 1) What is the dough weight and what size skin are you opening it into ?
- 2) What is your baking platform (deck, screen, disk, pan, etc.?)
- 3) What is your baking temperature?
- 4) Typical baking time to get a "cooked"/baked pizza?
- 5) Can you provide us with any pictures (top and bottom) of your pizzas?
- 6) You do realize that you are using 5% salt...right? This is about twice the amount normally used in making pizza dough.

Tom Lehmann/The Dough Doctor  
3233

**Dough Clinic / Re: What am I doing wrong with my dough?**

What does the bottom of your pizza look like? Also, if you can provide a picture of a cut slice of the pizza which is taken as a side view so we can see what the crumb (grain) structure looks like this would help in determining if the dough fermentation is correct.

Your scaling weight is OK for a 30cm/12" diameter pizza.

If the side view of the crumb structure shows any collapse this might be a cause for the toughness/chewiness being experienced. The bottom color would also provide an indication as to whether the pizza is being properly baked. This is important as an under baked pizza quickly takes on tough, chewy mastication properties.

If you are just trying to impart a more tender eating characteristic to the pizza the inclusion of 2% oil/fat to the dough formulation will also help (fat is classified as a tenderizer). Think of the eating properties of French bread (no fat), now think of white pan bread (4 to 6% fat).

Tom Lehmann/The Dough Doctor  
3232

**Neapolitan Style / Re: Sauce: To salt or not to salt**

I don't use added salt either, I haven't for more than 25-years now and indeed, most prepared foods are WAY too salty for my taste, and I totally agree that you can pick-up on flavors that you previously couldn't detect. Because of this I was one of the more "popular" persons on our sensory panel as I could detect things that were un-noticed by many of the other panel members. Since I don't add any salt to my sauces (only to the dough) I always advise people to feel free to use the salt shaker if they so desire as I have not used any salt in the preparation of their pizza.

Surprisingly, very few people do add any salt to the pizza as the natural flavors carry the flavor profile (think Mrs. Dash) and in reality, the cheese provides all of the salt needed for a well rounded flavor profile.

Tom Lehmann/The Dough Doctor  
3231

**Pizza Toppings / Re: Would this topping combination work?**

Sounds interesting! To thicken the sauce you might try using grated Parmesan cheese, giving you something a little like an Alfredo sauce, as for dressing the baked pizza with spinach....sounds GREAT!

Keep us posted.

Tom Lehmann/The Dough Doctor  
3230

## [\*\*General Pizza Making / Re: Impact of Dough Temperature When Opening the Dough Ball for Baking\*\*](#)

When dough balls are opened after they have reached a higher internal temperature it is because of the impact of the temperature directly upon the dough. As wheat based doughs warm they become softer and more extensible until they begin to break down at about 100F. This is NOT due to the release of glutathione but instead it is due to the disassociation of the wheat protein (gluten) at the higher temperatures. This is why commercial bread proofers operate at 100 to 103F. This temperature allows for the maximum expansion rate of the dough but still allowing it to retain sufficient strength to withstand the mechanical transfer points on the production line, even then, dough strengtheners are commonly added to supplement the dough strength and improve oven spring properties.

For glutathione to be released from the yeast cells you must, in some manner, collapse the cell membrane, this can be done in a number of ways:

- 1) slow/static freezing the yeast after it has been feeding/fermenting for a period of time (large, angular ice crystals puncture the cells allowing for the release of glutathione).
- 2) Exposure to heat, temperature above 135F will kill the yeast and allow for the release of the glutathione (this is how products like RS-190/"dead yeast" are made).
- 3) Starving the yeast will result in the yeast cannibalizing and feeding upon other yeast cells thus resulting in the release of glutathione.

These are the most commonly encountered ways that glutathione is released from the yeast cells. Letting the dough warm from 65 to 75F will not result in the release of glutathione.

Tom Lehmann/The Dough Doctor  
3229

## [\*\*Neapolitan Style / Re: air pockets in my dough balls\*\*](#)

Is there a possibility that you might be trying to ball the dough too tightly? When I make bread I follow a procedure similar to what you are doing, I ferment the dough in a lightly oiled bowl, and invert it onto a lightly floured surface, I then slap (spanking the dough is what my wife calls it) a few times to degas and relax it, I then ball it while incorporating as little work into the dough as possible and this works fine for me. When opening the dough into a skin try the same procedure. If the dough ball doesn't deflate to some extent when you begin opening it into a skin the dough is either not yet ready to be opened or it might be that it has been over fermented and now getting "bucky", a condition where the dough is no longer extensible but is too elastic to be opened, and if you should succeed in opening it into a skin it will exhibit pronounced memory/snap-back characteristics.

Just a thought.

Tom Lehmann/The Dough Doctor  
3228

## [\*\*General Pizza Making / Re: Impact of Dough Temperature When Opening the Dough Ball for Baking\*\*](#)

Mitch;

That sounds right to me too.

The dough was easier to open because of both the additional fermentation (yeast ferments faster as the temperature rises) and due to the temperature effect upon the wheat proteins (making them softer and more extensible).

Tom Lehmann/The Dough Doctor  
3227

## **Neapolitan Style / Re: air pockets in my dough balls**

It does sound like you are putting a lot of work into rounding the dough balls, I fold the dough three, maybe four times at the most and then finish rounding on the counter top. With that said, my dough NEVER leaves the counter top for the entire rounding process. If you pick the dough up during rounding it is much easier to round the dough too tightly. I've never worried about the gas bubbles in the dough when making pizza, bread dough yes, but not pizza dough as those bubbles will help to give me the open, porous crumb structure in the finished crust that I'm looking for. If you go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> you will be able to view one of my videos/How to Make Pizza Dough/Part-2 and see a demonstration on dough rounding. In the video you can see how we do not round the dough ball very tightly.

Tom Lehmann/The Dough Doctor

3226

## **Dough Clinic / Re: Freezing Pizza dough**

And don't forget that a lot of the success with frozen dough depends upon how long the dough is frozen. Assuming that the dough is slow/static frozen with the temperature range of +10 to -10F the dough will exhibit a frozen shelf life of 10 to 15-days during which it will produce acceptably consistent performance characteristics, with storage times beyond that performance becomes spotty and inconsistent at best. In order to achieve maximum frozen shelf life (12 to 21-weeks) the dough must be blast frozen either mechanically (-20 to -35F) or cryogenically using an industrial cryogen gas such as liquid carbon dioxide or nitrogen (-50 to -65F). The lower freezing temperatures allow for the development of a smaller ice crystal size within the yeast cells which is less damaging to the cells. In a home setting we also have to take into account the impact of freeze-thaw which is induced by the frost-free feature of our 5-star energy rated freezer. The effect of constant freeze-thaw (as many as 24-cycles in a 24-hour period) is extremely deleterious to the viability of the yeast in a dough after frozen storage.

Tom Lehmann/The Dough Doctor

3225

## **Neapolitan Style / Re: Problem when using a dough mixer**

The problem stems from a poor hook design...other mixers with a plain "J" hook design similar to yours have the same problem. A couple of things you might try; 1) Mix at a higher speed.

2) Initially use a agitator designed for batter (NOT the whip) and when the dough begins to develop change to the hook and mix at a speed just fast enough to through the dough off of the hook.

3) In many cases the problem can be diminished by mixing a larger size dough. I would try #1 first. The higher speed will not harm the dough, it will actually give you better gluten development, but listen to your mixer, it will tell you if it is working too hard to mix the dough.

If you use #3 begin your mixing at a lower speed to see if things improve (many time it will) and go to a higher speed ONLY if the dough continues to cling to the hook. Be careful though as the larger dough will put a greater load on your mixer, especially when you mix at a higher speed.

Tom Lehmann/The Dough Doctor

3224

## **Pizza Toppings / Re: Would this topping combination work?**

We work with thin slice apples all the time and they work just great! Be sure to soak the apple slices in some lemon water though to prevent them from browning after slicing. Granny Smith apples are the preferred apples, but just about any apple will work. Be sure to leave the peel on for the added flavor.

Tom Lehmann/The Dough Doctor  
3223

**Dough Clinic / Re: New KitchenAid Mixer Dough Hook Question**

A great 5-quart capacity dough mixer is the Hobart N-50 mixer. It has 3-speeds, all metal gears and it is considered to be the Clydesdale of all the small Hobart mixers. We used them for many, many years at AIB and never once did they ever require any servicing.

Tom Lehmann/The Dough Doctor  
3222

**Dough Clinic / Re: Freezing Pizza dough**

Actually, the more sugar you can add to a dough that is to be frozen the better the dough will be. This is because both salt and sugars are solubles which depress the freezing point of water which helps to mitigate some of the ice crystal damage to the yeast cells. It is not just a number game though, remember, all of those damaged yeast cells will be releasing the glutathione contained within each cell, this glutathione will act on the protein to weaken the dough much like L-cysteine (PZ-44) does. This is even available commercially and is known as "dead yeast aka RS-190". This weakening of the dough by the glutathione is addressed, in a commercially frozen dough through the addition of oxidation to the dough which is usually in the form of micro-encapsulated ascorbic acid, azodicarbonamide, potassium bromate (though not very well accepted by consumers) and bromate substitutes/replacers which are far more consumer friendly.

Tom Lehmann/The Dough Doctor  
3221

**Pizza Toppings / Re: Would this topping combination work?**

In adding "another log onto the fire" dates are something else that really works well on pizza, you don't even recognize them as dates when they are use as a pizza topping. I used them first when I was working in Saudi Arabia and then I used them again when working for a pizzeria in southern California, it was date season (fall) and we wanted to promote dates.

Tom Lehmann/The Dough Doctor  
3220

**Prep Equipment / Re: Thinking about buying broken Hobart a120**

The older A-120s (more than 50-years old) had really good motors, much better than the newer ones) but they also had a fiber type sacrificial main drive gear. This gear, while being sacrificial, was actually pretty stout and held up quite well, much better than many of the "plastic" gears being used today. There is a distinct possibility that this might be the only problem if the motor is running but power is not going to the agitator shaft. When I was at AIB we had one of these gears fail back in the early 70s so we replaced all of the sacrificial gears in both of our A-120 mixers with a replacement bronze gear and they were still running fine when I retired several years ago, mind you that these mixers were mixing all kinds of bread doughs on a daily basis so that speaks highly for these mixers. I might note that when we moved from Chicago to Manhattan, KS in the mid 70's we got new A-120s to replace our old ones but soon brought our old mixers out of retirement

as the new ones were what we fondly referred to as "gutless wonders" in reference to the motors with which they were equipped. The "new" mixers were relegated to mixing cake batters and cookie doughs, a task for which we felt they were well suited while our old A-120s were put back into use for mixing bread doughs a task for which we felt they were well suited.

Just my experience and observation.

Tom Lehmann/The Dough Doctor

P.S.

Does the mixer you are looking at have the bowl and any attachments? The bowl and all attachments are dedicated 12-quart accessories specific only to the A-120. Also, there is a reverse spiral dough mixing are available for the A-120 too, a HUGE improvement over the "J" arm/dough hook supplied with the mixer.

TDD

3219

### **Prep Equipment / Re: Need help choosing KA mixer...**

For small dough sizes a food processor is hard to beat in both performance and price.

Think of it as a glorified VCM (vertical cutter mixer) or Robot Coupe Mixer.

Tom Lehmann/The Dough Doctor

3218

### **Shop Talk / Re: Delivery practices?**

I never have been nor do I plan on becoming an advocate for pizza delivery due to any number of reasons from pizza quality, store space required, insurance costs to liability (what are your chances of being named in a suit if your driver is involved in an accident?). With a delivery only store you don't have many options but you can reduce your liability by contracting your drivers through a service which makes sure the drivers have safe/inspected vehicles, sufficient insurance, are properly licensed, etc. The bonus is, in the event of an accident, they will take the brunt of the litigation costs and responsibility, not you. Get a contract in writing and have your attorney check it over.

My two cents worth.

Tom Lehmann/The Dough Doctor

3217

### **General Pizza Making / Re: Impact of Dough Temperature When Opening the Dough Ball for Baking**

When it comes to controlling yeast activity/fermentation rate temperature trumps dough absorption every time. Plus changes in dough absorption will also impact other physical crust characteristics much more than changes in temperature will when looking at the big picture.

Tom Lehmann/The Dough Doctor

3216

### **Neapolitan Style / Re: Is this really a thing?**

She's just being a purist, that's all.

Tom Lehmann/The Dough Doctor

3215

### **Dough Clinic / Re: Using a bakery oven for pizza**

We really need more information on your "bakery" oven. For example, what kind of

oven is it (traveling, reel, deck, etc.)? What kind of deck/shelf surface does it have (steel, composite, grid)? Direct fired or indirect fired? Is it gas or electric? Any pictures? Once we know what kind of oven you have we can make better recommendations as to what you will need to do to improve the quality of your pizzas.

Tom Lehmann/The Dough Doctor  
3214

[\*\*Stones/tiles/steel, Pans & Accessories / Re: Can't keep my pizza steel from instant rusting\*\*](#)

Like cast iron, steel will also rust but a good seasoning (not removed or ever washed) will do an excellent job of preventing the rust as it forms a type of varnish on the entire surface which seals it from air/oxygen thus preventing the formation of oxidation/rust.

Tom Lehmann/The Dough Doctor  
3213

[\*\*New Forum Members / Re: I need to understand over and under proofing\*\*](#)

With regard to terminology, proofing/proving the dough takes place after the dough has been formed for making the final product. For example, bread dough is formed into a loaf shape and placed into a bread pan and allowed to proof aka rise for approximately 60-minutes before it is baked. Deep-dish pizza dough is opened, placed into a pan and allowed to proof/rise for a period of time before being dressed and baked.

If the discussion is on "fermentation", while the word is all encompassing meaning that fermentation is taking place from the time the yeast begins feeding and generating leavening gas (carbon dioxide, alcohol, and acids) until it is killed when it reaches the thermal death point in the oven (about 145F/62.7C) in conversational terms we refer to fermentation as the time the dough is exposed to the effects of fermentation beginning when the dough is removed from the mixer until it is formed in some manner and placed into a container and allowed to "proof" or "rise" prior to baking.

The amount of fermentation that the dough is exposed to will impact the flavor and aroma of the finished product as well as the mastication properties due to its weakening effect upon the wheat proteins. Too much fermentation can result in a strong, or sharp flavor (think sourdough as an extreme), it can also result in dough that is overly extensible and difficult to impossible to handle or open into a skin, and when it comes to baking, an over fermented dough might run out of nutrient for the yeast to feed upon which will result in a "dead" feeling dough that is overly extensible and exhibits little or no oven spring properties during baking. On the other hand, a dough which is subjected to less fermentation, or too little fermentation may exhibit excessive dough memory/snap-back during the opening/forming process, it may also be overly prone to bubbling or exhibit too much oven spring during baking. Finished crusts will typically have less flavor or lack what many describe as a "complexity in flavor" which in many cases is described as "bread like". Because the protein hasn't been as affected by fermentation the finished crust may exhibit unwanted toughness or chewiness. This is especially evident in thick crust/pan style pizzas.

What influences fermentation? More than I can cover here, but the basic drivers are dough temperature, environmental temperature, time allowed for fermentation, amount of yeast, condition/quality of the yeast, nutrient availability, and salt level are the main drivers.

All things being equal, the lower the protein content of the flour the more impact

you will see due to fermentation within any given period of time, this is why we typically see doughs that will be subjected to long fermentation times being made using a high protein content flour, usually in the 13 to 14+% range.

Tom Lehmann/The Dough Doctor  
3212

### **[Dough Clinic / Re: New KitchenAid Mixer Dough Hook Question](#)**

Whenever we added oil to the dough during the mixing process it just coated the outside of the dough ball which caused it to just slide around in the bowl getting essentially no mixing action at all.

Tom Lehmann/The Dough Doctor  
3211

### **[Pizza Toppings / Re: Would this topping combination work?](#)**

When using dates I normally don't chop mine, I just cut them cross wise into slices about 1/8-inch thick and put them on the pizza just like that.

Tom Lehmann/The Dough Doctor  
3210

### **[General Pizza Making / Re: Ever make Dough Mistakes?](#)**

I've made plenty of them too, usually forgetting to add an ingredient but once forgot a pizza in the oven until the smoke alerted us to the fact that something might be wrong in the kitchen. Always said "I sure won't do that again" WRONG! The good news though is that those mistakes, while far from perfect, were still edible.....except for the smoky one, it was beyond salvation. :-D

Tom Lehmann/The Dough Doctor  
3209

### **[Stones/tiles/steel, Pans & Accessories / Re: Do you slice Pizzas in the box](#)**

I like to slice before boxing but the majority of stores that I go into slice in the box.

Tom Lehmann/The Dough Doctor  
3208

### **[Stones/tiles/steel, Pans & Accessories / Re: Can't keep my pizza steel from instant rusting](#)**

One of the ingredients used in enrichment blends, like that added to flour or provided in tablet form, is reduced iron aka rust. The only issue I've ever encountered using rusty pans or baking directly on a rusty surface is a bit of a "funky" rust like flavor when the rust adheres to the product, like Craig said though, it's not dangerous though.

Tom Lehmann/The Dough Doctor  
3207

### **[Detroit Style / Re: Why No Oil - Detroit Style](#)**

I use 3 to 5% oil depending upon the protein content of the flour I'm using. My family says it eats like cotton candy, it's that tender. We like to reserve the chewiness for the thin crust pizzas and tenderness for the deep-dish and Detroit style pizzas.

Tom Lehmann/The Dough Doctor  
3206

### **[General Pizza Making / Re: Soggy pizza on plate](#)**

Depending upon the presentation you can also heat the plate to help REDUCE the

amount of condensation. Pizza Hut used to do something like this many years ago when they served their deep-dish pizzas in the pan to the table with a hot disk under the pan. In a restaurant setting the easiest thing to do is to allow the pizzas to steam-off for a minute or so before serving, this helps tremendously as previously mentioned.

Tom Lehmann/The Dough Doctor  
3205

### **Neapolitan Style / Re: Problem when using a dough mixer**

Welcome to the wonderful world of "J" hooks! Now you know why I hate those silly things. They only really work well when mixing a full size dough for the bowl capacity. BTW, it's perfectly normal for a dough mixer to jump around (we call it walking) while mixing a dough. This is why the larger Hobart bench top mixers are all designed to be bolted to the bench top. Even the floor mixers have provision for bolting them to the floor to keep them from walking. Most of the time we just glue the large floor models to the floor using a silicone adhesive as it works just as well. You can also do this with many of the smaller mixers to if they have a tendency to roam. Use a piece of 3/4-inch or 1-inch plywood a little deeper and wider than your mixer (the larger the better) and glue the mixer to it using any good quality silicone adhesive. You can buy 2 X 2 pieces of plywood at most box lumber stores, I just bought a piece at Menards for \$7.00. Remember, this does add a new dimension to the portability of the mixer though.

Tom Lehmann/The Dough Doctor  
3204

### **Dough Clinic / Re: What am I doing wrong with my dough?**

In my opinion, the last two images show pizzas that are just barely done on both top and bottom.

Tom Lehmann/The Dough Doctor  
3203

### **Dough Clinic / Re: Sourdough pizza dough**

If you're mixing the dough until the gluten film comes "clear" you are over mixing your dough, this is especially true for a sourdough formula. Instead I suggest mixing the dough "just" until the dough begins to take on a smooth appearance, more mixing than that is not necessary nor desirable.

Tom Lehmann/The Dough Doctor  
3202

### **Dough Clinic / Re: What do I do with dough after the 3 day cold rise**

You will want to take the dough out of the fridge and allow it to warm up to 60 F (whatever length of time that may take). Use a stem/dial type thermometer and insert it into the center of the dough ball to get an accurate temperature. Once the dough ball is at 60F you are ready to open the dough ball into a skin at any time within the next hour or so.

Tom Lehmann/The Dough Doctor  
3201

### **Chicago Style / Re: Tin Plated Steel - American Metalcraft**

I've worked with tin plated steel pans most of my professional career (more years than I care to admit to) in the baking industry. While tin does have a melting point of 600F you can safely bake pizzas in a tin plated steel pan at temperatures above 600F without fear of melting the tin off of the steel substrate, this is because we

have dough in the pan which acts like a heat sink and prevents the pan from getting that hot. Just don't put an empty pan in an oven over 600F long enough for the pan to get heated up to oven temperature.

Unless you have good reason for not doing so, don't forget to season those tin plated steel pans for improved baking and release properties.

Tom Lehmann/The Dough Doctor  
3200

**[Prep Equipment / Re: Thinking about buying broken Hobart a120](#)**

We used to get all of our parts directly from Hobart in Troy, Ohio. You might contact Hobart (the only number I have for them is 937-332-2218) to see about parts and while you're at it, ask them if they can give you a date or year of manufacture based on the serial number. You might need it anyway to make sure you get the correct parts. An Internet search might show up a reverse spiral dough hook (cast aluminum alloy). Be wary of any coming in from Mexico as most of them are made from melted down automobile pistons which makes them hard and brittle...just what you don't want. Yes, they do have a splendid reputation for breaking.

Tom Lehmann/The Dough Doctor  
3199

**[Dough Clinic / Re: What do I do with dough after the 3 day cold rise](#)**

June;  
The Infrared thermometers only read the surface temperature, not the internal temperature which is what you actually need to be measuring. In any case, those pizzas really look GREAT! Good Job! :chef:

Tom Lehmann/The Dough Doctor  
3198

**[Dough Ingredients / Re: Whole wheat](#)**

When making whole-wheat crust only whole-wheat flour should be used (100% whole-wheat flour). When making a "wheat" crust you can use any amount of whole-wheat flour you want to but best results will probably be had using 25 to 30% whole-wheat flour with the remainder being your regular strong white flour. Whole-wheat doughs DO NOT like to be fermented for long periods of time so limit the cold fermentation to not more than 48-hours. If making a multi-grain dough the multi-grain blend should be 25 to 30% of the total flour. Only the whole-wheat flour or multi-grain blend are used in the soaker. If you do not use a soaker it is impossible to get enough water into the dough and still be able to handle it. This is why I gave the procedure for finding the absorption of the whole-wheat flour or multi-grain blend. When making any kind of dough containing whole-wheat flour keep in mind that there are two basic types of whole-wheat flour used in bread and pizza baking, that made from hard red wheat varieties and that which is made from hard white wheat varieties. The flour made from hard white wheat varieties aka whole hard white wheat flour, is vastly superior flavor wise to that made from hard red wheat varieties. When formulating a whole-wheat/wheat/multi-grain dough use butter for the fat source for improved flavor.

Tom Lehmann/The Dough Doctor  
3197

**[Prep Equipment / Re: Very Interesting new product](#)**

Cool!!! It looks like it effectively turns a planetary mixer into a spiral mixer complete with the breaker bar....could be a game changer.

Tom Lehmann/The Dough Doctor  
3196

### **Chicago Style / Re: Tin Plated Steel - American Metalcraft**

The problem we used to experience occasionally was when using strapped pans and baking at a temperature high enough to melt the tin, with strapped pans you have 4 to 7-loaf pans joined together using a box frame around the top of the pans. If a formed (molded) dough piece was not dropped into one of the pans at the panning station (panner) it would go into the oven empty which would allow that pan to over heat in the oven which usually resulted in some melting of the tin plate which in turn ruined the entire strap of pans as the damaged pan would not release properly after being damaged resulting in loss of the entire strap (about \$45.00) and that was a good number of years ago.

Without anything in the pan to absorb heat the pan will continue to heat until it reaches the temperature of the oven, or until it is removed from the oven. The steel substrate has a melting point of around 2200F so it isn't going to melt. The dough that we put into a pan seldom rises above 206F, in some bakes the finished product temperature can rise to as high as 210F but that's about as hot as I've ever measured anything coming out of the oven.....the one exception being the time I left an angel food cake in the oven and forgot about it. The cake, if you want to call it that, was totally black and essentially welded itself to the aluminum tube pan it was being baked in but it never got above 385F which was the temperature that we were baking at. As long as there is moisture in the dough it will continue to cool itself through evaporative cooling, but once all the moisture has been baked out of the product the temperature of both the product and the pan rise quickly. Pizzas, by the way, come out of the oven at about 209 to 210F for thin crust and about 206 to 208F for thick crust, loaf breads come out at about 205 to 206F.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
3195

### **Prep Equipment / Re: Very Interesting new product**

Bill;

I agree with your concerns if mixing large size doughs in the KA mixer, but for those mixing smaller size doughs it might be just the ticket. If anybody opts to get one it might be wise to start small and then begin working up the dough size gradually until you know how it impacts the mixer. The outer scraper works just like the scraper used in the Hobart VCM mixers so one might say that this little device turns an average KA mixer into a hybrid cross between a VCM and a spiral mixer, leaning a bit more on the spiral mixer side of the equation. It looks to be a pretty nifty device.

Tom Lehmann/The Dough Doctor  
3194

### **General Pizza Making / Re: Soggy pizza on plate**

What do you place the pizzas on for the steam-off period?

Another reason for a soggy bottom soon after baking is insufficient bottom bake on the pizza which can be caused by baking at too high of a temperature or not baking the pizza long enough. The most common cause of this is use of sugar or too much sugar in the dough formula which results in fast crust color development which in turn results in short baking of the pizzas.

Tom Lehmann/The Dough Doctor  
3193

## [\*\*Pizza Toppings / Re: Would this topping combination work?\*\*](#)

Beth;

Yes it does. When I use dates though I just tear them apart with my fingers. I like the larger, irregular size pieces I get that way as it adds interest and flavor to the pizza experience.

Tom Lehmann/The Dough Doctor

3192

## [\*\*Dough Clinic / Re: Question about pizza oven installation\*\*](#)

Nope, no tricks, the only way to do it is just as you are planning to do...with brute force.

Tom Lehmann/The Dough Doctor

3191

## [\*\*Pizza Toppings / Re: Would this topping combination work?\*\*](#)

When you find it let me know as I've not discovered it yet. Dates are a sticky situation no matter how you "cut" it. If ya just gotta have them in bits 'n pieces you can buy them as chopped dates and save yourself a lot of trouble, that's how we did it in production when we made date nut cakes and muffins.

Tom Lehmann/The Dough Doctor

3190

## [\*\*Chicago Style / Re: Tin Plated Steel - American Metalcraft\*\*](#)

You can get both aluminized steel as well as tin plated steel pans. The non-stick coating on the pans is a silicone based coating that is baked onto the pan, it is known as "glaze". All commercial bakery pans are glazed to aid in the release of the baked product from the pan. A few things to keep in mind about glazed pans, the glaze will have an expected release life of about 350 releases after which you will need to treat the pan just as you would any other pan. The glaze is not a true non-stick coating, but instead it facilitates improved release properties so you will still need to use oil in the pan, but here's the catch, silicone glazed pans DO NOT fare well with polymerizing oils, those oils which work well to season a pan should be avoided if you want to retain the properties of the glazing. Because the pans in question appear to have a bright finish (they can also be had in what is referred to as a "bake prep" finish which is darker in color) they should be seasoned but it is important that ONLY the outside of the pan be seasoned in the conventional manner, you DO NOT want the inside of the pan seasoned. The glazing on your pan cannot be replaced from a practical point of view, to recondition a glazed pan it must first be stripped in a chemical bath, then cleaned and straightened if necessary, the new glaze is applied and baked to set the glaze. The process is so environmentally unfriendly that to the best of my knowledge, there is only one facility in the U.S. doing this so most of the work is farmed out overseas.

Tom Lehmann/The Dough Doctor

3189

## [\*\*Dough Clinic / Re: Urgent Help Needed\*\*](#)

From the pictures I see that you are using screens to bake your pizzas on, and from the sounds of things you're using an air impingement oven. The edges of the crust appear to be browned but the rest is still pretty light colored here are a few things to consider:

1) Are your screens seasoned to a dark color? Light colored/bright screens can cause the issue you're experiencing.

- 2) What brand oven do you have, did you buy it new or used?
- 3) If you bought it used do you have any idea of what the finger configuration is for both the top and bottom?
- 4) Did this problem just recently begin or is it a problem right from the start?
- 5) The inclusion of 2% sugar in the formula might help too.

Due to your urgency, please give me a call tomorrow morning (1/29/18) at 10:30 a.m., my telephone number is 785-537-1037 (we are in the same time zone (Manhattan, Kansas) as you are so that we may discuss in greater detail.

Tom Lehmann/The Dough Doctor  
3188

### [\*\*Dough Clinic / Re: a bit too much oven spring\*\*](#)

Chet;

Do you have a specific reason for using all of your dough water at 90F? Depending upon your dough mixing method this is probably giving you a finished dough temperature which is above the recommended 80 to 85F maximum. A high dough temperature might be resulting in too much fermentation for what you are trying to achieve. I would suggest using only 1/4-cup of water at 100F to hydrate/activate the ADY in with the remainder of the water at 70F which should give you a more controlled finished dough temperature. Do you know what your finished (mixed) dough temperature presently is? The other thing to consider is reducing the amount of dough for your pan size (12-inch?). I'd reduce it by 2-ounces and see where that brings you out at, then adjust from there if necessary. Another possible action is to adjust the amount of time you're allowing the dough to proof in the pan prior to dressing and baking. In this case reduce the time by 10-minutes and benchmark from there.

Tom Lehmann/The Dough Doctor  
3187

### [\*\*Newbie Topics / Re: Is it possible to get a FAT airy cornicione in a home oven?\*\*](#)

Additionally, I would recommend working with higher dough absorption percentages and bake as hot as you can. The idea here is to have a very soft and extensible dough and then have the oven heat expand the leavening gas, air and water vapor within the cell structure before the crust begins to set. The higher absorption both makes the dough softer and more extensible so it can better expand within the very short window of time for oven spring and it also exhibits a cooling effect upon the surface of the dough during baking (evaporative cooling) which effectively allows a little more time for oven spring before the dough begins to set. It is this rapid expansion of the dough during the oven spring phase of baking that will give you the characteristics you are looking for.

Tom Lehmann/The Dough Doctor  
3186

### [\*\*Dough Clinic / Re: a bit too much oven spring\*\*](#)

Good point Peter. A good starting point for ADY is 0.5% to 0.7% in deep-dish/thick crust pizzas. So that puts 2% way over the top.

Tom Lehmann/The Dough Doctor  
3185

### [\*\*New Forum Members / Re: Introduction and inquiry about pizza sauce\*\*](#)

It's not too often that I make a N.Y. sauce but like you I like things simple and uncomplicated. Here is what

I do for a N.Y. sauce.

1-can of Italian plum tomatoes

Crush/shred the tomatoes by hand.

Based on the weight of the crushed tomato add 4% sugar, 1.5% salt, 1% olive oil, and three basil leaves rolled and cut in to strips.

Adjust the viscosity as necessary by adding a small amount of cold water.

Blend together well and allow to marinate several hours or overnight (in the fridge) before using.

If you really want to make a "sauce" on the cheap and dirt simple, just brush the pizza skin (12-inch) with olive oil, cut one garden variety tomato into 1/8-inch thick slices.

Tear apart several fresh basil leaves and place on the skin, add sliced or diced fresh garlic or garlic powder if you wish, place tomato slices over the top of the skin (the tomato slices serve as the "sauce" in this case) About one medium to large tomato will cover a 12-inch pizza skin. Finish dressing the pizza with desired toppings and bake.

NOTE: If fresh ripe tomato is not available substitute 6-ounces of well drained canned diced tomato.

Everybody has their own favorite sauce formula so you should get a lot of great ideas for a sauce.

Tom Lehmann/The Dough Doctor  
3184

### [\*\*Pizza Toppings / Re: Would this topping combination work?\*\*](#)

Looks good! Have to remember that. Now let's see how it works with a larger batch size. Things can get outta hand rather quickly when trying to make larger batches in a food processor as it doesn't turn over as quickly so a portion can become a paste in you're not careful. You've got my curiosity up, keep us posted.

Tom Lehmann/The Dough Doctor  
3183

### [\*\*Newbie Topics / Re: Is it possible to get a FAT airy cornicione in a home oven?\*\*](#)

I would certainly entertain the idea of going with a higher dough absorption, as for the issue you mention with the K.A. mixer, have you seen the recent discussion here on that very topic?

Tom Lehmann/The Dough Doctor  
3182

### [\*\*Dough Ingredients / Re: Old Cerasota Flour question\*\*](#)

Easy, just remove what you need to use within the next few weeks and break the bigger bag(s) down into smaller bags of flour, label the bags and place in the freezer. Stored in the freezer your flour can last for years, or you can store it in the fridge and it will last for 6 to 9-months without any problem.

Tip: If your dough formula calls for say...2-pounds of flour, put 2-pounds plus a little extra in each bag so when you want to make pizza all you need to do is to just remove a bag from the fridge or freezer, allow it to warm to room temperature over night and you're good to go on the following day.

I've got flour in my freezer right now that is 3-years old, we just used some of it over the Holidays and it performed just fine.

Tom Lehmann/The Dough Doctor  
3181

## [\*\*Newbie Topics / Re: Is it possible to get a FAT airy cornicione in a home oven?\*\*](#)

If you watch carefully you will see that while they don't "create" a raised edge on the skin they also do not work the edge of the pizza either. In some videos you might see where the skin is being worked between the thumb and forefinger but look closely and you will see that the dough is not being worked on the edge, but instead a little bit inside of the edge which promotes development of the desired raised edge. I believe this can be seen in possibly one of Tony G's videos.

From the looks of your pizza and the edge I'd say that your dough is still too elastic. Needing maybe more fermentation or possibly more absorption, and don't forget the impact of "technique" on the edge too, as you continue to practice you will get better at opening the dough into a skin.

Tom Lehmann/The Dough Doctor

3180

## [\*\*Pizza News / Re: Is pizza a healthier breakfast than most cereals?\*\*](#)

The only "fly in the ointment" here is that there are very few people with the will power to eat only one (1) slice of pizza! AIB did some nutritional work on pizza (They have an AIB Technical Bulletin on the results) a number of years ago and if I remember correctly it was found that plain cheese pizza was about on par with white bread on an equal WEIGHT basis. This means that one slice of white pan bread and a 2"X 2" piece of plain cheese pizza were similar nutritionally. Many of the popular cereals today are looking much better nutritionally than they did a number of years ago, in fact they are beginning to look more like granola than cereal which isn't a bad thing. It seems pizza has always gotten a bad rap nutritionally, and some of the famous offerings from the big box chains hasn't done anything to dispute those claims, just look at the cheese filled crust pizzas so popular a short time ago. The only drawback to pizza is in the quantity typically consumed, but then we can say the same thing about our pasta servings too. Even that bowl of cereal, if you look carefully you may find that our average bowl of cereal really isn't a single serving as indicated on the box, but instead it is generally closer to two or maybe more servings, think about this the next time you pour out a bowl of cereal. I used to explain it like this to my students; A typical 12-inch thin crust cheese pizza is made with 10 to 12-ounces of dough, 4 to 5-ounces of sauce and 6 to 7-ounces of cheese. A typical slice of white bread weighs 2-ounces. If you eat that whole cheese pizza (be honest, who hasn't done that???) what you have really consumed is the equivalent of about five cheese sandwiches, now, be honest once again, when was the last time you sat down and ate five cheese sandwiches for a single meal? Pizza, like potato chips by itself really isn't all that bad (just 10-calories in a potato chip) but who eats just one or two chips? Who eats just one average slice (1/8th of a 12" pizza), that's where the real issue is.

Tom Lehmann/The Dough Doctor

3179

## [\*\*Dough Clinic / Re: Please walk me through a hand kneaded Lehmann NY pizza dough\*\*](#)

Reserve 2-ounces of water (100F) to hydrate/activate the ADY in. Hydrate for 10-minutes.

Add remainder of water to mixing bowl, add salt and yeast suspension, then immediately add the flour and begin your mixing process.

When thoroughly mixed together set aside and cover for 30-minutes.

Turn dough out of bowl and begin your kneading process.

Divide into dough balls, lightly oil the dough balls, place into individual plastic food or bread bags NOT ZIP LOCK BAGS. Twist the open end of the bag to close and tuck it under the dough ball as you place it into the fridge.

Place in fridge for a minimum of 24-hours, 48 is better.

To use, remove from the fridge and allow to warm AT room temperature to 60-65F.

Turn the dough out of the bag allowing the ball to drop onto a floured surface.

Begin opening the dough into a skin.

Dress and bake.

Tom Lehmann/The Dough Doctor

3178

**Pizza News / Re: Is pizza a healthier breakfast than most cereals?**

Fiber, that's a cute one too. When studies were being conducted on the impact of increased fiber in the diet (I believe it was Cornell University) included a study using students as test subjects. The protocol was to have the students continue eating just as they normally do but fiber (I don't remember the amount anymore) was introduced into their daily food intake in the form of supplemental fiber. Within a few days many of the students in the study began complaining of a painful malady....constipation. It seems that no one took into account the amount of pizza an average college students eats. The casein in the cheese is an excellent binder and the fiber was the bineee...oops!

Tom Lehmann/The Dough Doctor

3177

**Dough Clinic / Re: Please walk me through a hand kneaded Lehmann NY pizza dough**

I tell people to use a wooden spoon, when you think you might break the spoon it's time to stop mixing, sorta like a shear pin in the mixing procedure. You knead it just until the dough begins to take on a smooth appearance as opposed to a curdled appearance.

Tom Lehmann/The Dough Doctor

3176

**Dough Ingredients / Re: Old Cerasota Flour question**

If you have the room, go for it! It ain't goin' bad in the freezer.

Tom Lehmann/The Dough Doctor

3175

**Dough Clinic / Re: Please walk me through a hand kneaded Lehmann NY pizza dough**

The dough has a propensity to sweat in those containers unless you leave them unlidded for the first 2 or 3-hours after placing them in them fridge, plus if lidded right away it is next to impossible to achieve a consistent and repeatable rate of cooling for your dough. Since a lidded container traps the heat of the dough as well as the heat generated by the yeast during fermentation (heat of metabolism) it's next to impossible to effectively control the rate of fermentation.

Tom Lehmann/The Dough Doctor

3174

**Dough Clinic / Re: Minimum Amount of Dough Rating for Mixers**

The reason why you don't see data for minimum dough size is because mixer damage is not the result of mixing a dough that is too small, but instead it is the result of mixing a dough that is too large.

Try as I may, I have not been able to use a percentage of maximum dough size to determine the minimum dough size in planetary design mixers. This works well in spiral design mixers where the minimum is 25% of maximum rated bowl capacity. There are a number of reasons for this:

- 1) Agitator type ("J" hook v/s reverse spiral dough arm)
- 2) Age of the mixer. The older mixers (pre 1975, or so) especially those from Hobart have a different motor which is significantly more powerful than later production models.
- 3) Number of speeds. (impacts ability to effectively mix medium to large size doughs)
- 4) Clearance between the agitator and the bottom of the bowl (adjustable) will influence minimum dough size.
- 5) Dough consistency such as soft, firm, sticky, etc.

With this said, I can say this; I've used the Hobart A-120 (new and old) as well as the A-200 in research where consistency in mixing is CRITICAL. The MINIMUM dough size I used (to conserve sometimes scarce ingredients) was based on 750-grams of flour for the A-120 and 1,500-grams for the A-200 (this was for the older mixers, the new mixers were relegated to mixing batters only as they would stall when mixing even these small size doughs, mixers were returned to Hobart but when we got them back no improvement was noted). By the way, our MAXIMUM dough size for the A-120 was 1,200-grams of flour while that for the A-200 was 2,500-grams of flour weight. These mixers have been around for a LONG time which means that some of them are tired and well worn/used as such they will not be as powerful as they used to be (much like me) so the maximum dough size will be significantly diminished. A few years ago I used a 25-quart capacity mixer from a manufacturer I will not name (it was a new mixer, at a pizza show) the silly thing would not even effectively mix a dough based on 5-pounds of flour weight, needless to say I was not impressed at all. Planetary mixers are ALL OVER THE BOARD, I HAVE NOT found this to be the case with spiral design mixers, hence my preference for spiral design mixers.

Tom Lehmann/The Dough Doctor  
3173

### **New Forum Members / Re: Hand Kneading vs Machine Hook**

Just hand knead the dough until it begins to take on a smooth appearance, biochemical gluten development will take it from there.

Tom Lehmann/The Dough Doctor  
3172

### **Dough Clinic / Re: Minimum Amount of Dough Rating for Mixers**

My literature from Hobart gives the following maximum dough capacities for the A-120 mixer.

Pizza Dough 40% Abs. : 2-Kg. (All mixing at first speed only)  
Pizza Dough 50% Abs.: 2-Kg. (All mixing at first speed only)  
Pizza Dough 60% Abs.: 5-Kg. (All mixing at first speed only)

It should be pointed out that first speed mixing, even with a reverse spiral dough arm accomplished very little except to blend the ingredients together over a rather long period of time. If your mixer has a "J" hook it accomplishes next to nothing.

Tom Lehmann/The Dough Doctor  
3171

## [\*\*Chitchat / Re: Garlic Sauce\*\*](#)

Additionally, don't forget about the food safety (clostridium) issues associated with fresh garlic and oil. This has been covered here in great detail previously. Sure hate to lose a fellow participant of PizzaMaking.Com.

Tom Lehmann/The Dough Doctor  
3170

## [\*\*Newbie Topics / Re: Is it possible to get a FAT airy cornicione in a home oven?\*\*](#)

From the looks of the dough I'd put the absorption at around 60%. If you noticed that Tony doesn't work the edges of the dough at all, this promotes the development of a raised edge.

Tom Lehmann/The Dough Doctor  
3169

## [\*\*Dough Clinic / Re: Weird dough sometimes.\*\*](#)

Flour can and certainly does change from bag to bag especially when bought at different times. We discussed this some time ago but a thumb nail sketch of the reasons are:

- 1) Flour was made from a different grist (blend of wheat varieties)
- 2) Flour oxidizes as it ages (oxidization = stronger dough)
- 3) Flour will dry out in the unopened bag during storage (this can vary with seasonal changes)
- 4) Opened flour can/will change in moisture content over the time during which the flour is being used, this is especially so if that period of time covers a seasonal change.
- 5) The conditions under which the flour is stored prior to or after sale can influence both oxidation and moisture content of the flour.
- 6) If you buy multiple bags of flour and store them in the freezer you can minimize further change but be sure the bags show the same milling lot numbers. It is a very common occurrence to have mixed milling lots on a single pallet and they get further mixed up at retail.

Flour is potentially the most variable ingredient we work with.

Tom Lehmann/The Dough Doctor  
3168

## [\*\*Dough Clinic / Re: whitish ring around my pizza\*\*](#)

Simple :) it's part of the oven spring, in bread baking we call it the "break". It's the area where the dough has expanded last. Why uoi ask? Because it is right next to the sauce line which is high in water content (about 90%), as the pizza is baked the sauce gives off steam which cools the dough preventing it from developing a crust which would inhibit further expansion, so the dough continues to expand in that area longer than in other areas (closer to the edge/further away from the cooling steam from the sauce) until finally the dough heats to a point where the starch gelatinizes, the structure is set and the crust is baked...but this happens so late in the baking cycle that there is not enough time for this late expanding dough to achieve a dark crust color. You will see this very same thing on the side of a loaf of bread or on a hamburger bun too where it is referred to as "the white ring", come to think of it you also see it on a yeast raised donut ring and most other yeast raised products.

Tom Lehmann/The Dough Doctor  
3167

## [\*\*Dough Clinic / Re: whitish ring around my pizza\*\*](#)

Your hypothesis makes perfect sense to me. The greater amount of sauce piled up out towards the edge of the pizza might very well be the cause of the white ring you are seeing.

Tom Lehmann/The Dough Doctor  
3166

## [\*\*Newbie Topics / Re: Frozen pizzas\*\*](#)

Please describe your idea of what "fresh made frozen pizza" is. This is important as it will allow us to better respond to your question. We also need to know if you plan to make your frozen pizzas using a par-baked crust or will you be making something along the lines of a "bake to rise" concept pizza? How do you plan on marketing your pizzas? Lastly, before you get too deep into the pool you might contact your local licensing department as there is a possibility that you could come under some very specific regulations when selling food to the masses and you'll need to address those specifics before selling your first pizza.

Tom Lehmann/The Dough Doctor  
3165

## [\*\*Dough Clinic / Re: Weird dough sometimes.\*\*](#)

QJ:

There is, just re-bag the flour into individual use portions and place it into the freezer for storage as soon as possible after you get your flour. This is how we did it when we were working on long term projects at AIB and it worked quite well. One thing to remember though, be sure to bring the flour out of the freezer a day or more before you want to use it. This will allow plenty of time for the flour to warm back up to room temperature before you open the bag. If you open the bag and begin using the flour while it is still cold, depending upon the room humidity, you might get condensation on the flour and for sure, the cold flour will NOT absorb water or mix/develop in the same manner as warmer flour until it warms up in the mixing bowl.

Tom Lehmann/The Dough Doctor  
3164

## [\*\*Chitchat / Re: Fascinating use of a wood fired oven in Afghanistan...anyone ever try this?\*\*](#)

In my collection of photographs, much like yours, I have pictures of the process which were taken in the same part of the world (though at a much safer time)...THANK YOU FOR YOUR SERVICE!). The dough that is used is VERY WET and SLACK and one must wet the hand and arm that is used to place the dough into the oven with. Two long sticks are used much like chop-sticks to remove the baked bread from the oven. Really great when hot and very fresh but only so-so after cooling and getting a little age on it. The biggest complaint that I had about the bread was due to the source of fuel used to fire their ovens, since this type of baking is common in some of the most poor as well as remote countries on earth (or any other place as I'm told) they don't exactly have access to the best materials to fire their ovens with. I found that cardboard and wood pallets were the most common things used to fire their ovens. Cardboard gave the baked breads a sort of .....well cardboard like taste, while pallets were not too bad unless they were made from pine and in that case the breads had a very distinctive "piney" flavor...sorta like sucking on a pine board.

Tom Lehmann/The Dough Doctor  
3163

## [\*\*Dough Clinic / Re: What leads to dry dough in the middle?\*\*](#)

You say you used a dough hook a "J" hook? If so there is a probability that the dough was not properly mixed, the water that you saw on top of the dough was almost certainly due to condensation forming within the container as a result of 1) Not placing the dough into the fridge uncovered. 2) Excessively warm/hot dough...what was the finished/mixed dough temperature?) 3) Your new fridge being too cold (it should be operating at 36 to 38F).

Tom Lehmann/The Dough Doctor  
3162

## [\*\*Dough Clinic / Re: What leads to dry dough in the middle?\*\*](#)

Condensation is where the water came from. The best way to address a little dryness on the dough is with a light coating of oil, not water. Does the dough always look so dry when you make it?

Tom Lehmann/The Dough Doctor  
3161

## [\*\*Dough Clinic / Re: What leads to dry dough in the middle?\*\*](#)

Great question Q.J., you're crazy like a fox. ;D I think I see where you're going with your question.

Tom Lehmann/The Dough Doctor  
3160

## [\*\*General Pizza Making / Re: Too much chew in pizza crusts\*\*](#)

Little bean;

You should be targeting a finished (mixed) dough temperature in the 70 to 75F range. I'd also suggest increasing the IDY to between 0.3 and 0.4% to get more fermentation which will be conducive to achieving a more tender eating finished crust. Using a lower protein flour, as was mentioned is probably the most effective way to get a more tender eating crust. Remember, in New York City All Trumps flour is typically used as it gives their pizzas the desired "chew". Like Jackitup said, going to a lower protein flour just might be the ticket in your case. A good flour to test is the Pillsbury Bread flour aka "bread machine flour" which comes in around 12.2% protein content and should work well in your application. One other thing, your salt level at 2.5% is also inhibiting the rate of fermentation to some extent, especially when combined with your already low IDY level so that would be a contributing factor to insufficient fermentation which could result in a tougher eating crust. Maybe give some thought to reducing the salt to something in the 1.75 to 2% range.

Tom Lehmann/The Dough Doctor  
3159

## [\*\*Dough Clinic / Re: How long to age dough to ferment NY Thin crust, I assume no ferment for DeepDish\*\*](#)

Steven;

Your N.Y. style dough will be best if cold fermented for 36 to 48-hours. Deep-dish pizza doughs should also be fermented for a minimum of 24-hours for best handling, textural and crumb structure characteristics.

If you ever find a way to keep a pizza crispy 20-minutes after baking please contact me immediately....together we'll both become very rich.

After baking the outer crust (that's the part that's crispy) has a moisture content of about 8 to 12% while the inner crumb portion has a moisture content of 24 to 30%,

as the pizza cools after baking the moisture content of the pizza equilibrates throughout the entire crust which means the dry crispy part is no longer dry and crispy, but instead it becomes soft and droopy (I wouldn't call it soggy though) If you REALLY mean soggy/wet that might be the result of placing the hot pizza on a tray or plate of some type (a cold plate or tray would be especially problematic), but that just at room temperature the plate/tray would be cold as compared to the temperature of the pizza. The pizza will steam-off from all sides and as the bottom steam contacts the cooler plate/tray the steam will condense to water making for a wet, soggy pizza bottom. I hope this helps.

Tom Lehmann/The Dough Doctor  
3158

### **Dough Clinic / Re: What leads to dry dough in the middle?**

What's strange about the appearance of the dough is the apparent layering of it as seen in the attached pictures, there even appears to be a dry or floury texture between the layers. The only two explanations I have with the information presented are that it happened during the rounding process (hard time buying it though) but more likely during the mixing process where the dough is being continually pulled and folded over itself. I would think that the dough would need to be very dry and stiff for this to happen though which should have been apparent in the mixing bowl and a tip off that something wasn't right. Very small or too small size doughs in a large bowl are not well mixed and tend to just get pushed around by the agitator which creates friction resulting in heat on the surface of the dough which then accelerates drying of the dough surface to the point where a slight crust is formed on the dough. Once a crust is formed it is NOT soluble and remains as a crust within the dough, the crusted dough is rounded which folds the dough over on itself even more so what you end up with is a type of laminated dough. This is essentially the same method as used by manufacturers of saltine crackers to achieve the dough laminations only in their case the dough is sheeted into a continuous ribbon, heated air is blown onto the surface of the dough to create the desired drying effect and then the dough is passed through a laminator where it is folded over upon itself, this is repeated several times to achieve the desired number of laminations before the dough is cut to shape and baked.

Just a guess.

Tom Lehmann/The Dough Doctor  
3157

### **Dough Ingredients / Re: Flour mixup**

Do you have any milk, sugar or eggs in your dough formula? If not brush the edge of the skin with oil just before you place it into the oven, this will help the edges brown but the bottom will still be somewhat light in color. If you have a suitable pan you might also try pan baking the pizza with extra oil in the pan to get a fried effect....fried pizzas are actually pretty good.

Tom Lehmann/The Dough Doctor  
3156

### **General Pizza Making / Re: Too much chew in pizza crusts**

Yes it would.

Tom Lehmann/The Dough Doctor  
3155

### **Dough Ingredients / Re: Flour mixup**

With the sugar in your dough already I wouldn't sweat it, it should be just fine as it

is.

Tom Lehmann/The Dough Doctor  
3154

**Dough Clinic / Re: What leads to dry dough in the middle?**

Also with hand kneading you are incorporating additional flour into the dough while at the same time folding it (much like laminating the dough), this might be where the layering is coming from?

Tom Lehmann/The Dough Doctor  
3153

**General Pizza Making / Re: Too much chew in pizza crusts**

Under mixing the dough combined with a low/cold finished dough temperature could result in less affect of fermentation on the flour which could result in a chewier finished crust. In a case like that though I would expect that the colder dough would have the greatest impact due to its inhibiting effect upon the rate of fermentation.

Tom Lehmann/The Dough Doctor  
3152

**Dough Clinic / Re: Differences between 00 flour and bread flour**

Pete covered the differences in pretty good detail in the referenced response. What are your specific questions?

Tom Lehmann/The Dough Doctor  
3151

**Dough Clinic / Re: What leads to dry dough in the middle?**

With what I've just read, the reason why we don't ever allow dry salt or sugar for that matter to ever come into direct contact with compressed yeast is because it will plasmalize the yeast, that is, it will draw the moisture as well as the glutathione out of the yeast. Salt and sugar are VERY hygroscopic, that's why they both exhibit a tendency to lump during humid weather. So....you are just adding the salt to the surface of the dough and just pushing down on the dough to "incorporate" it, for some reason this seems counter intuitive to good incorporation of the salt, then you folded the dough over, removed it from the bowl and kneaded it a few times on the bench (layering the salt into the dough). IF the salt is not dissolved (salt comes in different particle sizes/granulation) by this action alone, it will draw moisture out of the dough and hold it in a brine solution (wet/slimy) sound familiar? Also, the dough will not adhere to the slimy layer resulting in a delamination where ever the brine solution is present. Touch your tongue to the delaminated/wet area to see if you get a salty taste, or just sprinkle some of your salt over the dough as you begin hand kneading.folding the dough on the bench to see if you get the same effect.

Tom Lehmann/The Dough Doctor

P.S. The coarser the salt the worse the issue is expected to be as it would be more difficult to get the coarse salt to go into solution by your method of addition. In the baking industry our rule is to always mix the dough for an additional 4-minutes after addition of the salt to ensure complete dispersion and dissolution of the salt (we use a VERY fine salt when using the "delayed salt mixing method").

TDD  
3150

**Dough Clinic / Re: Mixing time**

There can be huge differences between mixers, even those of the same model by the same manufacturer. The reasons for these differences can be for such things as bowl texture, type of agitator, dough size type of flour, dough absorption but more importantly, the single most over looked thing is the agitator (hook) to bowl clearance which has a very significant impact upon how the dough mixes.....much more than most people realize. All of this aside,I go into stores all the time where the "numbers" don't fit, not to worry, just mix the dough (what other option do you have?) until it takes on a SMOOTH appearance, at that point consider mixing completed. By the way, you should have a reverse spiral dough mixing arm and the bowl to agitator clearance is set by using a nickle placed into the bowl (DO NOT RUN THE MIXER WITH THE COIN IN THE BOWL), instead, adjust the bowl height until the coin "just" fits into the clearance between the bowl and bottom of the agitator with the bowl in the fully raised position. The correct place to set the clearance is where the bottom of the agitator angles sharply upwards, anywhere along that roughly 2-inch long section of the agitator (I normally take the measurement at the lowest part, just because it's the easiest to measure at that point). In summary, don't sweat the time, just look for the change in dough appearance from rough looking and dark color appearance to smooth and brighter in color (due to the smooth skin formation better reflecting light, not a TRUE color change at all but instead a change in reflectivity). If you find that the dough is tearing during normal dough rounding just give the dough a couple extra minutes of mixing time. (17-minutes is a long mixing time in second speed, check the agitator to bowl clearance when you get a chance, it may need to be adjusted)

Tom Lehmann/The Dough Doctor

3149

### **Dough Clinic / Re: Differences between 00 flour and bread flour**

They don't. The basic steering mechanisms for fermentation are the amounts of salt and sugar, dough pH, temperature plays a huge part, and dough absorption plays a lesser part.

The addition of non-wheat flours (what are commonly referred to as "composite" flours) will impact how much fermentation a dough should receive or how much it will tolerate but it will not impact the speed or strength of fermentation.

Tom Lehmann/The Dough Doctor

3148

### **Dough Clinic / Re: Need advice about pizza oven installation**

Q.J.

Two things to remember, heat rises so effective ventilation only takes place using a vertical or near vertical stack. If you have a codes department check with them before you do anything as they WILL HAVE THE FINAL WORD, especially when it comes to stacks and oven ventilation. Case in point, where I live our codes department requires that ALL ovens be ventilated with a vertical stack to the outside and the stack MUST extend a specified distance above the highest part of the roof, and if that's not enough, ALL oven ventilation hoods must extend for a specified distance beyond the physical oven AND it MUST be equipped with an approved fire suppression system. How do you spell oven hood and ventilation system in Manhattan, Kansas? Easy.....\$\$\$\$\$\$\$\$ :-D

Tom Lehmann/The Dough Doctor

3147

### **Dough Clinic / Re: Need advice about pizza oven installation**

Shorter runs are typically better than longer runs.

Tom Lehmann/The Dough Doctor  
3146

**New York Style / Re: Couple of questions**

You are correct in that "00" flour does have a smaller/finer particle size and the wet/sticky dough was most likely due to the fact that "00" flour has a lower absorption than the flour for which the dough formula you were using was developed for. If you want to use "00" flour just reduce the dough absorption to 57% and start from there. All flours are different and as such each will exhibit a specific optimum absorption depending upon the type of pizza you are making, dough formulation as well as the dough management procedure you're using.

Tom Lehmann/The Dough Doctor  
3145

**Dough Clinic / Re: Differences between 00 flour and bread flour**

The ash content of a flour is only an indication of its extraction rate during the milling process. Extraction rate in basic terms is the pounds/Kg of flour extracted from 100-pounds/Kg of wheat. Ash content influences the color of the flour with lower ash content giving a brighter, whiter flour and high ash content giving a darker, more gray colored flour. Over the past 50-years we have seen the ash content of U.S. flours increase from an average of around 0.450 to 0.52 and above for bread type flours. The lower ash flours can still be found but they are considered as "specialty" flours and command a premium price. Ash is purely an economic thing, a tool used by the flour miller to help control flour prices. This move to higher ash flours has also been embraced by consumers as they are no longer demanding that their white bread have a bright white crumb color, but instead they show a preference for a more "natural" slightly darker crumb color. This is further supported by the consumer shift towards non-bleached flour which has a slightly yellow/creamy color to it, further darkening the crumb color. We generally attribute this shift to the consumer move to more "natural" foods. I cannot see where ash content would have any impact upon the amount of fermentation that a flour might require, in fact it tells you almost nothing about the flour or how to handle it, but you are quite correct that referring to the flours by protein content would be a much better way to look at flours with regard to such things as dough absorption, mixing time and dough fermentation time. When we have less damaged starch present in the flour the flour typically exhibits a lower water absorption and the converse is also true. Italian "00" flour is un-malted so there is little amylase activity in the flour. It is the amylase enzyme (present in diastatic malt, malted/sprouted barley, or in a more pure preparation such as in amylase tablets or powder) which hydrolyzes the damaged starch into sugars to both support fermentation and provide crust color. Since "00" flour has low damaged starch and little to no amylase the only way for the crust to brown is through browning of the protein which requires a very high oven temperature to accomplish. This can be overcome by adding a source of amylase or sugar to the dough. With regard to the type of sugar added to the dough any simple sugar (dextrose, honey, molasses, malt syrup) or reducing sugar (sucrose, or brown sugar) can be used with a "00" flour to support fermentation and enhance crust color development. With regard to particle size, this can be regulated by the milling process and the grist (types of wheat being milled to make the flour). With hard red wheat varieties it is common that when flour is milled to a smaller/finer particle size there is more damaged starch present. This is a very common practice in Mexico where very short fermentation times are the norm rather than the exception and millers actually run the milled flour through their Entilators (a

hammer mill like device that the flour is processed through to help destroy any insect eggs left in the flour after the milling process) which further damages the starch which results in flour with very high absorption properties but little tolerance to fermentation as the damaged starch (which is holding all that extra water) is the first to be hydrolyzed into sugar by the small amount of naturally occurring amylase enzyme in the yeast resulting in a total release of all that additional water giving a dough which, in many cases, can almost be poured out of the mixing bowl. When softer wheat varieties are milled it is possible to mill the flour to a smaller particle size without use of multiple passes through the Entilator which results in a smaller particle size flour without the associated starch damage associated with the milling of hard wheat flours. This is how we mill the soft wheats used in making cake and pastry flours here in the U.S.

Tom Lehmann/The Dough Doctor  
3144

### **New York Style / Re: Couple of questions**

Sounds pretty normal for a "just mixed" dough to me. I always apply a little oil to my hands when handling the dough right out of the mixer and especially if I am planning to cover it with plastic as it doesn't breathe so it traps moisture at the interface of the dough and plastic causing it to stick. Additionally, finished dough temperature can play a big role in how the dough feels right after mixing.

Tom Lehmann/The Dough Doctor  
3143

### **New York Style / Re: Couple of questions**

It wouldn't be my first choice but it will work so long as you have some diastatic malt or sugar of some kind in the dough formulation it will be OK. If you want to be a "purist" use General Mills All Trumps flour.

Tom Lehmann/The Dough Doctor  
3142

### **Pizza News / Re: TV appearance for National Pizza Day**

Congrats! Super Cool!!  
Tom Lehmann/The Dough Doctor  
3141

### **New York Style / Re: Couple of questions**

Can't provide a "recipe" (volumetric portions) but here's a dough formula (weight measures) which will get you started...it's just a simple modification of your existing dough formula.

Flour: 16.1-ounces.....100%  
Water: 10.5-ounces... 63%  
Salt: 0.28-ounce.....1.739%  
Oil: 0.16-ounce.....0.993%  
IDY: 0.04-ounce.....0.248%  
Sugar: 0.322-ounce.....2%

Depending upon how you are managing the dough you might also consider increasing the IDY to 0.4% (0.0644-ounce).

Tom Lehmann/The Dough Doctor  
3140

## [\*\*Dough Clinic / Re: Added Malt\*\*](#)

That's the same malt powder that I use at 0.5%.

Tom Lehmann/The Dough Doctor

3139

## [\*\*New York Style / Re: Couple of questions\*\*](#)

Just an increase from 10.15 to 10.5-ounces.

Tom Lehmann/The Dough Doctor

3138

## [\*\*Shop Talk / Re: Pizza delivery bags - opinions\*\*](#)

For a while we saw a lot of interest in heated bags (ceramic disk heated by magnetic resonance) but they still didn't address the issue of steaming of the pizza during the delivery period, yes they were effective at keeping the pizza hot but that really wasn't the issue. I can't think of any pizzerias here in the U.S. where I've seen anything but the common, insulated pizza bags aka "moon bags" being used for delivery. The only variation in the bags that I see is between single pizza bags and multiple pizza bags. When we have had "other" things delivered such as Italian beef sandwiches and hamburgers they either came in a grease proof paper bag or in a Styrofoam clam shell. I've not seen them ever delivered any other way.

Tom Lehmann/The Dough Doctor

3137

## [\*\*Dough Clinic / Re: Differences between 00 flour and bread flour\*\*](#)

Yael / Pizzajourney;

But the alpha amylase DOES hydrolize starch into sugars to support fermentation...and to help develop crust color. The alpha amylase will continue to hydrolize starch in the flour until it is destroyed/denatured in the baking process or whenever the temperature of the dough reaches 160F. There are no other real sources of sugar in the flour.

Composite flour is any flour that is made from a blend of different grains milled into a flour like consistency. We run into composite flours all the time in developing countries where wheat is not generally grown and if it is it is not grown in any significant quantity but other grains and legumes are available. In this case the flour is used only as a binder to hold things together while the bulk of the "flour" is made up of the other grains and legumes. The closest thing we might have to a composite flour here in the U.S. is a multi-grain flour blend where 30 to 40% of the total flour weight is comprised of non-wheat grains and seeds. Look at it like this....in the case of a multi-grain flour blend the "other" grains and seeds do not provide any gluten so the amount of gluten present in the flour is reduced by the percent of non-gluten forming material in the flour blend, add to that the fact that the gluten film that is formed tries to envelop the other grains and seeds thus over extending what gluten there is which weakens the gluten film and to add insult to injury, many times these "other" materials will exert a cutting effect upon the gluten film as as the film is expended (dough increases in volume) the other materials cut into the gluten film weakening it even more. It there any wonder why composite flours exhibit a very short fermentation tolerance? Those "other" materials don't affect the rate of fermentation but they do raise havoc on the substrate (gluten film) that contains the leavening gas in the dough. Back in the late 70's I was charged with developing a method to improve the dough quality with composite flours WITHOUT the use of additives or anything that would increase the cost of the dough. I was able to develop a method for making the

dough where we found the absorption of the non-wheat materials (this is the same way we find the absorption of multi-grain blend and whole-wheat flour/discussed many this here) and then we made a dough using ONLY the wheat flour but with ALL of the calculated water for the dough. Sometimes this resulted in more of a batter than a dough so we used a flat beater aka paddle to mix the dough at this point. The "dough" was mixed until we had achieves good gluten film development for the flour being used, the non-wheat material was then added to the dough, the flat beater was swapped out for the dough arm, and the dough was mixed JUST until the material was blended into the dough, it was then allowed to ferment for 60-minutes (actually more for hydrating the "other" materials than to achieve fermentation which would further weaken the dough, at that point the dough was ready for use. This method for making composite flour doughs was so successful that I authored an AIB Technical Bulletin on the topic and then spent considerable time traveling in the middle east demonstrating the process. Is the process still in use today? I don't know as I have no burning desire to return to Syria, Afghanistan, Iran, or Yemen to find out.

In case you're wondering why I didn't just hydrate the non-wheat materials as a soaker like we do when making multi-grain doughs, we found that this process only worked when we had white flour of decent gluten forming properties...a quality few, if any, of the wheat flours in those countries had. At one point I was traveling for U.S. Wheat Associates and spent considerable time demonstrating how the use of U.S. wheat flour would improve the overall quality of their products made from these composite flours...the idea here being to show one big advantage to using U.S. flour provided many times under the government aid (federal assistance) program.

Tom Lehmann/The Dough Doctor  
3136

**Dough Clinic / Re: How long to age dough to ferment NY Thin crust, I assume no ferment for DeepDish**

Par-baking the crust and then finishing as a whole (completed/dressed) pizza, in my opinion, produces the crispiest pizza possible. Not necessarily the best after it has cooled off, but nice and crispy when still hot and fresh form the oven. Due to the lower moisture content of the crust as a result of par-baking, those pizzas made using a par-baked shell usually withstand the rigors of DELCO better than single baked pizzas. It's the single baked pizzas, aside from thin crispy and thin cracker that are problematic in DELCO.

Tom Lehmann/The Dough Doctor  
3135

**Dough Clinic / Re: Differences between 00 flour and bread flour**

Big Moose;

Just to give you an idea of why ash content is all but meaningless, assuming T55 = a flour with a 0.55% ash content the General Mills Hi Power and Remarkable both come in at about 0.54% ash content but the protein content is around 13.6% and more. then there is the T80 = 0.80% ash content which would be equivalent to the General Mills Iron Duke flour with 0.80% ash content. This is a clear grade flour like you might use when making rye bread but it is not a whole wheat flour by a long shot. For comparison, General Mills Wondra flour has an ash content of 0.56% but only 10.5% protein content.

If you're looking to replicate the "T" values it really isn't necessary to blend flours at all.

Tom Lehmann/The Dough Doctor

3134

**[Neapolitan Style / Re: Pizza sauce for 2 - storage question](#)**

I use my left over sauce in making something as simple as pan fried chicken, pork , beef or in our case venison simmered in a seasoned tomato sauce served over rice...not fancy but really good. :chef: or you can take the "coward's way out and just season it up a bit and serve over rice or egg noodles...either way makes a pretty decent meal. Speaking of #10 cans, I just finished a project evaluating pizzas made using a specific tomato product. I brought the unused portion home and used it in making a full crock pot of great tasting chili....now that's eatin' on a cold winter day! What we don't eat over this weekend I'll freeze for another day. I find that the chili freezes pretty well for up to about a month.

Tom Lehmann/The Dough Doctor

3133

**[Newbie Topics / Re: Thin base no kneed pizza?](#)**

We will also need to know how you are managing the dough (everything you do between mixing and baking) too. This is a case where T.M.I. is a good thing.

Tom Lehmann/The Dough Doctor

3132

**[Dough Clinic / Re: Differences between 00 flour and bread flour](#)**

Yael;

You are correct.

Aside from being naturally present in the flour (good quality milling wheat has very low amylase levels) it is usually added by the flour miller too as in "malted flour" which is how the falling number is adjusted to the desired level.

Tom Lehmann/The Dough Doctor

3131

**[Off-Topic Foods / Re: I hate cake..... but wow.](#)**

With all things equal just swapping out a low protein all-purpose flour with a higher protein content bread type flour results in some gluten formation during the mixing process which in turn helps to better retain leavening gas (both carbon dioxide as well as air incorporated into the batter during the mixing process) resulting in greater oven spring but at the cost of a tougher, firmer and sometimes dryer eating characteristic. This is true for all home made scratch cakes which are a form of what is referred to as a low ratio cake, meaning that the formula contains sugar equal to or less than the amount of flour. Conversely, a high ratio cake (like you buy from some bakeries but always from the super market), this is the super sweet cake we're all familiar with, is formulated so the sugar is equal to at least 110%, but sometimes as much as 160%, of the flour weight. The two specialized ingredients which allow these cakes to be made are emulsified shortening or a special emulsified oil as well as chlorinated cake shortening....without these two ingredients a high ratio cake cannot be made. By the way, those Hostess cupcakes are made using a very lean (low in fat and sugar) formula so they tend to be somewhat more like a low ratio cake. The most common low ratio cakes we see being made at home are pound cakes or "kilo" cakes in countries working in metric measures. These cakes contain only the most basic ingredients of flour, sugar, eggs and butter/shortening. The amounts of each as the name implies is one pound, or one kilo of each ingredient. Salt and vanilla as well as lemon are added for flavor enhancement. Pound cakes are also the basis for making fruit cakes too. Make a pound cake batter using bread flour rather than all-purpose and add candied fruit

and nuts at the rate of 1 to 3-parts fruit and nuts to 1-part batter. Keep in mind also that there is no real standard for all-purpose flour (it's just a name). Some AP flours are down in the 8 to 10% protein range and some are even made using soft wheat varieties as opposed to hard wheat varieties like are used for making bread flours, while other brands of AP flour will range up into the high 10% and into 11% protein range (for example, Certesota/Heckers AP flour is well within the 11% protein range) making it suitable for many bread and pizza applications.

Tom Lehmann/The Dough Doctor  
3130

### [\*\*Dough Clinic / Re: Mixing time\*\*](#)

Joe;

In my opinion the picture shows a dough that is still under mixed, I'm guessing by about 2-minutes.

Tom Lehmann/The Dough Doctor  
3129

### [\*\*General Pizza Making / Re: Trying to perfect a dependable recipe\*\*](#)

The key aspects to being able to consistently make good pizza are dough temperature control and accurate weighing of the formula ingredients. Combined with an effective dough management procedure you will be able to produce your pizza consistently wherever you're at. I've got an outline of a very effective dough management procedure posted here at pizzamaking.com that you might want to look at to glean some ideas which you can incorporate into your present dough management procedure to make it more effective.

Tom Lehmann/The Dough Doctor  
3128

### [\*\*Dough Clinic / Re: Mixing time\*\*](#)

If you will P.M. me your e-mail address I'll be glad to send you a copy of my Dough Management Procedure which is very effective at providing dough to dough, day to day consistency in your pizzas.

Tom Lehmann/The Dough Doctor  
3127

### [\*\*Newbie Topics / Re: Thin base no kneed pizza?\*\*](#)

You're looking for a dough formula and procedure that pours? You can use my dough formula and follow the following procedure to make a no mix dough, but you're still going to have to use some dusting flour to help in opening the dough into a skin for dressing.

Put water (75F) in mixing bowl.

Activate/suspend yeast in a small portion of 100F water for 10-minutes.

Add yeast suspension to the dough water.

Add oil to the water.

Add salt and sugar to the water IMMEDIATELY followed by the flour (bread flour works fine).

Stir until the resulting "dough" looks like porridge/thick oatmeal.

Cover the bowl with a piece of plastic or stretch wrap (don't seal tight).

Allow the dough to ferment for a minimum of 1-hour (2 to 3-hours works better), then turn dough out of the bowl onto a lightly floured surface.

Knead the dough for a minute or so, lightly oil the mixing bowl and place the dough back into the bowl, cover with a sheet of plastic and allow to ferment for another 3 to 5-hours.

Turn dough out of the bowl (it will come out much more easily) onto a lightly floured surface and carefully open into a pizza skin.  
Sauce and dress as desired and bake.

Even with this procedure you're still going to need to use some dusting flour.  
Tom Lehmann/The Dough Doctor  
3126

**[Dough Clinic / Re: Absorption rate and the detrimental effects of ignoring.](#)**  
Using a dough absorption higher than what the dough with that particular flour is capable of handling will, as you know, result in an overly soft, extensible, sticky dough characteristic and as the dough ferments, which naturally makes the dough softer and more extensible, these characteristics will become even more extreme. The overly weakened gluten structure may fail to retain the leavening gas during the critical oven spring phase of baking resulting in a full or partial collapse of the dough giving the finished crust an over tough, chewy eating characteristic along with a gum line just under the sauce. This picture is painted of a dough which is excessively over absorbed for the flour being used. Depending upon the magnitude of over absorption these characteristics could vary from not as extreme to even more extreme.

Flour is the single most variable ingredient used in dough production and this is why if you want to have consistent handling properties along with consistent finished crust characteristics, it is imperative that the dough absorption be correct for the flour and matched to the type of crust being made along with dough formulation and dough management practices being employed.

Tom Lehmann/The Dough Doctor  
3125

**[Dough Clinic / Re: Whats the best use for these Pans/Lids? Need advice.](#)**

Those are relics left over from the days when Pizza Hut used to make dough at each location and proof the dough for their deep-dish pizzas too.

You can use them for making deep-dish pizzas or by using less dough (about 12-ounces) you can use the pans to make a thin crust pizza too. You just won't be proofing the dough in the pan and you won't be using as much dough either.

To make deep-dish pizzas your regular dough will most likely work OK.

Scale at 16-ounces, ball, place into dough boxes, oil the top of the dough balls, cross-stack in the cooler for 2.5-hours then down-stack. The dough will be ready to use after 24-hours but it's better after 48-hours. Dough balls will keep for up to 3 possibly 4-days in the cooler. To use the dough balls, remove from cooler, allow to temper AT room temperature for 2 to 3-hours (you want to see a dough ball (internal) temperature of 50 to 55F. Using a rolling pin or pastry pin open the dough ball up to pan diameter (12-inches). Oil the pan (P.H. used peanut oil) be generous to get a fried effect on the crust. Fit the opened dough piece into the pan, cover and set aside for 45 to 60-minutes. Check the fit of the dough in each pan and re-fit if necessary. Cover again and allow to proof for about an additional 45-minutes (you will need to experiment to see what works best with your specific dough). Dress the proofed dough as you would any other pizza, bake at 450F in a deck oven. Baking time will be about 20-minutes. Get yourself a deep-dish pan gripper and a long, flexible blade spatula to help remove the pizza from the pan. Run the spatula around the pizza in the pan, slide the spatula down next to the pizza, using the pan gripper give the pizza a moderate flip while guiding the spatula under the pizza, guide the pizza out of the pan onto a cutting table using the spatula. Cut using a rocker knife.

Note:

The P.H. procedure called for the pizzas to be proofed to about 1/2-inch in thickness (dough thickness), there should be a stamped line on the side of the pan as a reference for how thick the dough should proof to, after the dough has proofed to the reference point it is placed in the cooler (UNCOVERED) for 30-minutes, it is then covered for use during the remainder of the day. Unused (proofed) dough SHOULD NOT be carried over from one day to the next, instead, incorporate it into new dough at an amount not to exceed 15% of the new dough weight, or it can be made into bread sticks by par-baking the dough in the pan, then cool on a rack or screen. Store at room temperature in a covered dough box. To make bread sticks on the following day use a pizza wheel to cut in half, then cut each half into 1-inch wide strips (one crust will make two orders of bread sticks). Place the cut bread sticks on a screen, brush with a commercial garlic flavored oil/butter and bake until thoroughly warmed, brush once again and sprinkle with an Italian seasoning mix (powdered Parmesan cheese, garlic powder, dried oregano) and serve with a dill flavored ranch dressing or a balsamic vinegar & oil dip. If you want, you can even brush with clarified butter/Ghee instead of the flavored butter/oil before baking, bake and lightly brush once again and sprinkle with a cinnamon-sugar mixture and serve with a cup of powdered sugar - water icing.

Tom Lehmann/The Dough Doctor

3124

**Dough Clinic / Re: Whats the best use for these Pans/Lids? Need advice.**

We developed that standard/basic dough formula more than 35-years ago for use in our pizza seminars at AIB. The reason why we like to call it "basic" is because it can be used with only slight modifications for making just about any type of pizza crust. Just as it is it will make a fine New York or Domino's type of crust, or just increase the amount of dough for a Pizza Hut type of deep-dish crust, then reduce the dough absorption to 40 to 45% and you have the making for a thin crispy type of crust. Take the same dough formula using 45 to 50% absorption, and mix the dough not more than 1.75-minutes to produce a "shaggy" dough and you're well on your way to making a dough for a thin cracker type of crust (much like Pizza Hut made waaay back when...well....they still used deck ovens in their stores).

By using the cold fermented dough ball method (my Dough Management Procedure is available I believe, in the tools here at [PizzaMaking.com](http://PizzaMaking.com)) or If you P.M. with your e-mail address I'll be glad to send you a copy, you will achieve a finished crust with much improved flavor and a much more tender eating characteristic than what you have proposed. Would I advise offering deep-dish pizza as a regular menu fare? No, at least not at first, not to sound disparaging but I think you are already biting off too much for a new store just opening. You are offering way too many options for a start-up pizzeria which can be a kiss of death. Start with just a few pizza options, do them very well, and then as you become more experienced expand your menu if you want to. A great way to ease into deep-dish pizzas is to make them as a special offering on your slowest night of the week "Join us next Monday for a special offering of deep-dish pizza" then show the sizes and pricing. The idea is to offer something "special" NOT SPECIAL PRICED/LOWER COST to bring the sales for that slow night up to equal or better the other nights of the week. This is when I begin making all different kinds of pizzas such as seafood pizza, Multi-grain crust pizza (your favorite pizza on our special multi-grain crust), fresh fruit dessert pizza (This Monday only, add a slice of our unique dessert pizza for only \$2.50 (1/8 of a 12-inch pizza format) with any pizza order). You get the idea.

Personal pan pizzas are just like their larger cousins only made on a smaller format. Again, why not start out with a slice offering for a lunch special at first?

You can do it using what you already have and if done right you can make a GREAT slice. At AJ's here in Manhattan, KS you can get a slice made to your order in under 5-minutes....fresh, hot and crispy. The cost is \$5.00 for 1/6 of a 16-inch pizza....do the math. Best of all, we're using regular pizzas for the slices so there is no special handling or space required.

Tom Lehmann/The Dough Doctor  
3123

### **Dough Clinic / Re: Temperature Controlled Dough Room**

No body uses a fermentation room anymore due to all of the issues surrounding the presence of caustic acids in these rooms, instead of fermentation rooms we now use what is referred to as a fermentation shelf. This is nothing more than a fermentation container aka dough trough which is wheeled under a suspended shelf there the dough troughs are placed for the fermentation period. This has totally eliminated all of the physical, mechanical and food safety concerns associated with fermentation rooms.

Tom Lehmann/The Dough Doctor  
3122

### **Chitchat / Re: Calculators - HP 10C Scientific**

Hey Mitch!

I've still got my old "slip stick" too! You would be surprised at how many young people don't have foggiest idea of what it is and what it was used for.

Tom Lehmann/The Dough Doctor  
3121

### **General Pizza Making / Re: sd pizza ballls**

Sounds like you might be using too much sourdough starter or your starter might be too strong. Then too, maybe your flour is too weak ?

Tom Lehmann/The Dough Doctor  
3120

### **Dough Clinic / Re: Differences between 00 flour and bread flour**

With conventional roller milling of wheat is is all but impossible to achieve a very high level of starch damage unless we're milling a soft wheat (better suited to cake and pastry production than bread and pizza) so the flour will have to go through some form of additional milling to get a high level of starch damage, this might include pin milling, ball milling or hammer milling (this is the way it is commonly done in Mexico and they use their Entilators (a type of hammer mill intended specifically for breaking insect eggs left in the flour post milling). The easiest way to achieve a higher level of starch damage is to simple add some pre-gelatinized wheat starch to any existing flour....PRESTO! Damaged starch content of the flour has just been increased. Remember...an increase in dough absorption due to an increase in the amount of damaged starch present in the flour is just temporary, after about an hour the damaged starch will be hydrolized into sugar and the water it was carrying will be released into the dough system resulting in a softer, stickier and more extensible dough, the magnitude if which will be dependent upon how much damaged starch was present. In many developing countries the amount of damaged starch is around 20 to 23% of the total starch present. 100-grams of flour is approximately: 11% protein, 12% moisture, and 3% ash and fiber. The remainder is carbohydrate/starch so, 100 minus 26 = 74-grams%. These are just very rough numbers for a typical white flour of around 76% extraction rate.

Based on this 23% of 74 = 17.02 grams of the starch would need to be in the form

of damaged starch or pre-gelatinized starch but you can't really replace native starch with damaged starch in the flour (how would you get it out to replace it?). so you can only dilute the flour with damaged starch. If you add 17-grams of pre-gelatinized starch the total starch damage in the flour will increase by about 18.5% this combined with the existing 5 to 6% naturally occurring damaged starch in the flour will get you close to 23% total damaged starch BUT do keep in mind that you are also diluting/reducing the amount of protein at the same time so that example of 11% protein now becomes something closer to 9.4% protein content (it no longer looks like a bread flour but now it looks like a pastry flour so your next option is to add additional protein in the form of vital wheat gluten. The addition of roughly 3.9% will get you back to around 11 to 11.5% protein content for the flour. Oh yes, now you will need to increase the dough absorption by an additional 6% just to satisfy the absorption properties of the vital wheat gluten that you have added. Seems like a lot of work for nothing?????

Tom Lehmann/The Dough Doctor  
3119

### **Dough Clinic / Re: Bench: wood, marble, steel**

Additionally there appears as if there might be some anti-microbial properties to the wood work surface.

Wood/marble/ stainless steel that's also my order of preference too.  
Tom Lehmann/The Dough Doctor  
3118

### **Dough Clinic / Re: Temperature Controlled Dough Room**

Jon;  
It all has to do with temperature differential in the room. A great example of this is the differential between the top and bottom of the room where the floor or lower part of the room is cooler than the top of the room, and then there is the area near the door(s) where cooler air is introduced every time the door is opened, all of this leads to condensation.

By far, the best way to have controlled bulk fermentation is a small operation such as a pizzeria or small bread and bun bakery is to develop excellent dough temperature control measures and then bulk ferment in a suitably sized container (room temperature if fine) with nothing more than a sheet of plastic draped over the top of the container to retain the carbon dioxide which is heavier than air and creates an insulating (green house) effect over the surface of the dough. The purpose of the plastic in this case is just to keep that layer of carbon dioxide in place. If the sides of the container extend sufficiently above the top surface of the dough at full fermentation volume (about 18-inches is what is needed) you really don't even need the plastic IF the area is draft free. Why can you bulk ferment large doughs at room temperature? Because the truth is, the room temperature has little control over the fermentation of the dough, instead it is the temperature of the dough which has the greatest impact upon the rate of fermentation, this is why I said it is better to fine tune your skills at controlling finished dough/sponge temperature rather than wasting money investing in a "fermentation room".

Tom Lehmann/The Dough Doctor  
3117

### **Dough Ingredients / Re: Storing Flour**

Gary;  
This topic was recently covered here in significant detail, check it out to see the entire discussion...short of it...break it down into smaller portions/bags and store in

the freezer for longest shelf life and overall best results. If you don't have enough freezer space still break it down and store in the freezer for 45-days then remove and store at room temperature. Not the best but at least you will not have to worry about infestation in the flour as the freezing will kill any viable insect eggs that might be in the flour. When storing at room temperature air tight is not the issue as it serves no benefit to the flour but you do want to protect the flour from infestation from outside of the bag so a metal or plastic container is recommended. Plastic 5-gallon buckets like you can get at a home center work great for this.

Tom Lehmann/The Dough Doctor  
3116

**Dough Clinic / Re: Differences between 00 flour and bread flour**

Yael;  
May I ask, more specifically what are you trying to understand or accomplish?  
Tom Lehmann/The Dough Doctor  
3115

**General Pizza Making / Re: All Trumps flour vs. others for certain particular style pizzas**

If you are asking what is the best or preferred flour protein content for making Papa John's, Domino's and Chicago style pizzas from a commercial stand point the answer is a patent grade flour with a protein content between 12.8% and 13.2% for the big box stores and 13.8 to 14.2% for the Chicago style pizzerias.

Tom Lehmann/The Dough Doctor  
3114

**Dough Clinic / Re: Why is high hydration dough sticky?**

Rob;  
Nothing "chemical" about it. When dealing with white flour it is primarily the protein portion of the flour that carries the water/influences the dough absorption. When more water is added to the dough than what the flour is capable of absorbing the surplus water results in the characteristic stickiness due to dilution of the protein/gluten with water. There is a reason why it is called ("glue" ten) it is due to its inherent stickiness. Under normal circumstances the water is absorbed into the protein allowing it to be developed into gluten through the mechanical mixing action or through bio chemical gluten development which takes place during fermentation. Any water in excess of what can be absorbed into the protein just coats the protein on the outside which is what gives us the characteristic stickiness.

Tom Lehmann/The Dough Doctor  
3113

**Dough Clinic / Re: Differences between 00 flour and bread flour**

Yael;  
To answer your first question, flour with less (to a point) damaged starch can indeed ferment slower but what concerns us more is that without added sugar to the dough the yeast can metabolize all of the available nutrient which then greatly SLOWS the rate of fermentation but more importantly, the yeast can begin to cannibalize itself releasing glutathione from the cells in doing so which will now cause the dough to become overly soft and sticky while exhibiting weakness. When there is an abundance of damaged starch the yeast doesn't ferment any faster as it can only feed on so much nutrient during fermentation (if you were to ADD an excessive amount of sugar to the dough it will most certainly slow the rate of

fermentation. This is why when making yeast leavened pastries with high sugar levels we also significantly increase the yeast level at the same time (many pastries will contain upwards of 8 to 10% CY in their formulas when sugar levels are close to or above 20%. The one thing that higher levels of damaged starch does do is to provide a continual source of nutrient for the yeast to feed upon which is especially important when long dough fermentation times are employed. Like I said earlier though, the damaged starch absorbs A LOT of water in the dough making stage but when it is hydrolyzed it releases the water into the dough making for a wet, soupy dough after a couple hours of fermentation.

The Italian flours are milled from varieties of soft wheat which are much easier to mill to a low level of starch damage than hard red wheat varieties common to the U.S. and Canada as well as any other country importing wheat from either country and milling it themselves. As the differences in dough absorption, different wheat varieties will exhibit vastly different absorption properties. In the U.S. and Canada the wheat varieties developed for use in milling into flour are bred for mixing tolerance, fermentation tolerance and absorption properties. They are looking for wheat varieties that exhibit slightly short to moderate mixing times, excellent tolerance to long fermentation times without breaking down, and high dough absorption characteristics (within reason). A good number of years ago (1968) there was a wheat-rye cross called Red River-68. The flour exhibited decent milling properties made good flour and had a reasonable mixing time as well as fermentation tolerance, so what was there not to like about it? The rye gene that was introduced into the wheat brought with it a unique property of rye flour....STICKINESS. The doughs made with

Red River-68 were so sticky that you couldn't handle them! Remember, this is due to a genetic characteristic of rye so when we reduced the dough absorption all we got was a stiffer sticky dough that now exhibited a raft of other unwanted bread making properties. As you might have guessed, a lot of genetics goes into wheat breeding programs in many countries while in other countries the only concern they seem to have about the wheat is if it can be harvested and milled into flour. This is still true in most middle eastern countries where the order of the day is some type of flat bread which is typically made with not much more than an hour of total fermentation time.

Tom Lehmann/The Dough Doctor  
3112

### **Dough Clinic / Re: Differences between 00 flour and bread flour**

Alpha amylase aka liquefying amylase (naturally present in flour to a greater or lesser extent, also present in diastatic malt as well as amylase supplements, hydrolyzes only the damaged starch into sugars. The native/intact starch granules are NOT hydrolyzed as they are the starch which develops the gel structure for making the finished product being bread, pizza crust, pastry, etc. without them the structure would not set during the baking process.

The amylase enzymes begin to denature at around 137F and complete activation is achieved at about 160F, this is the same temperature at which the native starch granules begin to gelatinize except the gelatinization process continues to a temperature of about 190F at which point all of the starch has been completely gelatinized. This is the reason why par-baked goods are ALWAYS baked to a minimum internal temperature of 190F, though most go to 195F as an added level of assurance. If the starches are not fully gelatinized the finished product will either collapse during baking or cooling or at the very least it will have a wet, gummy crumb structure.

The sugars formed as a result of the amylase hydrolyzing damaged starch are not

just on the surface of the dough but instead are an integral part of the dough. It is only the residual sugars that participate in the browning reaction during baking as the other sugar has been metabolized by the yeast and is now in the form of carbon dioxide, alcohol, and acids (acetic, lactic and propionic) which is not sugar and does not participate in the browning reaction.

Keep in mind that the production of sugars by the amylase working on the starch will be limited by the amount of damaged starch present and crust color is not dependent upon JUST the sugars produced by the amylase. As the dough continues to ferment the yeast continues to produce acids (see above) these acids WILL significantly impact crust color development by reducing the crust color development, such as is the case with sourdough bread which will always have a very light crust color due to the acidity of the dough either formed naturally by the metabolism of nutrients by the yeast or added as an ingredient such as the addition of lactic acid to the dough to provide a sourdough like product. Additionally, crust color is an arbitrary thing, it is whatever you want it to be so many time we have to add something to the dough to improve the browning characteristics in order to achieve the DESIRED finished crust color characteristics.

If you want to learn more about bread making and everything related to it including fermentation and effect of different enzymes on the dough/bread I suggest getting a copy of Baking Science and Technology by E.J. Pyler. The book isn't cheap to buy but it's worth every cent if you want to learn the practical hows and whys of baking. If you have a nearby university that offers any kind of food or cereal science curriculum I'm betting that they will have this book in their library resource. Also check with your public library to see if they have it. The book is fondly referred to as "the Bible of the baking industry" and each of our Baking Science and Technology students at the American Institute of Baking had a copy.  
Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
3111

### **Dough Clinic / Re: Me again Tom...**

Joe;

It sounds like you are not rounding the dough balls properly/consistent tightness which is what is causing the issue. Have you been to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and watched my videos on dough making? I discuss dough rounding in detail.

If you REALLY want to go the route of individual fermentation containers they will need to be oiled to ensure decent dough release (you don't want to have to dig the dough out) and yes, I HIGHLY recommend leaving the containers uncovered for 2.5-hours for a 20-ounce dough ball. My reason for not having a preference for individual dough ball containers in a retail setting is because they are a real pain to work with, especially when it comes to washing them (sorry, I have better things to do with my time than washing and drying all those containers and lids. Before going that route I might suggest using plastic food bags to store the dough balls in. Round the dough balls, oil them and drop into individual plastic bags (DO NOT USE ZIP-LOCK BAGS), twist the open end of the bag into a pony tail and tuck it under the bag as you place it on a sheet pan or other flat surface. By using this method you don't need to use the dough boxes and there is no cross-stacking required, just bag the dough balls, place in the cooler until ready to use (dough balls should have a 3-day shelf life in the cooler if you do your part). To use the bagged dough balls just remove from the cooler, allow to warm AT room temperature for about an hour (you may need to experiment to find the time that works best for you in your shop), pull the bag down around the dough ball and invert the dough ball/bag allowing the

dough ball to fall onto a lightly floured surface. The bags can be reused a number of times IF they remain in a secure area (behind the counter). The dough balls DO NOT need to be perfectly round to be opened into a round pizza, if your people are having problems with opening the dough balls try using a rolling pin to open the dough balls to within an inch or two of the desired finished diameter and then finish opening the dough by hand. We developed this procedure a number of years ago as a training tool to help those who are challenged in opening dough balls. I've never seen a case where it didn't work wonders....no more thin center sections either! I have a video of this procedure being used in a commercial pizzeria if you are interested in seeing it just let me know.

Tom Lehmann/The Dough Doctor  
3110

### **Shop Talk / Re: Selling nothing but pizza as USP**

To me it sounds like a RECIPE FOR DISASTER!

Offer a few great pizzas as your mainstay, and then do "specials" these are NOT lower priced special, but instead they are different type of pizza that you might offer once or twice a week (like a Tuesday and Thursday "special"). Now those specials become a "treat" and as everyone know treats are better tasting than anything else! :chef:

Tom Lehmann/The Dough Doctor  
3109

### **Dough Clinic / Re: Differences between 00 flour and bread flour**

Rolls;

You can probably get a copy at Amazon.

Don't forget to check out any used book stores too.

Tom Lehmann/The Dough Doctor  
3108

### **Off-Topic Foods / Re: Tom Lehmann's Sour Cream Cake Dessert**

This is a little off topic but I thought I'd share it as it concerns my use of sour cream. When I do pizzas for the family occasionally I will make a cake for dessert. Being lazy I don't do scratch cakes very often anymore (except for pound cakes and fruit cakes). I use the box cake mixes, the ones where you only need to add oil, eggs and water. The yellow cake mix is preferred, what I do is to add an extra egg, reduce the water by 4-ounces, replace the oil with melted butter and include 4-ounces of sour cream, then blend together until smooth (a few lumps in the batter are OK), to spice things up a bit I add 1-tablespoon of vanilla, zest from one orange and 1/2-cup of chopped pecans, blend these into the batter and pour into an 9" X 13" greased (buttered and floured) cake pan and bake at 350F until the cake sets firm (use toothpick to test). These cakes are great just as they are without any added icing but you can ice them if you really have a sweet tooth. Right now I'm using the Pillsbury Traditional Yellow cake mix as I bought a bunch of them on sale over the winter for \$1.00 each.

Tom Lehmann/The Dough Doctor  
3107

### **Off-Topic Foods / Re: Re: Tom Lehmann's Sour Cream Cake Dessert**

If you don't have an orange handy at the time you can also use the zest from one lemon as a substitute for the orange zest. When I do this I like to toss in about 1/4-cup of shredded coconut. :chef:

Tom Lehmann/The Dough Doctor

3106

**[Off-Topic Foods / Re: Re: Tom Lehmann's Sour Cream Cake Dessert](#)**

Same for me too! :)

I also do a version using a chocolate cake mix modified in the same manner to which I add 1/2 cup of chocolate morsels, 1/2 cup of shredded coconut and I use chopped walnuts instead of pecans. We call it the double chocolate, coconut, nut cake.....This is my wife's favorite by a long shot! This one I like to serve with an icing (applied at the time of serving) using nothing but vanilla yogurt and then sprinkled with a little more coconut. :drool:

Tom Lehmann/The Dough Doctor

3105

**[Off-Topic Foods / Re: Tom Lehmann's Sour Cream Cake Dessert](#)**

After I got off of the computer I thought I with all this talk about cake, why not make my wife her favorite treat? Yep, I made a double chocolate, coconut, nut cake. We had it for dessert after our Alfredo, shrimp and rice (Alfredo, fresh garlic, fresh basil and dried cherry tomatoes from our garden last year) this is all simmered and then dressed with a splash of lemon juice and served over rice. Fast, easy and good! Susan was ready to go straight to the dessert but she did manage to eat her dinner first. :)

Tom Lehmann/The Dough Doctor

3104

**[Neapolitan Style / Re: SD starter vs. little yeast](#)**

A sourdough starter "is what it is", meaning that it doesn't change with age, a sourdough starter that is 1,000-years old and PROPERLY MAINTAINED will retain its original flavor profile. Does age make any difference in flavor profile? No. Every starter lends a different flavor profile due to differences in the bacteria present so the trick is to find something that you like and then continue to culture or manage the starter so as not to change the bacteria profile in the starter (this is MUCH easier said than done).

Tom Lehmann/The Dough Doctor

3103

**[Dough Clinic / Re: Me again Tom...](#)**

Since you were NOT thoroughly cooling the dough prior to lidding the container(s) you ended up getting more fermentation than what the dough formulated for. You have two options (1) Further reduce the finished dough temperature. I seriously doubt that this will result in any significant change as 45-minutes unlidded cooling is just too short a time to allow for any real cooling to take place. So we go on to the next option (2) Reduce the yeast level in the dough to control the amount of fermentation the dough receives under YOUR SPECIFIC dough management procedure. Be aware that you should always be sure to allow the dough to warm to at least 60F (maybe more) before opening the dough when using low yeast levels. I suggest using your standard procedure with a reduction in yeast level, if you find the dough too elastic at the time of opening allow the dough ball to warm to a higher temperature the next time before opening as this will reduce the elasticity of the dough, continue making adjustments to the temperature of the dough ball before opening until the dough ball opens easily or to your liking. Use a stem type thermometer to measure the INTERNAL dough ball temperature prior to opening.

Tom Lehmann/The Dough Doctor

3102

## **Neapolitan Style / Re: SD starter vs. little yeast**

When I was at AIB another research group was doing a full blown research study on sourdough starters so I wasn't involved first hand but if I remember correctly the starters stabilized, in general, after about a month of culturing.

You can purchase a copy of the AIB Technical Bulletin on sourdough starters by Wulf Doerry by contacting the American Institute of Baking at

<[www.aibonline.org](http://www.aibonline.org)>

Tom Lehmann/The Dough Doctor  
3101

## **General Pizza Making / Re: A question about cheese**

Additionally, you can also use frozen cheese (applied frozen) or you can find what is referred to as a low melt cheese, this is the type of cheese that is most commonly used in the commercial hot sandwich type products (avoided the commercial name).

Tom Lehmann/The Dough Doctor  
3100

## **Neapolitan Style / Re: SD starter vs. little yeast**

That's the whole idea behind a sourdough culture. Once it matures, retaining the flavor. If the flavor changes from what it originally was it is due to a shift/change in the bacteria/wild yeast composition and the starter is said to have been "lost".

Sourdough cultures, once developed, are rather difficult to maintain (they're like a long living pet....think a parrot) as they require constant and timely feeding as well as temperature control. Sourdough starters were not developed for the flavor that they developed in the finished product, instead they were developed as a means to leaven dough. It's only over the past 50-years or so that we have recognized sourdough starters for the unique flavor profile between different starters. I can still remember my grandmother going to the neighbors to get a small amount of their starter so she could make bread later in the week after finding that her own sourdough starter had "gone south" for whatever reason. I remember that she kept it in a 1-quart Mason jar on a kitchen shelf near the wood burning cook stove.

From what I know now about sourdough starters today, the reason why she lost her starter was most likely due to lack of temperature control as it was stored too near to the stove where it was exposed to regular temperature fluctuations.

Tom Lehmann/The Dough Doctor  
3099

## **Newbie Topics / Re: measurements of rheological properties**

Alveograph:

A dough testing machine which measures the extensibility of dough by expanding a disc of dough with compressed air and recording the degree of extensibility of the dough before the bubble bursts. The resultant graph gives an indication of the stability, the extensibility and the comparative strength of the gluten forming proteins in the flour being tested.

Farinograph:

An instrument used to measure development and certain other physical characteristics (tolerance to over mixing) of dough at a constant temperature. It also provides an absorption value for the flour.

Stability:

A measurement taken from the Farinograph curve as soon as the curve drops below the 500- B.U. (Brabender Unit) line on the chart. The stability value provides

an indication of the tolerance of the flour to over mixing. The higher the number (in minutes) the more tolerance the flour has to over mixing. This is also a good indicator of the quality of the flour protein also. Higher quality protein = stronger doughs with all things equal.

Falling Number:

A laboratory device used to measure the level of alpha-amylase activity in the flour. The number provided by the Falling Number Test that indicates the level of diastatic activity in the flour. A falling number of 400 to 500 indicates a very low level of amylase activity while a number of 200 to 250 indicates a level typically associated with a malted flour (such as is typically used for bread and pizza production).

Dry Gluten:

The weight of the gluten after drying. In the U.S. we report gluten as protein content (nearly the same) but we typically report it on a standardized 14% moisture basis (this is the moisture basis that flour is sold on when purchasing in bulk). The gluten here appears to be reported at 10.5% moisture content resulting in a slightly higher protein/gluten percentage than if reported on a 14% moisture basis.

I know we have discussed this a number of times here at Pizzamaking.com so a quick search through the archives may shed a little more light on the topic.

Tom Lehmann/The Dough Doctor

3098

**[Dough Clinic / Re: SD quandary](#)**

It sounds more like a leavening issue to me than a flour issue as flour will not have such a significant impact upon flavor (more subtle). I suggest trying more SD to see if that brings you back closer to where you used to be.

Tom Lehmann/The Dough Doctor

3097

**[New Forum Members / Re: buying mozzarella direct from manufacturers](#)**

I know that P.H. contracts all of their cheese from Leprino and I've seen their trucks at various P.H. stores so I'm assuming if you're big enough there is a chance to buy directly from a cheese producer rather than a distributor. I can't speak to all of the large producers if they sell direct or not but there are many small and mid size producers from which one could probably buy direct. As for Grande, I don't THINK they do any direct sales unless it would be to one of the large frozen pizza manufacturers.

Tom Lehmann/The Dough Doctor

3096

**[Off-Topic Foods / Re: What do you need for a Pop-up Pizzeria?](#)**

Define "pop-up pizzeria"?

Tom Lehmann/The Dough Doctor

3095

**[Dough Clinic / Re: Hey Tom. Sd448 question.](#)**

I realize that the amount of bake that a pizza received is purely a personal preference type of thing with mine being that the bottom of the pizza be baked a bit more than the top of the pizza, thus assuring a nice crispy pizza without excessive char on the top. With that said, too much bottom color:

1) Oven temperature too hot for the crown height of the oven.

- 2) Use of sugar (any type), eggs, milk or anything which would contribute to the browning reaction in an oven which is too hot for the dough formulation.
- 3) Burners too close to the deck or providing too much heat to the deck.
- 4) Deck material not sufficiently thick.

Any one of these might be responsible based on the information provided.

Tom Lehmann/The Dough Doctor  
3094

### **Dough Clinic / Re: Pre-portioning before cold fermenting**

It all depends upon your dough formulation, specifically the yeast level. I ALWAYS make my pizza dough in a way similar to what you have described. After the CF period, remove the dough balls from the fridge, allow to warm to 50 to 60F (NOT ROOM TEMPERATURE), turn the dough ball(s) out of the container onto a floured surface and open into a skin for dressing. Hopefully you oiled the container prior to putting the dough in it thus allowing the dough ball to be easily turned out of the container.

Tom Lehmann/The Dough Doctor  
3093

### **Prep Equipment / Re: Standing Mixers in Australia**

Look at the used restaurant equipment market to see if you can find a Hobart A-120 or A-200 mixer with a reverse spiral dough arm. The A-120 should handle up to about 2-Kg. flour based doughs while the A-200 should handle up to about 3.5-Kg flour based doughs. There has been some discussion here on these mixers and I think just about anyone would jump at the chance to get their hands on one (space permitting). These mixers don't require an unusual amount of space on the counter top BUT they are NOT portable either. A lot of people put these mixers either in their garage or on a sturdy wheeled stand so it can be moved out of the way when not in use.

Tom Lehmann/The Dough Doctor  
3092

### **Dough Clinic / Re: Hey Tom. Sd448 question.**

Yep, had a BP electric deck oven with both top and bottom temperature control. The top wasn't a specific temperature control, it was more like a top heat damper but it worked well to allow adjusting the top bake. Crown height aka oven height (distance from the deck to the top of the oven) can have a significant influence on the way an oven bakes. We always baked our pizzas in the BP deck oven at 500 to not more than 525F. We could never get a decent temperature balance when baking at a temperature higher than that.

Tom Lehmann/The Dough Doctor  
3091

### **Dough Clinic / Re: Pre-portioning before cold fermenting**

If your yeast is IDY the amount is fine for taking the dough right from the fridge, allowing it to warm AT room temperature to about 60F dumping it out of the container onto a floured surface and immediately beginning to open the dough ball into a skin. Without actually seeing your dough formula and knowing the dough temperature after mixing this is based on a lot of assumptions.

Try it and let us know how it worked for you, I think you're be fine.  
Tom Lehmann/The Dough Doctor  
3090

## [\*\*Newbie Topics / Re: Dough Texture to shoot for\*\*](#)

If you read any of my postings on dough mixing you'll know that I advocate mixing the dough JUST until it takes on a smooth, satiny appearance...no more. It sounds like that's where you are at. Well done! :chef:

Tom Lehmann/The Dough Doctor  
3089

## [\*\*Dough Clinic / Re: Same NY style dough recipe, different flour & different containers...new problem\*\*](#)

Just going to take a guess on this one as I would need to actually see the two doughs made with the different flours to do any better at this time.

The larger diameter container allowed the dough to expand outward (dough will always try to expand outward as it is the path of least resistance) so much of the leavening gas was not seen as it was allowed to escape into the space within the container (dough only retains a small portion of the leavening gas, the rest passes through it into the surrounding atmosphere) This is why you didn't see the bubbles. BUT you never said you had any problems opening the dough so I'm guessing fermentation was still OK, and you said the flavor was still good, again an indication that fermentation was still good. Because there wasn't as much gas trapped within the dough cell structure (the smaller container will help to prevent it from escaping into the surrounding space because there is LESS surrounding space) there was less present IN the dough when you opened it into a skin. The open cell structure is well known to be partially responsible for the crispiness as well as the firmness of the finished/baked crust. A simple test would be to use one of the smaller containers to ferment the KASL flour based dough in and see how it compares to a control dough made in the SAME size container at the same time. This is why, in research, we use the mantra "Change only one thing at a time". When something changes it's a lot easier to get a handle on the reason for the change.

Tom Lehmann/The Dough Doctor  
3088

## [\*\*New Forum Members / Re: Starting my own Artisan/Neapolitan pizzeria\*\*](#)

Andy;

- 1) Move dough rack further away from the oven.
- 2) Create a heat/thermal block between the dough rack and the oven.
- 3) Use a refrigerated catering cabinet for storing your dough in.

Take yer' pick.

Tom Lehmann/The Dough Doctor  
3087

## [\*\*Sauce Ingredients / Re: Sun-dried Tomatoes\*\*](#)

In one word.....EXCELLENT!

They provide a sweet flavor and a great texture.

Tom Lehmann/The Dough Doctor  
3086

## [\*\*Dough Clinic / Re: Same NY style dough recipe, different flour & different containers...new problem\*\*](#)

We did the work back in the late 60's and found that it retards the fermentation rate. It's not the pressurized aspect, it's the fact that the dough presses against the sides of the container thus impeding the release of the leavening gas. This is why I

personally favor using plastic bags to cold ferment my dough in.

Tom Lehmann/The Dough Doctor

3085

### **Sauce Ingredients / Re: Sun-dried Tomatoes**

You have two options...see which one you like best.

1) Soak in olive oil several hours or overnight before use.

2) Take a small quantity of your sauce, heat it just to a simmer, add the sun dried tomatoes and stir in. Place in the cooler/fridge for several hours or over night before using.

You don't want to hydrate as that will dilute the flavor.

Tom Lehmann/The Dough Doctor

3084

### **Dough Clinic / Re: Same NY style dough recipe, different flour & different containers...new problem**

Actually...a lot of research has been done with mixing dough under controlled atmosphere (vacuum) back when the Tweedy Dough Mixing process was being developed in the U.K. Fermentation doesn't do very well in a vacuum as bakers yeast is aerobic, plus the things that grow in an anaerobic environment are typically not very "consumer" friendly.

Tom Lehmann/The Dough Doctor

3083

### **Dough Clinic / Re: Hey Tom. Sd448 question.**

All things equal the addition of sugar or more sugar to the dough will result in both the top and bottom of the pizza developing more color. You might also try decking the pizzas, a lot of pizzerias do it.

Tom Lehmann/The Dough Doctor

3082

### **Dough Clinic / Re: Hey Tom. Sd448 question.**

It's a baking procedure where the pizza is baked on a screen to limit the bottom bake, when the top of the pizza is almost done the pizza is removed from the screen and placed right on the deck for 15 to 30-seconds to achieve the desired bottom bake characteristics. This is a very effective way to bake a more heavily loaded/dressed pizza in a deck oven where one would like to bake the pizza longer but in doing so the bottom of the pizza gets too dark. This is just the opposite of "doming" a pizza which is common in high temperature ovens where the bottom of the pizza gets done first so the pizza is raised on a peel into the dome of the oven, where the temperature can be as much as 1,000F, for just a few seconds to achieve the desired top color characteristics.

Tom Lehmann/The Dough Doctor

3081

### **Dough Clinic / Re: Sourdough pizza dough**

Yes you may. You can attach it here or in a P.M. or send it directly to me at <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)>

Tom Lehmann/The Dough Doctor

3080

### **Dough Clinic / Re: Differences between 00 flour and bread flour**

If you plan on using the same size dough formula the answer is yes. Keep in mind

that the two flours in question MAY NOT be directly interchangeable due to the potential differences in malting between the two flours which will affect the way the pizza bakes.

Tom Lehmann/The Dough Doctor  
3079

**[Dough Clinic / Re: The "Basic Dough Recipe" from the Dough Doctor](#)**

After it comes out of the fridge it goes straight to the bench for opening into a skin. If you ball it again you will be waiting another 6-hours or more for the dough to relax sufficiently so it can be opened into a skin without the dough having all of the opening characteristics of a tennis ball.

Tom Lehmann/The Dough Doctor  
3078

**[General Pizza Making / Re: Soggy pizza.... weight or liquid content of toppings?](#)**

To answer your question in one word...yes. The amount of toppings that can be applied before a pizza becomes soggy (swamp pizza) depends upon how you have prepared the toppings, the amounts added (you already know that), the type of oven the pizzas are being baked in as well as the baking time (longer baking time allows for more evaporation of moisture) and air movement/circulation helps with the evaporation (like a hair dryer). If you par-bake your crusts prior to dressing you can carry more of the wet toppings than you can if you build your pizza on a raw dough skin.

Tom Lehmann/The Dough Doctor  
3077

**[Dough Clinic / Re: The "Basic Dough Recipe" from the Dough Doctor](#)**

You got it right!  
Tom Lehmann/The Dough Doctor  
3076

**[Dough Clinic / Re: Hey Tom. Sd448 question.](#)**

I've not done it nor seen it done in a commercial oven so I can't answer that.  
Tom Lehmann/The Dough Doctor  
3075

**[Dough Clinic / Re: Differences between 00 flour and bread flour](#)**

Congratulations! That's a mighty fine looking pizza! :chef:  
Tom Lehmann/The Dough Doctor  
3074

**[Dough Clinic / Re: Gliadin](#)**

I'm not aware of where you might be able to source just gliadin (one of the two wheat proteins making up what we call "gluten"). You can easily source vital wheat gluten (many supermarkets carry it in their baking section) which can be easily added to any flour to increase the gluten forming protein content of the flour. When adding VWG, for each 1% VWG added to the flour you will be increasing the gluten forming protein content of that flour by 0.6%. For example, if you have a flour with 11% protein content and add 1% (based on the total flour weight) VWG to the flour, the protein content of that flour will now be effectively increased to 11.6%. Remember, for each 1% VWG added YOU MUST also increase the dough absorption by an amount equal to twice the weight of VWG which you added.

Different types of wheat flour can have different protein levels, some high (14+%) and some low (10% and less). It is a fairly common practice with home pizza makers to make a blend of different flours to make specific types of pizzas. Which flour would be best to blend with Caputo flour depends upon the type of Caputo flour you are using as well as the type of pizza you want to make and to some extent the dough management procedure you wish to employ in making your pizzas. Do you have a specific reason for wanting to use a Caputo flour? Do you have an oven hot enough to bake pizzas made using Caputo flour to make the dough? It takes an oven temperature of at least 700F (800 to 900F is better) to properly bake dough made with Caputo flour unless you add sugar or diastatic malt to the dough formula.

Tom Lehmann/The Dough Doctor  
3073

### [\*\*Chitchat / Re: Girl Scout Cookies - Worse than before?\*\*](#)

Craig;

You're right! There is a difference between politically correct food and good tasting food. They're beginning to learn this in the school lunch programs too. If I wanted to eat politically correct (whatever that means) I would not be eating pizza and certainly not the double chocolate, coconut, nut cake that I made last night for dessert. I know what you mean about supporting the kids, we do the same. I've even helped them do pizza dinners for fund raisers too. One of them raised over \$800.00 for the local grade school.

Tom Lehmann/The Dough Doctor  
3072

### [\*\*Dough Clinic / Re: The "Basic Dough Recipe" from the Dough Doctor\*\*](#)

Peter;

Oops! You caught me!!! ;D

You're right. I do recommend 50 to 55F for application in pizzerias but in home pizza making applications where all of the dough will be opened within a rather short window of time I like to go with 60F as a temperature suggestion but in actuality, because of all the variations in the way we make pizzas at home and all the different temperature definitions of "ambient" I like to say 60F minimum but let it go longer if necessary, then note the internal dough ball temperature and whatever it is now becomes YOUR specific temperature to allow the dough balls to temper to before opening.

Tom Lehmann/The Dough Doctor  
3071

### [\*\*Sicilian Style / Re: Pizza pala/in teglia \(Sicilian style\): troubles with hydration & dough mixer\*\*](#)

There is a HUGE difference in the way the dough interacts with the agitator when using a spiral mixer as compared to a planetary type of mixer, this is especially true with the larger size spirals. It is this difference which enables the spiral mixer to handle tough pizza doughs so much better than their planetary cousins and it is also the reason why the longevity of a spiral mixer is so much better than that of a planetary mixer. Spiral design mixers are really not the best suited mixers for making really high absorption doughs. just watch the mixing action between the two designs and you will see what I'm referring to.

Tom Lehmann/The Dough Doctor  
3070

## [\*\*Sicilian Style / Re: Pizza pala/in teglia \(Sicilian style\): troubles with hydration & dough mixer\*\*](#)

In its own way hand mixing probably does a better job of mixing a very high absorption dough than a spiral mixer, in this regard an ARTOFLEX type of mixer might work quite well for mixing those very high absorption doughs.

The way the agitator works with the very slack dough condition is why it takes so long to mix the dough. There is a spiral mixer design that might be better suited for a very slack dough condition, this is the one with a wide breaker bar (about 75mm wide) and it also has a plastic scraper to assist in pulling dough off of the bottom of the bowl. Like other mixer types, all spiral mixers are not designed the same.

Tom Lehmann/The Dough Doctor  
3069

## [\*\*New Forum Members / Re: buying mozzarella direct from manufacturers\*\*](#)

Nick;

I can't answer that as the price of cheese is very fluid. Perhaps someone who is buying directly from a distributor will identify the brand as well as the current price that they are paying for it.

I will get you a local (for me) price for Grande shredded mozzarella.

Tom Lehmann/The Dough Doctor  
3068

## [\*\*Pizza Cheese / Re: Fresh Mozz Price\*\*](#)

Stiks;

If you e-mail me at <thedoughdoctor@hotmail.com> I can send you a copy of a distributor's price list.

Tom Lehmann/The Dough Doctor  
3067

## [\*\*Dough Clinic / Re: Any substitute for caputo 00 Flour which is suitable for Neapolitan pizza\*\*](#)

Yael is right, there are some "00" type domestic flours available at a much lower cost. You will need to try them to see if they meet your specific requirements for the way you are managing your dough.

Tom Lehmann/The Dough Doctor  
3066

## [\*\*Dough Clinic / Re: dough stretches really quickly?\*\*](#)

QP;

Eliminate the malt powder from the dough formula and let me know how the dough performs for you. Excessive diastatic activity in the dough can result in an overly slack dough condition which could manifest itself as you have described. Also, what is your measured finished dough temperature? This can impact the dough both by itself and also the effect of the diastatic activity on the dough.

Tom Lehmann/The Dough Doctor  
3065

## [\*\*Neapolitan Style / Re: Hybrid Starter Levain/Direct\*\*](#)

Jizza23;

The problem in using a domestic yeast in a true sourdough starter is that a sourdough starter is a delicate blend of wild yeast strains and lactic acid forming bacteria. It is the proportions of these microbes in the starter that give the

finished/baked product its unique flavor. It was said for many years that San Francisco sourdough bread couldn't be made outside of the Bay area as no one was ever successful at making breads with a true sourdough flavor east of California. We studied this and what we found was that in every case where flavor was an issue they added domestic yeast to the sourdough starter. This was done to speed up the final proofing of the breads, as you know, a true sourdough bread requires approximately 12-hours to proof after forming. Bakeries producing sourdough breads in California had this consideration built into their processing schedule but other bakeries didn't...they tried to incorporate sourdough bread into their regular production/processing schedule (hence the addition of yeast) and the unique flavor notes were lost. We found that the addition of the yeast completely upset the balance of micro-flora in the sourdough starter and within a short time the yeast became the dominant micro-flora as a result the starter was "lost". With that understanding, today, sourdough products are successfully made across the U.S. but only in bakeries designed for making/handling sourdough products. To a great extent sourdough products are made most successfully by smaller bakeries which can better accommodate the long proofing times required of sourdough products. By the way, much of what we see on the supermarket shelves today promoted in one way or another as "sourdough" on the label are not made from a true sourdough but instead incorporate what is referred to as a "dry sour" which is a sourdough which has been matured and then dried and ground into a powder for addition to the dough as a flavoring compound or it might be made as you have described, from a blend of yeast and sourdough starter, but in either case the flavor is far from what many would describe as a "true sourdough" flavor. This is why so many people recognize a true sourdough flavor as something different....it is. But remember that all sourdough starters are not the same, the flavor can range from sweet to tart/acid and in some cases can be down right disgusting, it all depends upon what micro-flora you're culturing.

Tom Lehmann/The Dough Doctor  
3064

### **New York Style / Re: My Attempt at New York Style**

Your pizza appears to be very light in color possibly due to the oven temperature being off (cooler than what the thermostat shows it to be) or not knowing your finished dough temperature (immediately after mixing) the dough could be getting too much fermentation for your baking temperature. Fermentation produces acids (among other things) which inhibit crust color development unless you can bake at high temperatures. You might include 2% sugar in your dough formula to see if this helps or reduce the amount of room temperature fermentation to an hour or less before balling the dough and putting it into the fridge. The crust also appears to have a lot of dusting flour on it so you might want to concentrate on minimizing the dusting flour when making future pizzas. By the way, for your method of dough management I would suggest a finished dough temperature in the 70 to 75F range. I'm also assuming that you're allowing the dough balls to warm up to at least 55F before opening them into pizza skins. You say you have your fridge temperature set at "level 5" but that really doesn't help us as you need to know the actual temperature in the fridge...this will have a significant bearing on the rate of fermentation taking place. By addressing these issues you might find the dough balls holding their shape better too, if not we can help you sort that out too.

Tom Lehmann/The Dough Doctor  
3063

### **New York Style / Re: My Attempt at New York Style**

## Making Pizza:

There are two reasons why I suggest 55F (it can be as high as 60F) instead of "room temperature". 1) The dough is a little easier to handle at 55 to 60F than it is at room temperature. 2) Room temperature is a great unknown. There is no consistency to "room temperature" while 55 to 60F is a known entity and it's always the same. As an example, I've got a friend in Australia and for him "room temperature" is constantly flirting with 37.7C aka 100F. As for the temperature of your fridge, there is only one temperature range that is recommended: 36 to 40F.

Tom Lehmann/The Dough Doctor  
3062

## Dough Ingredients / Re: Best water for pizza style

For any yeast leavened products hard water is better than distilled, RO or softened water. This is primarily due to the calcium in hard water which has a strengthening effect upon the wheat proteins making for a stronger dough with less stickiness/tackiness. If you need to use any of the treated waters named above all you need to do is to add some calcium sulfate (0.25%) to the dough and you're good to go. I wrote an article in PMQ on this very topic some time ago if anyone wants to research it.

Tom Lehmann/The Dough Doctor  
3061

## Dough Ingredients / Re: Best water for pizza style

Norcoscia;

Yes, non-bromated mineral yeast food goes by two different names.

- 1) Non-bromated mineral yeast food.
- 2) Calcium sulfate. Actually, since bakeries stopped using bromated mineral yeast food most have just switched over to using calcium sulfate because it is the majority ingredient and most beneficial ingredient in any commercial yeast food. You can get calcium sulfate at any drug store or many garden centers (the stuff you get at the garden centers will not be approved for food use). It is so cheap that farmers apply it to their fields to break up clods of clay.

Tom Lehmann/The Dough Doctor  
3060

## Dough Clinic / Re: Stretching issues and timing?

Did you place the dough containers in the fridge uncovered? Why did you turn the dough out of the fermentation containers and allow to set out for 2-hours? They are supposed to go into the fridge uncovered for at least 2-hours. If you lightly oil the containers before you put the dough into the containers all you need to do is to remove the dough (leaving it in the container(s) and allow to temper AT room temperature to about 60F, then invert the container allowing the dough to fall onto a floured surface, turn the dough over a couple of times to get it completely floured and you're ready to begin opening it into a skin. You might also try partially opening the dough using a rolling or pastry pin to about 2-inches of full diameter, then finish opening by bench stretching or your preferred method of hand opening. As you continue to get more proficient with your opening skills you will be able to wean yourself off of the rolling/pastry pin and open the dough entirely by hand.

Tom Lehmann/The Dough Doctor  
3059

## Dough Clinic / Re: Stretching issues and timing?

Let us know how that works for you.

Tom Lehmann/The Dough Doctor  
3058

**Dough Ingredients / Re: Best water for pizza style**

Craig;

I think you're confusing dough quality and bread quality. The "hardness" of the water is well documented regarding its effect upon the dough. As for bread quality, I'm not aware of any real benefits to the finished bread quality resulting from the hardness of the water unless it is a peripheral benefit resulting from the improved dough handling properties had when using hard water. This does not mean that you cannot have a decent handling dough when soft or treated water is used, you certainly can, but when comparing like doughs made with hard and soft water research shows that those doughs made with soft water tend to carry about 2% less absorption and they also have a greater propensity for stickiness/tackiness than dough made with hard water. Some commercial bakeries have their mixer water (water that is used for making the doughs) piped directly from the building main without any further treatment while the rest of the water is further processed through a water conditioning/softening system. Calcium is a very effective dough improver, especially where stickiness and strength are potential issues, this is why literature states that you get stronger, better handling doughs with the addition of milk (dry milk solids) to the dough....it's the calcium in the milk. Calcium has always been an ingredient in mineral yeast food too (calcium sulfate, ammonium sulfate, potassium bromate) are the main ingredients. The ammonium sulfate is where MYF gets its name from as the ammonium sulfate breaks down releasing nitrogen as a food source for the yeast (actually it has little to no effect on the yeast) so when bromate fell from favor it didn't take too long for baking companies to figure out what the "real" active ingredient in MYF was....calcium sulfate. If the water in question has sufficient calcium content you don't see any further improvement from the addition of calcium sulfate or MYF for that matter. There is also an acid type mineral yeast food that also contains MCP (mono calcium phosphate) as the acid source. With this type of MYF the MCP serves an important role in helping to improve the rate of fermentation in applications where the water is slightly alkaline. We ran head long into that issue when the AIB moved from Chicago to Manhattan, KS back in the mid-1970's. The water in Chicago was as hard as a rock (city is built on a lime stone structure/lots of stone quarries) and slightly acidic (helps to keep the calcium from building up in/on equipment) so we just used a plain bromated MYF, not because we had to but because that's what the baking industry was doing. Then we moved to Manhattan, KS and all of our dough fermentation times were WAY off...Huh??? A check of the water soon disclosed what the problem was....our water had a pH of 7.3 at the lowest and 7.7 was the highest we saw...Good Grief! We addressed the problem by changing over to an acid type MYF and increased the amount from 0.25% to 0.5%.

Note:

Chicago has since changed their water treatment as it is now all pre-softened before it goes into the delivery system and Manhattan, KS has addressed their alkaline water issue too as well as going with pre-softened water into their delivery system. The reason: Water treatment is cheaper than equipment failure, maintenance, and replacement.

Tom Lehmann/The Dough Doctor  
3057

**New York Style / Re: My Attempt at New York Style**

MakingPizza;

You just bring it out of the fridge and set the containers on the bench/counter top or some other convenient location. Like Yael said, make a note of how long it takes the dough balls go get up to 60F and then you can just go with the time. One thing you might try is placing the dough balls into plastic Food Bags (not Ziplok). Form the dough into balls, oil the dough balls with any food grade oil and drop into individual plastic bags, to close the bags, twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge...that's all there's to it. When you're getting ready to use the dough just remove it from the fridge and set it on the counter top for 60-minutes. To remove the dough ball from the bag, roll the bag down close to the dough ball and invert the bag allowing the dough ball to fall free from the bag onto a floured surface, flour the dough ball and begin opening it into a skin for immediate dressing and baking. When done right, the bag automatically makes a nice round dough ball. This procedure has been discussed here a number of time if you would like to look back in the archives to see how others use this method.

Tom Lehmann/The Dough Doctor  
3056

### **Dough Clinic / Re: dough making questions**

MBLUE;

We really need more information. Your dough management procedure is very sketchy and we don't have a clue as to what your dough formulation is. With your procedure I'm guessing that the yeast level might be very low...can you confirm yeast level and type used? A low yeast level can result in a reduction of crispiness as well as set the stage for a potential gum line just below the sauce.

Any additional information you feel comfortable sharing will help us to answer your questions.

Tom Lehmann/The Dough Doctor  
3055

### **Dough Clinic / Re: crispy crust**

These are the things that will come into play when trying to develop a crispier crust.

- 1) Enhance oven spring.
  - a) Make sure you have sufficient yeast in the dough formulation.
  - b) Optimize dough absorption.
  - c) Sufficient fermentation for an extensible dough.
- 2) Oven temperature should be balanced to the dough formulation.
- 3) Bake the pizza long enough to develop a thicker crispy layer across the entire bottom of the pizza.
- 4) Minimize the use of browning agents in the dough as much as possible to allow for #3 above.
- 5) The higher the flour protein the greater the POTENTIAL for a crispier crust.
- 6) Ensure the dough formula is in proper balance.
- 7) Develop good time and temperature controls over the dough, without these you cannot have effective dough management and without effective dough management you will not have a consistently crispy crust.

Those are the high points of achieving a crispier crust.  
Tom Lehmann/The Dough Doctor  
3054

### **Dough Ingredients / Re: Best water for pizza style**

TXCraig1;

Amen to that! Too many people buy into the "better ingredients make better pizza" philosophy, agreed, it's part of the equation but if you can't consistently make a decent pizza better ingredients aren't going to make your pizzas any better. I liken it to a pile of the best bricks in the world....in the hands of a skilled brick mason he can build a castle, in the hands of anyone else, you're likely to get a pile of the best bricks in the world stuck together with mortar.

Tom Lehmann/The Dough Doctor

3053

### [\*\*Dough Clinic / Re: crispy crust\*\*](#)

Peter;

Oil is a tenderizer, with regard to a cracker style crust it makes for a more tender/flaky eating crust. Work that we did many years ago showed that 8 to 10% fat (preferably as shortening or any plastic fat) gave the overall best characteristics. I might also add that this closely corresponds to what is typically used in the production of premium saltine and club crackers which come in at around 8% fat. The reason why I don't recommend oil at those levels is due to the possibility of the oil soaking into the flour. If you really know what you're doing oil can be used but a plastic fat is a LOT easier to work with in this case, and if you are using a VERY SHORT mixing time (under 2-minutes) a plastic fat is mandatory as it is impossible to use oil in this specific application without it soaking into the flour...remember, we're dealing with only two minutes or less total mixing time. Those dough formulations which do not contain any oil are normally referred to as "thin crispy" while those made with oil or shortening are normally referred to as "thin cracker".

Tom Lehmann/The Dough Doctor

3052

### [\*\*Dough Clinic / Re: what yeast for Neapolitan\*\*](#)

Which ever you use just be sure to use it correctly (both method of addition and amount used). ADY has to be suspended in 100F water (use a thermometer) and allowed to activate for about 10-minutes before addition to the remainder of the dough water, IDY, on the other hand, is used at a level about 20% less than ADY and it is typically added in its dry form directly to the flour. The one exception to this is when mixing the dough by hand, in that case the IDY is suspended in 95F water and allowed to activate for 10-minutes prior to addition to the remainder of the dough water.

Aside from that you can expect essentially the same results between IDY, ADY and CY (compressed yeast) as Craig noted.

Tom Lehmann/The Dough Doctor

3051

### [\*\*Dough Clinic / Re: crispy crust\*\*](#)

Peter;

I classify the Chicago thin crust as a thin crispy type of crust...and I might add that I use the term "crispy" quite loosely in this description as only the very edges (the corner edges of the round pizza, remember it is a party cut pizza) even come close to resembling anything very crispy...that's just the way it is. A good example of a thin cracker type crust can be seen at Incredible Pizza, the silly thing holds up fantastically well on their pizza buffets. Thin cracker crusts are also what P.H. "used" to have back in the 50's and 60's but then changed to a more traditional thin crispy type of crust sometime around 1968 or so.

Tom Lehmann/The Dough Doctor  
3050

**Dough Clinic / Re: dough making questions**

MBLUE;

You gave your dough formula in "true %" as opposed to bakers percent which is the more common and to a great extent, correct way to look at a dough formulation.

Here is your formula in bakers %;

flour: 100%

Water: 59.94%

Salt: 0.18%

Yeast (IDY/SAF): 0.71%

Based on this my recommendations would be to increase the salt to 1.75 or 2% and probably cut the yeast level in half as this is a very high level for IDY. I'm betting that just increasing the salt level will do wonders for the flavor and consumer acceptance of your crusts. With very low salt levels like you have the flavor of the crust is typically described as being "starchy" and flat/tasteless.

Tom Lehmann/The Dough Doctor  
3049

**Dough Clinic / Re: dough making questions**

Thanks for catching that, I neglected to change the salt and IDY to bakers %...Oops!

Here are the correct percentages for the salt and IDY in bakers percent;

Salt: 0.286%

IDY/SAF: 1.13%

The salt is still much too low and the yeast as IDY is really quite high for making pizza crust unless it's for an emergency dough.

Tom Lehmann/The Dough Doctor  
P.S.

I'll lick the egg off of my face in the morning for breakfast :-D  
3048

**Neapolitan Style / Re: Freezing whole pies**

I've done N.Y. style crusts with just sauce, then dress the sauced crusts and bake with relatively good success. When I've frozen fully dressed baked pizzas I never really like the texture of the toppings after the final reheating (too soft and mushy).

Tom Lehmann/The Dough Doctor  
3047

**Neapolitan Style / Re: Freezing whole pies**

I can't argue with you on that one! "Even a bad pizza is better than no pizza at all". I have a saying that I coined many, many years ago, it goes like this: "I've never had a pizza that I couldn't learn to like" ^^^

Tom Lehmann/The Dough Doctor  
3046

**Dough Clinic / Re: dough making questions**

Use the delayed oil addition method of mixing. Put water in bowl first, then the salt (no need to stir) and then the flour with the IDY added on top of the flour, mix at low speed JUST until you don't see any dry flour in the bottom of the bowl (1.5 to

2-minutes), add the oil and continue mixing at low speed for another minute then finish mixing at medium speed.

Tom Lehmann/The Dough Doctor  
3045

### **General Pizza Making / Re: Chocolate Dough Pizza**

We experimented with making chocolate croissant dough back in the heyday of croissants. They already add chocolate to croissant dough but it's in the form of chocolate pieces, we wanted to see if we could make a decent "chocolate" dough for making chocolate croissants. The problem we were having at the time was related to the flavor of the dough, it looked like chocolate but it sure didn't have a chocolate flavor. The reason for this is due to the pH of the dough. Chocolate/cocoa develops its flavor in an alkaline environment....dough pH is acid and it becomes more acid with fermentation. When we added soda to the dough to get the flavor we were looking for fermentation all but ceased (pH too high). Because of this we stopped working on the concept.

Tom Lehmann/The Dough Doctor  
3044

### **Dough Clinic / Re: dough making questions**

I can't tell you how much oil to use, you'll need to make dough with 2% and 4% (if those are the amounts you want to look at) and judge for yourself to see what works best for YOUR application. Regarding the oil/fat addition, since when a very short mixing time in 1st. speed is employed I DO NOT advocate using oil in your dough, instead use shortening and add it right along with the flour (no special handling or addition method) and continue mixing the dough just as you do. Oil will change the viscosity of the dough in a way similar to water but because it functions so very differently than water I do not recommend including it the dough absorption calculation BUT do be aware that it WILL make the dough feel softer as you either add or increase the oil and if this poses a problem in handling address it by reducing the dough absorption by an amount equal to the weight of oil added. Shortening DOES NOT do this so it is not necessary to make any changes to dough absorption regardless of the amount of shortening used.

NOTE: In some very specialized applications where high levels of shortening are added to the dough (I'm talking about levels of 10 to 25%) it may be necessary to mix the dough to "normal" (whatever that is for the dough in question) and then add the shortening and mix at low or medium speed for an additional 4 to 5-minutes to incorporate the shortening. This is a very common practice when making a high quality sweet dough (think cinnamon rolls) where the total fat content is typically in the 18 to 22% range. The reason for these practices with high shortening addition levels is due to the fact that the shortening (at these high levels) will coat the flour and thus interfere with both flour hydration and gluten development.

Tom Lehmann/The Dough Doctor  
3043

### **Dough Clinic / Re: dough making questions**

Many times here, PMQ and P.T.

Both serve the same purpose, entrap flavors, lubricate the dough for improved extensibility, seal the cell structure for improved oven spring, provides tenderness in the finished crust and adds a dimension of "richness" to the finished crust. Shortening TENDS to promote slightly better volume/height in thick crusts than oil. No significant difference in thin crusts.

Tom Lehmann/The Dough Doctor  
3042

**Dough Clinic / Re: dough making questions**

Peter;  
You're ABSOLUTELY AMAZING!!! :)  
Tom Lehmann/The Dough Doctor  
3041

**Dough Clinic / Re: dough making questions**

Agreed. In the wholesale baking industry we use the delayed salt addition mixing method to reduce total dough mixing time and yes....they even forget to add the salt occasionally :( so I can appreciate your concerns.

Tom Lehmann/The Dough Doctor  
3040

**General Pizza Making / Re: Chocolate Dough Pizza**

Norma;  
The most flavorful cocoa is cocoa made by the Dutched Process, this is where the cocoa powder is treated with alkali (high pH) to develop the dark color and more pronounced flavor. Natural cocoa has a lower pH but little flavor and gave the dough a "muddy" appearance.

Tom Lehmann/The Dough Doctor  
3039

**General Pizza Making / Re: Chocolate Dough Pizza**

It would be interesting to experiment in this direction (you would be making a "chemically leavened" crust as opposed to a yeast leavened crust. You have to be in developing a leavening system, if you just use the cocoa for the alkali and milk kefir for the acid part you're liable to cancel out the pH of the cocoa and end up with something that more closely resembles natural cocoa. Why not just experiment with a chemically leavened crust to begin with? Use a single acting baking powder (CALUMET) and blend it into a small amount of Crisco to encapsulate it with the fat, then blend this into the remainder of the fat (be it oil or shortening) and proceed to make the dough. Things to remember:

For each % cocoa added you will need to add 1.5% additional water.

The dough will not ferment (no yeast).

The dough will not rise until it goes into the oven.

You will want to have a fairly soft and extensible dough coming off of the mixer which will allow it to rise due to oven spring.

I would suggest starting with 5% Calumet Baking Powder for starters and benchmark from there.

Procedure?

Mix; Scale; Ball; Refrigerate (for convenience); Remove from fridge, dress and bake. You MIGHT need to allow the dough to warm up a bit?

Alternative Procedure:

Mix; Scale; Ball; Box; Oil; Seal to prevent drying. The dough might be able to be held for quite some time (several hours) in this manner?

Tom Lehmann/The Dough Doctor  
3038

## [\*\*General Pizza Making / Re: Chocolate Dough Pizza\*\*](#)

Norma;

What I said was that using just milk kefir and Dutched process cocoa may just create a situation where the alkalinity of the cocoa (pH 9.8) neutralizes the acidity of the milk kefir almost instantly leaving nothing to react later in the oven...hence the baking powder. When you're using the cocoa powder in a baked product I find very little benefit from using the more expensive cocoa powders. The flavor imparted comes from the amount of cocoa butter present as well as the pH. If those numbers are similar you won't find much difference in flavor in a baked product. When you have a baked product that is supposed to be chocolate but lacks the chocolate flavor it's almost always due to the pH being too low. Stop at a donut shop and buy a chocolate cake donut...upwards of 15% dark (Dutched process) cocoa and yet you don't have a pronounced chocolate flavor...why? pH is the answer. You can't mess with the pH of a cake donut without destroying the quality of the donut itself due to too much or too little fat absorption during the frying process. DO NOT CONFUSE THIS WITH THE CANDY MAKING PROCESS...that's a whole different story.

By the way, one of the things that I do when making my "double chocolate coconut nut cake" mentioned in a previous post, is to use semi-sweet chocolate morsels in the batter. The morsels melt late in the baking of the cake so the chocolate retains its integrity (unlike a chocolate syrup which would get incorporated as a part of the batter) so after baking there is sort of a matrix of melted chocolate throughout the entire cake giving it a VERY chocolate flavor and I might add a somewhat desirable "gooey" texture. I'm not sure how this texture might come across in a pizza crust BUT if it were a crust that was used just for the foundation of a dessert pizza it might work. This is similar to how we make the chocolate croissant dough where there are "splotches" of melted chocolate distributed throughout the dough for flavor...a trip to your local Panera will get you a chocolate croissant to sample.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

3037

## [\*\*Dough Clinic / Re: dough making questions\*\*](#)

Lard is a fat in the family of "plastic" fats...sure go ahead and use it if you like! It works well and like many other fats it imparts a unique flavor to the finished product it's used in. It's interesting to note that people ALWAYS comment on how great REAL tortillas taste...sooooo much better than the ones you buy at the store. "REAL" tortillas are made with REAL/non-deodorized, LARD which provides tortillas with a wonderful flavor. So why doesn't everyone use lard? Lard gets a bad consumer rap due to health concerns and for all practical purposes you can't sell much when you show lard on the label...that's just a fact of life here.

Tom Lehmann/The Dough Doctor

3036

## [\*\*Dough Clinic / Re: Stretching issues and timing?\*\*](#)

That's a fine looking pizza there! :) :)

Tom Lehmann/The Dough Doctor

3035

## [\*\*Dough Clinic / Re: Fermentation Process\*\*](#)

I must have missed it, I didn't see anything in the video to suggest a "dough room" , all I saw was an open kitchen concept...is that what you are referring to?

Temperature and humidity (relative humidity) of Naples? On what day? I'd go with controlling the dough temperature and bulk fermenting at room temperature while controlling the room temperature seasonally in Denver, CO. The biggest difference between Denver and Naples is altitude which means that there is a greater potential for a seasonal temperature change in Denver, and then there is the effect of altitude on evaporation of moisture from the dough (it wants to dry out faster at altitude (5200-feet) than at something closer to sea level 0 to 1500-feet). Just controlling the dough temperature to something around 80F and keeping it covered with a sheet of plastic will do fine for emulating the R.H. of Naples (about 80% R.H.) I mention this because 80% R.H. is the point where there is very little moisture evaporation from the surface of the dough...regardless of where you're at. It appears that they bulk ferment in a large container (like a food contact approved bin) probably for 12 or more hours, and then turn the dough out onto the bench for scaling and balling (in the video they are using a box scraper to cut the dough for scaling (wrong tool, they should be using a bench scraper aka bench knife...really isn't a knife at all) and the lady doing the rounding (balling) is doing it EXACTLY as I do it, even to the reverse pull at the end of the procedure. Hummm, I wonder if someone might have been watching one of my videos?

Just to make sure we're both on the same track, please clarify what you are calling the "dough room".

Tom Lehmann/The Dough Doctor  
3034

#### [\*\*Dough Clinic / Re: Sticky Dough - can't ball - The Pizza Bible\*\*](#)

Additionally, I didn't see any dusting flour in any of the pictures? Actually, the dough looks pretty good.

Tom Lehmann/The Dough Doctor  
3033

#### [\*\*Dough Clinic / Re: Why aren't low inoculation sourdoughs sour?\*\*](#)

One thing to keep in mind is that all sourdough starters do not provide the finished baked product with an actual sour/tart flavor, it all depends upon the type of micro-flora you have growing in the starter. We have used specific types of sourdough starters to make panettone which is a kind of Holiday fruit bread.

Additionally, your sourdough starter may not have been strong enough or you didn't use enough for the strength it was at.

Tom Lehmann/The Dough Doctor  
3032

#### [\*\*Dough Clinic / Re: Fermentation Process\*\*](#)

If you're planning to bulk ferment a large dough mass your greatest concern should be with regard to achieving a CONSISTENT finished dough temperature, then just keep the dough in a draft free area and it will maintain temperature and humidity all by itself. Just be sure to drape a sheet of plastic over the fermentation container to prevent drafts and possibly evaporate drying.

Tom Lehmann/The Dough Doctor  
3031

#### [\*\*Dough Clinic / Re: Same NY style dough recipe, different flour & different containers...new problem\*\*](#)

The level of fermentation that a dough has received is measured by both the pH and total titratable acidity of the dough. While being a by-product of fermentation the bubbles seen in the dough are not a good indicator of level of fermentation

since they are greatly influenced by both the viscosity of the dough (softer doughs tend to promote larger bubbles while tighter/stiffer doughs tend to promote smaller bubbles additionally, as previously indicated, the size of the container, relative to the dough size, in which the dough is fermented will also influence the bubble formation. Commercial pizzerias control the spreading of the dough balls in two ways, the first is through temperature control, keeping the doughs within a very narrow targeted temperature range (usually in the 70 to 80F range) and managing the dough in such a manner so as to allow for rapid and efficient cooling of the dough balls once in the box. The second thing that is done is to adjust the dough absorption so as to control the amount of spread of the dough ball during the storage period, this is why we almost universally see the dough absorption used in pizzerias running about 60% (+/- 2%).

Tom Lehmann/The Dough Doctor  
3030

### **Dough Clinic / Re: Pizza Party at park: Dough temperature-control**

Why not just oil the dough balls initially and drop them into individual plastic Food Bags, twist the open end into a pony tail and tuck it under the dough ball as you place them onto aluminum sheet pans and place them into the walk-in cooler for the CF period, place 1/2 of the dough balls into a cooler (which has also been stored in the walk-in) for first use at the event, the second half would be placed into the freezer for super cooling (DO NOT FREEZE) about 20 to 30-minutes in the freezer will be sufficient, there will be packed into the other cooler for use later in the event. Being in plastic bag you can just arrange them in the coolers and remove at the event to warm in the bag, then just invert from the bag onto a floured surface and open. The bags would be discarded...fast, easy, and it works well.

Tom Lehmann/The Dough Doctor  
3029

### **Dough Clinic / Re: Pizza Party at park: Dough temperature-control**

The reason for twisting the open end into a pony tail and tucking it under the dough ball is just the opposite, it allows the bag to "self burp" thus releasing any gas accumulation and prevent the bag from being opened or burst by the excessive gas pressure. Following one of the laws of physics stating that cold air is heavier than warm air I would highly recommend packing the dough balls into the containers and then placing a piece of cardboard over the top layer and then add some dry ice on the top...8-ounces should be plenty for both cooler chests.

Tom Lehmann/The Dough Doctor  
3028

### **Chitchat / Re: Stromboli**

Winstonian;

Let me start off by quoting an age old adage: "A happy wife makes for a happy life". Of course you should make them for her! You have two choices when it comes to the dough, one is to use your regular pizza dough...it'll work just fine as long as the dough absorption is in the 58 to 62% range. The other option is to use a slightly richer dough for your strombolis to do this, going back to your regular pizza dough add 2 to 4% whole egg and replace the olive oil with unsalted butter or if your dough formula doesn't call for olive oil add 4% butter to the dough. While not traditional, this second dough formula really makes a great tasting stromboli. I like to finish mine off by brushing it with a little melted butter and then sprinkling it with shredded Parmesan cheese immediately before baking, or if you prefer, you can forego this step and brush it with melted butter as soon as it comes out of the

oven and then sprinkle with an Italian herb blend and some powdered Parmesan cheese.

Tom Lehmann/The Dough Doctor  
3027

### **Neapolitan Style / Re: Fermentation and Temperature**

Victor;

I would suggest the following:

Use a CF procedure for dough consistency and convenience, since you are flexible, go with only a 1 or 2-day CF rather than a 3-day. This will reduce the number of boxes of dough by about 1/3. Depending upon dough weight/pizza size you should be able to get 8 dough balls per box, assuming 333 dough balls per day are needed (1000 divided by 3 = 333), 333 divided by 8 = 42 dough boxes will be needed for the dough ball inventory, this will be only 2 to 2+ a partial stack in your walk-in. Adjust the dough temperature off of the mixer to about 85F, follow my suggested dough management procedure and you should have a very good and consistent quality dough to work with. Additionally, using CF the addition of scrap dough back to fresh dough will not have as dramatic impact upon the overall quality of the dough (especially in view of the fact that you are considering as much as 20% scrap add back) as a room fermented dough would have. It will also be much easier to manage your dough ball inventory using CF as you will almost assuredly be able to use the dough balls one day beyond their CF period, meaning if you don't use a dough ball today you can still use it tomorrow.

If you use a RT management procedure you will need to pay special attention to managing the scrap return to your new doughs, it is highly recommended that you limit the scrap return for RT dough to not more than 15% of the new dough weight, so if you're making a dough based on 50-pounds of flour the total dough weight will be around 84-pounds which means the maximum recommended scrap return not exceed 12.6-pounds. Can you use more than this? Sure you can but dough quality as well as finished pizza quality will be impacted, remember GIGO.

As to the type of yeast that you use, any type CY, IDY or ADY will work just fine so long as it is USED CORRECTLY. My recommendation would be to use IDY for its ease of storage, long storage life, consistency and ease of use.

Tom Lehmann/The Dough Doctor  
3026

### **Chitchat / Re: Stromboli**

Not too shabby! Here is an idea to help you win a few extra gold stars with her. For Mother's Day make another one just like that but make it in a heart shape. I've not made on in a ring shape, I've always made them in more of a bar shape....I think you're onto something there! ^^^

Tom Lehmann/The Dough Doctor  
3025

### **New Forum Members / Re: Hot Pocket**

Hotpocket;

When you say hot pocket do you really mean "Hot Pockets" or do you mean calzones?

Tom Lehmann/The Dough Doctor  
3024

### **Neapolitan Style / Re: Fermentation and Temperature**

What Craig says is correct but when we bulk ferment the dough (large doughs is

what I'm talking about here) the finished dough temperature is MUCH MORE CRITICAL than it is when the dough is subdivided, formed into balls and CF in that manner. Time and temperature are the two main drivers of fermentation so if the fermentation time is the same for two different doughs the dough that came off of the mixer at a higher temperature will ferment faster than the one that came off of the mixer at a lower temperature. No, bulk fermenting the dough in the cooler is not the solution as the dough is an excellent insulator and it continues to improve in this aspect as it continues to ferment so it is all but impossible to efficiently cool a large dough mass in the cooler, and to add insult to injury there is the heat of metabolism to contend with too, this is the heat generated by the yeast as it metabolizes nutrients during fermentation, this temperature gain is about 1F per hour. In some cases we see where a bulk fermented dough in the cooler results in a mottled finished crust color, which has been found to be due to the outer portion of the dough, that which was against the container, being cooler, thus conserving sugar and having a higher pH than dough from the center portion of the mass where there was little to no cooling of the dough resulting in more fermentation which allowed for greater metabolism of any sugar and the development of more acidity which inhibits crust color development. We saw a lot of this issue back in the late 60's and early 70's when pizzerias were transitioning from 100% room temperature bulk fermentation to a refrigerated dough management procedure. A good compromise that never really caught on was to form the just mixed dough into logs (weighing 6 to 8-pounds each) and 28-inches long (the length of an 18" X 26" sheet pan, two of these dough logs were placed on each pan which was then placed in the cooler (uncovered for 2-hours and then a plastic bag was slipped over the entire rack or over each pan of dough to prevent drying). The dough in this condition is really quite stable and can be held easily for two days and can even go as long as three days depending upon the finished dough temperature coming off of the mixer. To use this dough we just removed it from the cooler, allowed it to temper a little (just enough to be able to ball it), then cut each log into desired weight pieces, balled and placed back onto a lightly floured sheet pan, covered with plastic and allowed the dough to rest at room temperature until the dough could be easily opened into skins.

Tom Lehmann/The Dough Doctor  
3023

### [\*\*New Forum Members / Re: Hot Pocket\*\*](#)

The reason why I asked is because HOT POCKETS is a registered trade marked name that is jealously guarded, to about the same extent as Micky Mouse and other Disney characters are. "HOT POCKETS" are different from calzones.

Tom Lehmann/The Dough Doctor  
3022

### [\*\*Chitchat / Re: Stromboli\*\*](#)

Actually, my first preference is to bake them on screens, then disks or cookie sheets as it is much easier to control the bottom bake color this way.  
I bake mine at 430F.

Tom Lehmann/The Dough Doctor  
3021

### [\*\*Neapolitan Style / Re: Fermentation and Temperature\*\*](#)

Victor;  
To address your questions;  
#1) Flavor is OK after 24-hours, much better after 48 and quite good after 72-

hours. The main reason why many pizzerias don't go to a 3-day dough is due to keeping track of the day the dough was made on and the need to have an inventory of 3-days of dough plus any carry over (4-day dough).

2) Don't sweat the humidity issue, instead concentrate on achieving a constant finished dough temperature. As for yeast level I have always used 0.375% IDY for a 48-hour dough with 1-day carry over and 0.4% for a 24-hour dough with 1-day carry over. If you've got the temperature control thing under control a lot of times you can eek out an extra day from the 24-hour dough allowing you to carry over any unused dough for up to two additional days, giving you a three day dough. This can only be accomplished using a walk-in cooler as I've never been able to effectively get that second extra day when using a reach-in cooler.

3) While it can be done, I'm not a big advocate of using a biga or starter in a commercial pizzeria setting as it is just another thing to go wrong and you really don't have much of a margin for things to go wrong in a pizzeria.

Tom Lehmann/The Dough Doctor  
3020

**Dough Clinic / Re: NEW TO ALL THIS AND IN UK BUT WOULD APPRECIATE HELP PLEASE?**

We really need more information to address your questions, we need to know what type of yeast you're using and how much, we also need to know your entire dough formulation as well as the finished dough temperature (temperature after mixing). You mention that the dough is shiny coming off of the bread machine, this sounds as if the dough is being mixed too much for a pizza dough, you only want to mix the dough to a smooth, satiny appearance as this will give you the best finished crust characteristics.

Tom Lehmann/The Dough Doctor  
3019

**Dough Clinic / Re: 80% hydration pizza**

I haven't seen the article but he is absolutely correct about the high absorption doughs providing a crispier texture. I have said for MANY years that if you want to have a crispier crust characteristic increase the dough absorption, to a point. The increased absorption allows for faster expansion and more expansion of the dough during the critical oven spring stage of baking, this in turn allows for improved bake-out and a less dense structure which are the factors contributing to a crispier characteristic, however you do need to have sufficient oven temperature to achieve maximum oven spring with these high absorption doughs but like everything else there is a limit to the temperature part of the equation, too hot and you get the oven spring but you don't get the baking time necessary to fully bake the dough/crust all the way through so you end up with a crispy crust fresh out of the oven but it quickly turns soft and limp with less than desirable eating properties. You can also go the other way with regard to absorption and reduce it down to something in the 30 to 40% range to make a thin crispy or thin cracker type of crust but now you have a crust that is different in that it is crispy pretty well all the way through.

When making high absorption doughs it is important to remember that the absorption level must be matched to the oven temperature, by this I mean if your oven will bake at 850 to 900F you will soon find that you can successfully use a higher absorption than you can if your oven will only reach 700F, in which case the definition of "high absorption" will have a lower number immediately before the "%" sign, you will still get many of the benefits, just not to as great a degree.

Tom Lehmann/The Dough Doctor

3018

**Dough Clinic / Re: 80% hydration pizza**

Bill;

That seems to be the accepted way to go about it, put it right on the deck to achieve the oven spring and to set the structure, then transfer the crust to a screen to finish baking off of the deck so as not to get too much bottom color on the finished crust, in a way it like "having your pizza and eating it too", the best of both worlds.

Tom Lehmann/The Dough Doctor

3017

**Dough Clinic / Re: Cracker Crust Issues**

How are you mixing the dough? I see you are using 1-pound of flour, are you weighing out this amount? The other ingredients are all portions rather than weights, since we all portion differently there can be differences in portion weights. Do you have a scale that will weigh in grams? If so, can you provide the portion weights that you are using? You mention an issue with flavor, problems with flavor are normally associated with salt (not enough), fermentation (insufficient) and baking (insufficient). Can you share with us how you are managing your dough (this is everything you do to the dough from mixing to opening it into a pizza skin). Additionally, what is the finished dough temperature? You mention that the dough was still too tough to open even after 24-hours fermentation at room temperature. Did the room temperature fermented dough show much in terms of expansion of the dough ball after 24-hours? If not your issues might be due to;

- 1) Old yeast.
- 2) Incorrectly hydrated/activated ADY.
- 3) Excessive salt, but I really don't think that is the issue here as you would be detecting a salty taste in the finished crust.

How did the dough feel after mixing? Was it tougher/tighter than what you had with the KA flour? If it was the AT flour might just require more water than the KA flour. Flour is the most variable of all the basic ingredients used in making a yeast leavened dough.

Sorry to have more questions than answers but with more information I'm sure we can get you back on the pizza making track again.

Tom Lehmann/The Dough Doctor

3016

**Shop Talk / Re: Coal fired pizza...give up the dream?**

If it burns or can be made to burn I've probably worked with an oven fired by it (coal/anthracite, hard wood, soft wood, fruit woods, paper rolled into logs, cardboard, kerosene, electric and all forms of gas). The type of pizza you are attempting to make will determine the temperature you operate your oven at. For example, a number of years ago I was working with a fellow in Dallas, TX on his pizza concept using a wood fired oven. The problem he was having was getting his pizzas crispy enough to satisfy his customer's demands. To do this we finally ended up operating the oven at 600F and baking for a longer time. Since his main business was DELCO he finally sold the wood fired oven and replaced it with a stone hearth gas fired oven.

In both New York City and South Carolina I worked with coal fired ovens and in both cases we were baking in excess of 900F with great results BUT the dough was

entirely different AND both were dine-in pizzerias. I've worked with any number of wood fired ovens operating in this temperature range too with similar results when the application was correct (right dough and right audience). While a coal/anthracite fired oven might be able to achieve a higher operating temperature than wood I've yet to actually see that put into use in a commercial application.

By the way, when managing a coal/anthracite fired oven I've found it much easier if you have the coal put up into 5# bags. it's a lot easier to handle too.

From a commercial standpoint the only drawback to a single fuel source oven (wood or coal) is that you're locked into feeding the beast 24/7/365, to get around this I really like the idea of a dual fuel oven where the second fuel is gas. This allows you to idle the oven at 350F during the night and when the store isn't open and then get it back up to operating temperature within a reasonable time on the following day. There was a very practical aspect to the pizzeria and bakery owners living above their business establishments back in the early 1900's, their ovens were primarily all coal or wood fired which needed constant feeding and the trip down to the oven was a short one when you lived immediately above it.

Tom Lehmann/The Dough Doctor  
3015

### **Shop Talk / Re: Coal fired pizza...give up the dream?**

In a word, yes. But at the same time I do realize that the type of wood being burned will have some impact upon the aroma of the pizza. A great example of this was when pine was being used to fire the oven, it resulted in a piney tasting and smelling pizza, sorta like sauce and cheese on a pine plank would best describe the flavor of that pizza. Cardboard resulted in another interesting flavor as the finished pizzas literally tasted like proverbial cardboard, not too much better for the paper which was whetted and rolled into a log shape, dried and used to fire the oven, not to mention all the ash on the pizza. The real "kicker" was the pizza baked in an oven fired by a kerosene heater (operates like a mini jet engine), those pizzas tasted just as if they had been baked over a diesel exhaust stack...yum! Come to think of it, there is one that I haven't had yet, pizza baked in an oven fired by cow chips/pies, I know they're burned as fuel but at least to the best of my knowledge, I haven't had a pizza baked in an oven fired by them yet and now that I've limited my International travel hopefully I've limited the possibility. That's what has made the International travel part of my career so interesting, you get to see just how resourceful people can be.

Tom Lehmann/The Dough Doctor  
3014

### **General Pizza Making / Re: What would cause pizza to stay dense?**

Also, was the dough ball easy or somewhat difficult with a lot of dough memory/elasticity to contend with while opening the dough ball into a skin. Assuming you're opening the dough ball by hand and using a fixed weight for each dough ball?

Tom Lehmann/The Dough Doctor  
3013

### **General Pizza Making / Re: What would cause pizza to stay dense?**

Jr07;

Do you mean extensibility?

Elasticity means that the dough keeps fighting you as you try to open it into a skin. If the dough was soft and extensible (easy to open) the fermentation was probably sufficient so that leave the oven to look at. What kind of oven are you using? What

is the confirmed baking temperature? What are you baking your pizzas on? How long do you allow the oven to warm up before baking a pizza?

Tom Lehmann/The Dough Doctor  
3012

**[General Pizza Making / Re: What would cause pizza to stay dense?](#)**

Baking as you are I would expect that the absorption of your dough should be in the 70% range to give you optimum oven spring characteristics. Lower dough absorption values (high 50's to low 60's) are usually employed when baking at lower oven temperatures, say...in the 500F range. If the dough absorption is too low when baking at high temps the dough is too stiff/firm to give full expansion during the critical oven spring stage of baking where as the dough made with a higher absorption will be softer/more fluid and expand more readily during the oven spring stage of baking.

Tom Lehmann/The Dough Doctor  
3011

**[Chitchat / Re: What are you made of?](#)**

My mother was German and my father was Italian and then there's me. I guess that explains why I like sour kraut and pizza.

My father died in the last months of WWII and my mother remarried hence my last name which is very German.

Tom Lehmann/The Dough Doctor  
3010

**[Dough Clinic / Re: Cracker Crust Issues](#)**

Sounds about right for a cracker style crust. Too stiff to open any other way except to use a rolling/pastry pin..right? If so it sounds to be "spot on".

Tom Lehmann/The Dough Doctor  
3009

**[General Pizza Making / Re: What would cause pizza to stay dense?](#)**

That would be a good place to start at, and then slowly increase the absorption in 2% increments until either you have too great a difficulty in handling the dough or it collapses during baking.

Tom Lehmann/The Dough Doctor  
3008

**[Sauce Ingredients / Re: Sun-dried Tomatoes](#)**

Almabts;

How about just replacing the sun dried tomatoes called for with pieces of FRESH, VERY RIPE plum tomato? Cut the tomato into slices about 1/8-inch thick and then cut into quarters, use this rather than the sun dried counter part.

Tom Lehmann/The Dough Doctor  
3007

**[Dough Clinic / Re: Cracker Crust Issues](#)**

I've had my best success baking them at 500F in a deck oven or 465F in an air impingement oven.

Tom Lehmann/The Dough Doctor  
3006

**[Dough Clinic / Re: Neapolitan pizza in montana](#)**

To achieve the characteristics you're looking for the first place to start is with the dough absorption, ramp it up to 70% and bench mark from there. With your slightly greater elevation you will get even more oven spring than at sea level to 1,500 feet above sea level (Naples). At what temperature are you baking at?  
Tom Lehmann/The Dough Doctor  
3005

### **Prep Equipment / Re: Parmesan Grater for 2 to 3 lb at a time?**

How about the food processor you probably already have sitting on the kitchen counter?

Tom Lehmann/The Dough Doctor  
3004

### **Shop Talk / Re: Opening a pizza shop : USA vs CANADA ?**

Yael;

Post your question in the PMQ Think Tank too. There are several very good Canadian operators over there who I am sure will be glad to provide you with some first hand knowledge of what it takes to have a pizzeria in Canada.

<[www.pmq.com](http://www.pmq.com)>

Tom Lehmann/The Dough Doctor  
3003

### **Dough Clinic / Re: honey**

Here are the reasons for adding honey to a pizza dough formula:

- 1) Nutrient for the yeast to feed upon.
- 2) Residual honey/sugar contributes to crust color through participation in the Maillard browning reaction.
- 3) Residual sugar can provide a sweet taste to the finished crust if used at a sufficiently high level to begin with.
- 4) Redeeming social value, it makes you feel better using honey than that nasty stuff we refer to as "sugar".
- 5) You don't mind spending \$9.00 a pound for honey when you can accomplish the same thing using regular sucrose for less than \$0.50 a pound.

Tom Lehmann/The Dough Doctor  
3002

### **Shop Talk / Re: Pizza screens**

The 20" screens are available from just about any restaurant supplier (might need to special order) or American Metal Craft. I can't help you on a 30" as the largest I know of is 28".

Whatever you get just make sure the rims are either riveted or spot welded, NOT stapled. Most health departments take a dim view on the stapled ones as the staples come apart. You might check with Lloyd Pans to see if they are doing a 30-inch diameter aluminum screen.

Tom Lehmann/The Dough Doctor  
3001

### **Dough Clinic / Re: honey**

You got me on that one! :-D

All kidding aside, the little known fact is that the darkest grades of honey (also the lowest cost) are the one preferred for baking applications, not just due to their lower cost but mostly due to the fact that the flavor is more intense (robust) with

the darkest honey grades. The least desirable for baking applications, if flavor is a reason for including honey in the formulation, is the grade referred to as "water white" this is the lightest colored grade of honey (also the most expensive) and from a baking perspective, has the most delicate (least intense) flavor of all the honey grades.

Tom Lehmann/The Dough Doctor  
3000

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

Mike;  
Out of curiosity, what is your total finished dough weight?  
Tom Lehmann/The Dough Doctor  
2999

**Events Calendar / Re: International Pizza Expo**

Steve;  
There is a group of PMQ Think Tankers planning to meet on March 20th. following the Beer 'N Bull have you given any thought to possibly joining them? I'm sure they would be receptive to the idea. There is presently discussion on it on the PMQ Think Tank discussion board.  
Tom Lehmann/The Dough Doctor  
2998

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

Mike;  
The reason why I asked is because if the total dough weight is under 1.5 Kg. (3.3-pounds) the dough will ferment the same if it is balled off in bulk due to the small size. I discussed this to some extent in an earlier post. The dough has to be sufficiently large to retain the heat generated through fermentation/yeast metabolism (heat of metabolism) to show the effects of bulk fermentation. However, if you allow the dough to ferment, whether it be in "bulk" or as dough balls prior to placement in the fridge for a cold fermentation period the dough will ferment prior to going into the fridge making it perform more like true bulk fermentation regardless of the dough weight. This is due to the change in dough density resulting from fermentation making the dough a better insulator and better capable of retaining heat while in the fridge.

Tom Lehmann/The Dough Doctor  
2997

**Dough Clinic / Re: Dough tastes boring - what to do?**

And we also need to look at your dough formulation, amount of yeast (we have to know the type of yeast you're using too) as well as the amount of salt you're adding to the dough formula are important considerations when assessing a dough formulation when flavor or lack of flavor is an issue. Lastly, do you weigh or portion your ingredients?

Tom Lehmann/The Dough Doctor  
2996

**Dough Clinic / Re: honey**

Peter;  
Your assumption is a valid one but it doesn't take into account one very important enzyme contained within the yeast cells, that enzyme is invertase, its main job, if you want to call it that, is to break down (hydrolize) the disaccharide (two sugar)

sucrose into its monosaccharide (single) component sugars (dextrose and fructose) which are then available for the yeast as a nutrient. The action of the invertase is nearly instantaneous as it occurs during the mixing of the dough. This is also the very same reason why the addition of sucrose aka table sugar (a non-reducing sugar) to the dough allows for the development of additional crust color during the baking process.

What you observed when making the emergency dough with 0.8% IDY is what I would have expected to see, at least from one on my emergency dough which is ready to be opened into a skin between 60 and 90-minutes after coming off of the mixer. The total life of one of my emergency doughs is something less than 3-hours on average so it's fermenting VERY FAST to say the least. By the way, my fastest emergency dough (made at the P.H. Headquarters in Dallas, TX) was just under an hour from scaling ingredients to the pizza coming out of the oven. The story behind the dough:

Mr. Lehmann, how fast can you make a pizza from dough to oven?

I'm not sure of the exact time but it would be around an hour.

Can you make enough dough for four pizzas?

Sure! Do you want me to show you how to do it?

Yes!

With that I scaled-up the dough and proceeded to mix it, scale the dough balls and ball, oiled the dough balls and covered with a sheet of plastic to ferment until the dough could be opened, in just under an hour after starting we were eating pizza. When I asked them why they wanted to see this they responded: Oh, it was getting close to lunch time and we didn't want to have to run over to the cafeteria for pizza.

Just goes to show you, emergency dough pizza really isn't all that bad....all things considered. :)

Tom Lehmann/The Dough Doctor

2995

### **Dough Clinic / Re: Dough tastes boring - what to do?**

Q.J.:

Spot on! :) The use of oil in the dough can really have an impact upon the flavor of the crust as it will better enable it to retain flavors released from the pizza during the baking process.

Tom Lehmann/The Dough Doctor

2994

### **Dough Clinic / Re: effects of mixing on sd pizza**

I always mix my sourdoughs the same as I mix any other pizza dough, just until it begins to take on a smooth appearance..no more than that is needed. You can do it by hand if so inclined, or by machine.

Tom Lehmann/The Dough Doctor

2993

### **Dough Clinic / Re: Batch fermentation**

You will get a different crust if you bulk ferment as opposed to what you're presently doing. You will also, in all probability, introduce a new world of inconsistency to your customers which will not be good for business in the long run. My recommended solution: Purchase a free standing walk-in cooler and install it "out back" where you will have ready access to it. This is a very common fix to a very common problem.....and it works well.

Tom Lehmann/The Dough Doctor

2992

**[General Pizza Making / Re: What was your worst pizza mistake.](#)**

Made a 45-Kg. flour based pizza dough in Guyana, 65F off of the mixer, direct to the bench for scaling and balling, oiled dough balls, bagged dough balls, places on sheet pans in a rack in the walk-in cooler, came back to it on the following day only to discover that the dough had essentially liquefied over night (it came out of the bag looking more like a very thick cream than dough). That's where I learned my lesson about damaged starch and fermentation.....they don't play well together at all! Oops!

Tom Lehmann/The Dough Doctor  
2991

**[Chitchat / Re: Facebook knows everything about you, and it's scary!](#)**

To the best of my knowledge FB has nothing on me at all. Don't do ANY social media, never have, never will. Plenty of other sources most likely have a lot of stuff on me though.

Tom Lehmann/The Dough Doctor  
2990

**[Dough Clinic / Re: Best time to add starter in final mix](#)**

Yep, I just mix it right into the water.  
Tom Lehmann/The Dough Doctor  
2989

**[Newbie Topics / Re: Making Neapolitan Pizza Dough - Rising and forming pizza](#)**

Actually, Food Bags are better than Zip Lock bags, the reason being that it is possible for the gas pressure within the bag to either pop the seal open or actually split a seam open in the bag which will allow the dough to both seep out as well as dry out, additionally many people like to have the dough ball retain a round shape during the fermentation period as this can make the ball easier to open into a round skin....Zip Lock bags are really not conducive to this. Food Bags (they look just like bread bags) are cheaper to use and are better at retaining something of a round shape. Just lightly oil the dough ball, drop it into the bag, twist the open end into a pony tail as close to the dough ball as possible (the idea is to exclude air from the bag) and then tuck the pony tail under the dough ball as you place it into the fridge. Why a pony tail? A pony tail is not an air tight seal so it will allow the bag to both expel gas and expand as the dough expands without fear of the bag tearing. To remove the dough ball from the bag just roll/pull the top of the bag down over the dough as you invert the bag allowing the dough ball to invert the bag as it falls free onto a floured surface, if you're so inclined you can place the used Food Bags into a sandwich size Zip Lock bag and store in a corner of the fridge, they're reusable any number of times. If you want to save up a few bread bags you don't need to buy the Food Bags (they're cheap) or you can buy relatively inexpensive bread bags on the Internet and not have to worry about buying them again for a long time.

Tom Lehmann/The Dough Doctor  
2988

**[Commercial Ovens / Re: Serial number and model number](#)**

The last time we moved deck ovens we had six college students, a few beers and the promise of a free pizza dinner, and my pick up truck.

You might want to run your post over at the PMQ Think Tank too, we have a number of Canadians tuned in over there who might be able to add something to the discussion <[www.pmw.com](http://www.pmw.com)>

Tom Lehmann/The Dough Doctor  
2987

**Newbie Topics / Re: Making Neapolitan Pizza Dough - Rising and forming pizza**

I see you're using "00" flour, unless your baking at 800F or more you would probably be better off using one of the other regular white flours such as King Arthur Bread Flour or Pillsbury Bread Flour (designed for bread making machines and available at just about any supermarket).

Tom Lehmann/The Dough Doctor  
2986

**New York Style / Re: How to Mix Pizza Dough so it's ready to use?**

From the sound of your question your dough doesn't look like that...how does it look? What is the finished (mixed) dough temperature? I seldom, if ever mix my doughs to that consistency unless I'm making a no-time/emergency dough. A typical pizza dough, regardless of the type of mixer used, is only mixed to a point where it has a smooth, satiny appearance. When doughs are mixed more than that you begin to lose some of the desirable open, porous crumb structure characteristics....the crumb structure of the finished crust looks more like that of bread than pizza.

Tom Lehmann/The Dough Doctor  
2985

**New York Style / Re: How to Mix Pizza Dough so it's ready to use?**

Here is a very simple and basic procedure for you to follow to make your pizza dough.

- 1) Use 60F water temperature when making your dough. We like to see a finished (mixed) dough temperature between 70 and 80F).
- 2) DO NOT add the oil right away, instead, mix the dough JUST until all of the flour is picked up in the mixing bowl, THEN add the oil and resume mixing. Be sure to measure the temperature of the mixed dough as this is very important.
- 3) Mix the dough JUST until it has a smooth appearance...no more than that.
- 4) Remove the dough from the mixing bowl and immediately take it to the counter for scaling and balling.
- 5) Lightly oil each dough ball and place it into a bread bag....NOT a Zip-Lock bag.
- 6) Twist the open end of the bag to form a pony tail and tuck it under the dough ball as you place it in the fridge.
- 7) If you can make 3 dough balls that'll be great. Remove one dough ball after 24-hours and one dough ball after 48-hours and the last one after 72-hours in the fridge.
- 8) When you remove the dough ball allow it to temper AT room temperature until a thermometer, inserted into the dough ball, shows 60F, then begin opening the ball into a skin for dressing and baking.
- 9) Repeat #8 with each dough ball.

This will allow you to see how your dough handles at 24, 48 and 72-hours allowing you to see how the progression of time in the fridge impacts both the dough and the finished crust characteristics which will let you decide which one you like the most. Take a lot of pictures and notes along the way.

Good picture shots:

Immediately after mixing.

Dough immediately after balling.

Dough in bag immediately upon removing it from the fridge.

Dough just before removing it from the bag.

Dough after being opened into a skin.

Dressed skin.

Baked pizza.

Smile on your face as you're eating your pizza. ;D

One other thing, how to remove the dough from the bread bag:

Roll or pull the bag down around the dough ball then invert the bag allowing the dough ball to fall free from the bag onto a floured surface, dust both sides of the dough ball and proceed to open it into a pizza skin.

After using the bag method you can experiment with different types of containers if you wish.

Tom Lehmann/The Dough Doctor

2984

### [\*\*Newbie Topics / Re: Making Neapolitan Pizza Dough - Rising and forming pizza\*\*](#)

Mjs16;

Neeever Mind. You've got that base already covered. ;D

Tom Lehmann/The Dough Doctor

2983

### [\*\*New York Style / Re: How to Mix Pizza Dough so it's ready to use?\*\*](#)

As you watch the dough develop during mixing it goes from shaggy to having a curdled or "brain like" appearance then as mixing progresses you will see what appears to be a color change as the dough becomes lighter in color (actually it is not a color change at all but instead it is due to the dough becoming smoother and reflecting more light), once it reaches this point you are close to being finished with the dough mixing (the dough is normally sufficiently mixed about 2-minutes after you see this change in the dough. Additional mixing is not needed nor desired and it just puts more wear and tear on your mixer. Biochemical gluten development will take care of the rest of the gluten development for you during the fermentation period.

Tom Lehmann/The Dough Doctor

2982

### [\*\*New York Style / Re: How to Mix Pizza Dough so it's ready to use?\*\*](#)

Mixing the dough JUST until it comes smooth in the bowl is pretty well a standard mixing procedure for all but two methods of handling or managing the dough. The two exceptions are when making an emergency/no-time dough where we will not be fermenting the dough for a sufficient time for biochemical gluten development to take place and when making a frozen dough where the dough will be frozen before any significant fermentation takes place. In both of these cases the dough needs to be mixed to full gluten development, this is a point in gluten development where the dough becomes soft and extensible during the mixing process.

By the way, bread doughs, unlike pizza doughs are mixed to full gluten development since they only receive limited fermentation.

If you want to see a pizza dough being mixed go to my web site at

<[www.doughdoctor.com](http://www.doughdoctor.com)> and you will be able to watch one of my PMQ videos showing the mixing of a pizza dough.

Tom Lehmann/The Dough Doctor  
2981

### **Dough Clinic / Re: Pizza under carriage wet in the middle**

This can also result when the skin is improperly opened resulting in a very thin center section so when the dough rises in the oven the edges rise higher than the center forcing the moisture and fat to flow to the center of the pizza and with a very thin center section the moisture and fat soak into the crust resulting in what you are seeing.

If you're having a problem opening the dough uniformly try this:

Use a rolling pin or pastry pin to open the dough to about 2-inches less than the desired diameter, then hand stretch the dough the last two inches or so. This will give you a much more uniform dough thickness across the entire diameter of the skin. With time and practice you will become better at opening the dough and you'll be able to put the rolling pin or pastry pin away.

Tom Lehmann/The Dough Doctor  
2980

### **New York Style / Re: How to Mix Pizza Dough so it's ready to use?**

Cherubino;

Regarding your question on dough ball temperature, please refer to my Response #5 above, Item #8.

As for the ingredients, not really assuming you have a decent flour to begin with (like a bread flour), the main factor responsible for that easy to open characteristic is fermentation and to a lesser extent dough absorption. The comments posted by Rolls is "spot-on".

With all of this said, there are certain types of ingredients that can give you the dough characteristics depicted in the video. These ingredients are referred to as "reducing agents" they break down the gluten chains making the gluten form faster during mixing while at the same time giving a much more extensible (though weaker) gluten film after mixing. The two most commonly used reducing agents are glutathione aka dead yeast and L-cysteine/L-cysteine hydrochloride which is the active ingredient in the ingredient PZ-44 (a blend of dairy whey and L-cysteine). To a lesser extent one can also achieve a more limited reducing effect by adding onion and/or garlic to the dough. Some milk proteins can also exhibit a reducing effect but it is very inconsistent (this is why if you read old cooking and baking books they will always call for scalding the milk prior to using it in making breads and pastries. The scalding denatures those proteins and eliminates the reducing effects of the liquid milk. Bet you didn't know that! :chef:

Tom Lehmann/The Dough Doctor  
2979

### **Neapolitan Style / Re: Fermentation and Temperature**

Rolls;

You are ABSOLUTELY 100% spot-on! ^^^

Tom Lehmann/The Dough Doctor  
2978

### **Dough Clinic / Re: Pizza under carriage wet in the middle**

You don't use the rolling pin on the crust, you only use it on the dough when opening the ball into a skin. By using a rolling pin to open the dough to about

2-inches LESS than full desired diameter you DO NOT degas the dough or significantly alter the cell structure in the dough as you would by opening it to full diameter using a rolling pin or pastry pin. Just be sure to use it correctly.

- 1) Pin the dough out from different directions by turning the dough often.
- 2) Use many light to moderate pressure strokes. Never try to open the dough using a couple of heavy pressure strokes.
- 3) Never allow the pin to roll off of the edge of the dough....that's a "golden rule".
- 4) When using a rolling pin always place your thumbs ON TOP of the handles, never on the bottom. This will provide much better control and application of more even pressure to the dough.

Tom Lehmann/The Dough Doctor  
2977

### **Sauce Ingredients / Re: Black/purple tomatoes**

I grew them year before last and I agree with what you say about the flavor. While I don't use a traditional sauce very often I mostly just slice the tomatoes, blot them dry and apply to a very lightly oiled skin just as they are and call it my "sauce". Really great flavor. I also had a bunch of black, cherry tomatoes which had a fantastic flavor. I dried these for use as you would sun dried tomatoes....FABULOUS!

Tom Lehmann/The Dough Doctor  
2976

### **New York Style / Re: How to Mix Pizza Dough so it's ready to use?**

Your stone temperature is OK but don't use your infrared thermometer for measuring the dough temperature when determining the time to open the dough balls as in this case we are referencing the internal dough temperature so a stem or dial type thermometer must be used unless you have an electronic thermometer with a cabled thermal-couple which can be inserted into the dough. Your infrared thermometer is only effective for measuring the surface temperature (which will be lower than the internal temperature in most cases).

Tom Lehmann/The Dough Doctor  
2975

### **Commercial Ovens / Re: Infrared pizza oven**

I'm not an engineer qualified to really answer your questions so I'll leave that to someone better qualified than I am. I can however say that infrared has been used in pizza ovens here in the U.S. for many years, I worked with some of the first commercial IR pizza ovens back in the mid 70's, Domino's even used them for a while. Heat/temperature recovery of the baking deck will be your greatest challenge as the emitter temperature will not be as hot as a gas flame or resistance heating in direct contact with the deck so you might want to think about going thicker with the baking deck material, I'm thinking that twice as thick as you have proposed would be better for holding heat as you will be baking on latent heat (as you have large production ovens for consideration I'm assuming you will be using this oven in a pizzeria application where you will need to bake multiple pizzas back to back without much time for heat recovery).

These are just my thoughts.  
Tom Lehmann/The Dough Doctor  
2974

### **Commercial Ovens / Re: Infrared pizza oven**

I forgot to add that while you aren't burning gas so products of combustion are not

an issue, you will still probably want to be venting the oven to get rid of the acids, alcohol and carbon dioxide coming off of your pizzas during baking. Failure to do so may leave everyone in your store rubbing their burning, irritated eyes in short order.

Tom Lehmann/The Dough Doctor  
2973

### [\*\*Dough Clinic / Re: Chewy base\*\*](#)

I don't think anyone is going to be able to help you from the dough standpoint, I know if I could I wouldn't be where I'm at right now, I'd be sitting out on my own private beach on some secluded Caribbean island sipping a cold drink with a little umbrella placed on top of it. What you are asking for is the Golden Fleece of the retail pizza industry. Your best bet is to consider using boxes with steam vents, one of the many mats used to hold the pizza up off of the bottom of the box allowing for ventilation of the bottom crust, reducing the amount of vegetable toppings (reduces moisture in the box) and being a little sparse on the sauce (sauce, like the veggies, is almost 90% water). Additionally, be sure to allow the pizzas to steam off for at least 30-seconds before boxing them as this practice will also reduce the moisture which is trapped in the box.

If you search back through archived posts you will find that we have discussed this not too terribly long ago and you might be able to glean a few more nuggets of wisdom from one or more of those posts.

Tom Lehmann/The Dough Doctor  
2972

### [\*\*Newbie Topics / Re: Help! How long can I cold ferment?\*\*](#)

Can you provide the following information?

- 1) Tell us as much as you can about the flour you're using.
- 2) How much and what kind of yeast did you use when making the dough?
- 3) Percent salt used?
- 4) Percent sugar used? (if used at all).
- 5) What was the finished (mixed) dough temperature?
- 6) Did you allow for and fermentation prior to putting the dough in the fridge or did you go straight from the mixer to the bench for scaling and balling and then directly into the fridge?
- 7) Did you cross-stack or leave containers uncovered for at least two hours after placing in the fridge? No need to do this if using bags.

If you can fill in these blank spaces we might be able to be a bit more specific.

Tom Lehmann/The Dough Doctor  
2971

### [\*\*New Forum Members / Re: Hot Pocket\*\*](#)

Here is a dough formula that should get you started;

Flour: 100% (bread type flour)

Salt: 2%

Sugar: 2%

Oil: 2% (add by delayed oil addition mixing method)

Yeast: 1% IDY

Water: 56%

Hard Fat Flakes: 12% (these are added TO the dough after it has been mixed to within 4-minutes of completion) If you cannot get the hard fat flakes you can make your own by freezing Crisco and then shaving and chopping it into flakes about the

size of rolled oats. Keep frozen until ready to use and add to the dough directly from the freezer. After mixing take the dough to the bench and roll out to about 3/16-inch thickness, cut into 7-inch diameter circles, add precooked filling, brush 1/2 of the edge with water and fold over (dry over wet), crimp the edges well and par-bake at 425F until just lightly browned. Refrigerate or freeze for later use or bake until the internal temperature reaches or exceeds 165F.

If you want more crust color brush the dough with whole milk, oil, or egg wash depending upon how dark you want the crust to be. Steam vents are not typically used BUT YOU HAVE TO WATCH THE INTERNAL TEMPERATURE CAREFULLY! If you get the IT too hot they will blow every time.

Tom Lehmann/The Dough Doctor  
2970

#### [\*\*Newbie Topics / Re: My first pizza!\*\*](#)

Not a bad first run at it! As you've discovered, they all taste good and that's the best part of learning, you get to eat your mistakes too. Stay at it and soon you'll be inviting friends over for pizza dinner! :chef:

Tom Lehmann/The Dough Doctor  
2969

#### [\*\*Newbie Topics / Re: Help! How long can I cold ferment?\*\*](#)

With that amount of IDY probably 3-days on the outside, re-ballling "might" get you an additional day, I wouldn't hold my breath on it though.

Tom Lehmann/The Dough Doctor  
2968

#### [\*\*Prep Equipment / Re: What model of dough mixer is this!?\*\*](#)

Craig;  
You're correct, (M-80 model has a closed base and the M-800 has an open base, otherwise the same) it is the best and I might add, the most powerful mixer EVER built by Hobart. It has an automotive clutch as well as an automotive transmission. The only problem those mixers ever had was due to their great power, they were known to break agitators, and main shafts and if the shaft didn't break the seal was always damaged as well as the bearings (this is evidenced by oil leaking at the shaft), this was all brought about by the power of these mixers and the low absorption pizza doughs of the time. I had one for many years, by the way, much like a P-51 Mustang, they have a very unique sound when you start one up...kinda sounds like a beast being fired up, which ain't entirely wrong!

Tom Lehmann/The Dough Doctor  
2967

#### [\*\*New York Style / Re: How to figure out the weight for Dough Balls of Different Sizes?\*\*](#)

Easy! Use Pi X R squared. This will give you the surface area of a circle. For example, if you are making a 12-inch pizza and you use 10-ounces of dough for the dough ball:

Pi = 3.14 (approximately)  
R = radius (1/2 of the diameter)  
Squared = radius X radius  
Radius of a 12-inch circle is 6-inches,  $3.14 \times 36 = 113.04$  square inches.  
10-ounces divided by 113 = 0.08849-ounces of dough per square inch of surface area.

Now you know the "dough loading" (weight of dough per square inch of surface area for your pizza). To find the dough weight for ANY other size of pizza just calculate the surface area for the new pizza and multiple it by the dough loading (0.08849)

20-inch pizza:

$3.14 \times 100 = 314$ -square inches.

$314 \times 0.08849 = 27.78$ -ounces (round it off to 27.75-ounces.

Ain't math great?

By the way, you can use this for estimating the amount of sauce and cheese too. :)

Tom Lehmann/The Dough Doctor

2966

### [\*\*Prep Equipment / Re: What model of dough mixer is this!?\*\*](#)

Rolls;

It is very much a dough mixer.

Tom Lehmann/The Dough Doctor

2965

### [\*\*Prep Equipment / Re: What model of dough mixer is this!?\*\*](#)

Walter;

Actually, they are a 4-speed mixer, an "H" shifting pattern too. :-D

Tom Lehmann/The Dough Doctor

2964

### [\*\*Dough Clinic / Re: Elasticity, Extensibility & Tenacity, Oh My!\*\*](#)

Rolls;

If you want it in "Lehmann's Terms" you'll have to go to PMQ Magazine :-D, but to save the trouble I'll try my best here.

Elastic: Think of the properties of a piece of elastic, you deform it and it quickly returns to its original shape. I used to use the example of a rubber band, stretch it out to 12-inches long and let it go and it returns to its original length.

Extensible: This is the ability to be stretched (easily extended), when this adjective is used it carries with it the inference that when extended to a specific length or shape the dough will not retract or try to assume its original shape. A good synonym might be "stretchable".

Tenacious: Throughout all my years in the food industry, I think I might have heard this word used only a handful of time to describe the properties of a dough. When it was used it was always used to describe a dough that was tough, difficult to handle, generally, but not always, somewhat sticky. Where I've heard the term used most was to describe a dough that was difficult to discharge from a horizontal mixer, as in "The dough was tenacious and difficult to kick out of the mixer". I've never heard it used interchangeably with "elastic". While "bucky", as in a bucky dough, might seem similar to a tenacious dough it is not as a bucky dough is used to describe a dough that resists deformation, it just springs right back when you try to deform it in any way, and if you force it against its will it just rips or tears apart as in "The bucky dough was shredded by the reduction rolls as it went through the sheeter". Bucky doughs are almost always accompanied by a lot of gas bubbles in the dough as in an over fermented dough condition.

Did that un-muddy the waters, or just make it worse?

Tom Lehmann/The Dough Doctor

2963

## [Dough Clinic / Re: Elasticity, Extensibility & Tenacity, Oh My!](#)

Oh, that's easy! They're called "works of art"! As in now here is one of my works of art, enjoy! :chef:

We just don't tell them Art who, you all know him, he's the guy who steps in occasionally and makes a pizza for use once in a while that turns out really great, better than anyone's expectations, and then rides off into the sunset like the Lone Ranger. :-D

Tom Lehmann/The Dough Doctor  
2962

## [Neapolitan Style / Re: Dough after Bulk Rise](#)

The dough looks OK to me, but the real question is, did it make a good pizza?

That's the only real way to tell is a dough has been properly fermented for making whatever you are trying to make with it. If it did then all you need to do is to replicate the dough formulation, all temperatures and time will become a relative constant in your equation for success.

Tom Lehmann/The Dough Doctor  
2961

## [Dough Clinic / Re: Sauce](#)

Q.J.

No, it is not, in fact, tomato paste is bitter, probably not the flavor you are looking for. To start, I'd suggest changing over to 7/11 (also a Stanislaus product). The 7/11 is made from whole "unpeeled" tomatoes so it provides a much richer tomato flavor and might be just what you are looking for, if you still want more flavor and want to "go for broke" begin blending some Saporito (also from Stanislaus) which is a heavy tomato puree, into the 7/11 until you get something that your customers like. If you go this route I'd start with 75% 7/11 and 25% Saporito and bench mark from there.

Tom Lehmann/The Dough Doctor  
2960

## [Stones/tiles/steel, Pans & Accessories / Re: Brush for cleaning](#)

Oven brooms are made from metal so there is nothing to melt or burn. If you're cleaning the deck with anything that melts or burns you're using the wrong kind of brush. The metal bristles on an oven brush do a very good job of removing all but the baked on debris, for removing that stuff you will need an oven rake, fortunately most of the time the two are combined so there is nothing else to buy.

Tom Lehmann/The Dough Doctor  
2959

## [Dough Clinic / Re: Elasticity, Extensibility & Tenacity, Oh My!](#)

Rolls;

An over mixed dough "lets down" during the mixing process, this means that the gluten structure becomes weakened to the point where the dough loses its elastic nature and begins to take on more of the characteristics of a batter, yes, pourable in extreme cases, in the baking industry the slang term for this is "elephant snot", not very pretty, but you get the picture. In this condition the dough is STICKY, has a very shiny appearance (due to loss of water holding properties of the gluten) and if you grab onto a piece of it the dough will stretch with no effort at all and continue to stretch for a country mile. I believe the Pyler book, Baking Science and Technology, by E.J. Pyler has some pretty good pictures of this. We've referenced this book a number of times in the not too distant past.

One of the very first things that I looked at when I first began my life's research on pizza was to identify the technology controlling the making of pizza dough. At the time the general belief was that pizza doughs were for all practical purposes the same as a bread dough but it didn't take too long to dispel that belief. This perceived similarity in dough technology is perhaps why we see some terms used in bread making also applied to pizza dough. They're not necessarily wrong, but they just don't fit well and "dough tenacity" is one of those terms. Another mixing term that falls into the same category is "pick-up" To the bread maker this is the point in time during mixing the dough where the dough begins to come together as a mass, in pizza production this might be all the mixing the dough will receive so it might be referred to as fully mixed at this point but due to so very many differences in dough formulation this term does not work well in pizza dough production as a thin crispy type of dough with 40% absorption might exhibit this characteristic at a very different stage of gluten development than a Domino's type of dough with an average of 60% absorption. Full gluten development might also be said to be one of those terms too as there are few pizza doughs mixed to "full" gluten development, the exceptions which come to mind are doughs for frozen pizza dough and emergency doughs, essentially all other pizza doughs are under mixed to a greater or lesser degree. These are the things, among many, that I had to unravel back in the mid 60's.

Tom Lehmann/The Dough Doctor  
2958

### [\*\*Dough Clinic / Re: Sauce\*\*](#)

QwertyJuan;  
Note in my original response (heavy tomato puree), the answer to your question is behind door #2. Your assumption is correct. ^^^

My all time personal favorite is nothing else but the Stanislaus 74/40 tomato filets with a little fresh garlic and a few fresh basil leaves placed on the skin just prior to application of the filets, great fresh, ripe tomato flavor with a superb texture. With the filets you don't need to go for 100% coverage like you do with a sauce, but instead go for about a 1" spacing between the tomato filets.

Tom Lehmann/The Dough Doctor  
2957

### [\*\*Dough Clinic / Re: Elasticity, Extensibility & Tenacity, Oh My!\*\*](#)

Rolls;  
Your comment on the "over mixed" dough was interesting. It is very difficult, if not nearly impossible to really over mix a dough without some type of high speed machine mixing. With any type of low speed mixing, especially with kneading you are incorporating air/oxygen into the dough which oxidized the gluten bonding points on the gluten chain which re strengthen it. At one point some time ago I discussed the fatigue dough method of dough mixing which utilizes this to great advantage, with high speed mixing you can open/extend the gluten and allow the addition of more water (like an autolyze but without the need for time), the mixer bowl is then opened and the dough is allowed to continue mixing for several minutes at low speed. The opened bowl allows air to enter into the mixing chamber (horizontal bar type mixer) and the low speed mixing allows for a pulling/stretching, and folding action to take place which effectively incorporates air/oxygen into the dough which restrengthens the gluten giving the dough normal handling and processing properties. This was the preferred mixing method of the old Continental Baking Company (same folks who brought you Wonder Bread/"Builds strong bodies 12-ways" in reference to the twelve enrichment

ingredients). Back to the point: From your description it sounds as if you had mixed the dough to a point of full or near full gluten development. Full gluten development is defined as mixing the dough to a point where the gluten is developed to provide maximum dough strength which we see as a very stiff, tight dough consistency in the mixing bowl. You only see this when you develop the gluten by some form of mechanical means, when you achieve full gluten development through biochemical means the effects of the formed acids and the enzymes also provide a softening of the dough at the same time so what you end up with is a dough with a fully developed gluten structure but without the elasticity associated with a dough mechanically mixed to full gluten development.

Tom Lehmann/The Dough Doctor  
2956

**Dough Clinic / Re: Elasticity, Extensibility & Tenacity, Oh My!**

Amazing! :-D

I never knew anything like that existed aside from a dough descriptor.  
You learn something new each day.

I wonder if the name is a befitting for that stuff as it is for the dough?  
Thank you.

Tom Lehmann/The Dough Doctor  
2955

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

Yes, there just isn't sufficient dough mass to give you the typical characteristics of bulk fermentation.

Tom Lehmann/The Dough Doctor  
2954

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

Bulk fermentation is characterized by a steady progression in fermentation. The outside ambient temperature will have little or no effect upon a true bulk fermenting dough. There are two reasons for this, one is because the dough, as it ferments becomes less dense so it is a better insulator thus preventing the core/center of the dough form being influenced by any outside temperature. The second is due to the heat of metabolism, as the yeast ferments it also creates heat (about 1F per hour), this results in a very steady and progressive rise in temperature which is really quite predictive which is an important aspect to managing dough.

Tom Lehmann/The Dough Doctor  
2953

**Pizzeria & Restaurant Reviews / Re: NY slice joint tour**

Welcome to New York City! Goes to show you that even in NYC there are so many versions of pizza that it is impossible to keep track of. This didn't surprise me either when I did my tour as when it comes to pizza, if you don't like one pizza, try another until you find what you like.

That soft, limp slice is what caused me to develop my "new approach to pizza by the slice" which you can read about in PMQ Magazine if you search it out in the archives or go Google AJ's New York Pizzeria, Manhattan, Kansas where you can see it in application.

The extreme variety that we see in pizza is the driver that makes pizza so popular, and truth be known, I wouldn't want it to be any other way! :chef:  
Tom Lehmann/The Dough Doctor

2952

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

From a fermentation standpoint, no but from a dough handling standpoint the answer is probably yes. When you bulk ferment you will still need to subdivide the dough by scaling and balling and then wait sufficiently long for the dough balls to sufficiently relax so they can be easily opened into skins. In my opinion it is just a lot easier to put the dough into balls right up front and then open a well fermented dough ball (rather easily) into a skin. This also eliminates the question of how long to wait before opening the dough balls after "bulk" fermentation.

Tom Lehmann/The Dough Doctor

2951

**Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand**

I do essentially the same thing that Steve does when making unusually large batches by hand with one exception, I always like to mix the salt, sugar (if used) and yeast into the water immediately prior to adding the water. This ensures thorough dispersion throughout the dough. Remember, if you are using IDY, like ADY it must be suspended in a small portion of 95F water prior to addition to the dough water. If you're using CY you can just crumble it right into the dough water and whisk to suspend it and you're good to go. As for the fat, I prefer using oil as opposed to shortening for ease of incorporation but if you must use a plastic fat it's better to melt it and add it slowly during the mixing process. When adding the oil I will add it to the dough towards the end of the mixing process and let the following kneading process work it throughout the dough mass.

Tom Lehmann/The Dough Doctor

2950

**Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand**

I put the flour in the bowl and create a crater in the middle of the flour all the way to the bottom of the bowl then pour in the flour and begin mixing by pulling in the flour a little at a time as I stir it. I like to use a plastic bowl scraper to clean the flour and dough off of the sides of the bowl after I've got all of the flour incorporated. Mine you, this is a hand held, flexible bowl scraper not one of those Rubber Maid bowl scrapers which are designed for use with batters only.

Tom Lehmann/The Dough Doctor

2949

**Shop Talk / Re: How To Increase My Crust Production**

Cracker doughs and dough presses do not play well together, sheeting them is the only real way to get a decent crust with the same characteristics that you are getting from your present procedure which involves sheeting the dough.

How to speed up your operation? First thing we need to know is what your present procedure is, from there we might be able to suggest changes, or if you wish, please feel free to call me at 785-537-1037 and I will be glad to review what you are presently doing and suggest some possible changes that might help speed things up a bit. As I am not always at my desk, please send me an e-mail at <thedoughdoctor@hotmail.com> letting me know when you plan on calling.

Tom Lehmann/The Dough Doctor

2948

## **Dough Clinic / Re: Smoke in oven**

Here's something to remember, the "flash point" of most food grade oils is about 435F, meaning this is the temperature at which the oil can ignite. This is the reason why it is highly recommended that any future seasoning you do be initially done at not more than 425F, then after the oil has polymerized (formed an amber colored finish) you can crank up the temperature to further darken it without fear of all the excitement that accompanies an oven fire.

Tom Lehmann/The Dough Doctor

2947

## **Shop Talk / Re: How To Increase My Crust Production**

Kreskin;

Have you given any thought to using a reversible sheeter with a cutting/forming table (this is where take-away conveyor is about 6' long allowing for a die cutting roll to be installed or you can manually pass a die cutting roll over the dough sheet. If you really want to automate I would use the reversible sheeter to sheet the dough to the desired thickness, roll it on a baton and take it to a cutting table where the dough is unrolled from the baton and individual pizza skins are cut from the dough using a hand held die cutter. While this is taking place the next dough is being sheeter and rolled making the process quite fast.

Note: The die cutter in this case is not the biscuit cutter type as you might be presently using but instead it is a rotary die cutter looking more like a giant rolling pin so it continually cuts skins from the dough sheet as you roll it along the length of the ribbon of dough.

Just something to think about.

Tom Lehmann/The Dough Doctor

2946

## **Shop Talk / Re: How To Increase My Crust Production**

You've got the right picture. We make croissants in a very similar manner.

Another, though more labor intensive method is to scale the dough and ball it immediately after mixing, cold proof it and then open it by making multiple passes through a standard pizza sheeter/roller, the skins will be near finished size though just a little larger. The skins are placed on a screen and trimmed to final size. This method typically generates 10 to 15% scrap dough while the method using a reversible sheeter will typically generate upwards of 45% scrap. This is an important consideration since the amount of scrap added back to new dough MUST be controlled if you are going to have a consistent quality finished crust. When working with a sheet and die cut line here is a typical scenario;

The amount of scrap return is not controlled (whatever scrap is generated is added back to new dough) the variable amount of scrap dough creates variability in the way the dough stretches and contracts (extensibility and elasticity) resulting in the generation of additional scrap which is again, all added to the new dough, resulting in even more variability which results in even more dough processing issues, etc., etc. You can see what happens when the amount of scrap dough isn't controlled....nothing good ever comes of it. The level of scrap dough where it has little impact upon the dough is 15%, any more than that just means more work for you. But the line is generating 45% scrap dough, what do I do with the other 30% scrap? (question most often asked). The answer is simple, find another use for it. Bread sticks are commonly made from this scrap dough as they are easy to make and have a broad spectrum restaurant application, you could also use it to make rustic type breads and rolls where in this case the scrap dough can be used much like a sponge (sponge and dough process) at levels of up to about 80%. Just some

food for thought.

Tom Lehmann/The Dough Doctor  
2945

**Dough Clinic / Re: Bulk cold ferment or ball then cold ferment?**

JPB;

Not following your question?  
Tom Lehmann/The Dough Doctor  
2944

**Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand**

If anybody is from the Pittsburgh, PA area there used to be a pizzeria in the (I believe it was referred to as the School Hill area) where the owner makes all of his dough by hand, quite a sight to watch him.

Tom Lehmann/The Dough Doctor  
2943

**General Pizza Making / Re: Washing Pizza Pans**

Tin plated steel pans as well as "bright" aluminum pans that have been seasoned should NEVER be washed in a typical manner, and NEVER, EVER soak them in soapy water as this will ensure that the seasoning (which is really nothing more than a polymerized (think varnish) finish will begin to peel off like a bad sunburn. To clean these pans just dip in warm soapy water, immediately gently scrub with a SOFT bristle brush, then IMMEDIATELY rinse in clear water, towel dry and then oven dry. Do this and you won't have any problems with the seasoning peeling off, don't do it, and you're likely to be trying to figure out how to strip all of that beautiful seasoning off of your pans and starting the seasoning process all over again. By the way, I skipped the sanitizing step that comes into play after the rinse as you are a home pizza maker, but if you have a pizzeria you are well advised to include the sanitizing step just to stay on the happy side of your local health/sanitation inspector.

Tom Lehmann/The Dough Doctor  
2942

**Starters/Sponges / Re: Does autolyse gives a whiter final crust ?**

I agree with Craig, when looking at the pictures those were my first thoughts too. The whitening effect of oxidation is only seen in the interior (crumb portion) of the crust, not on the exterior (crust) portion. When we did our research many years ago comparing bleached v/s non-bleached flours in white pan bread production we always saw a brighter, whiter crumb with the bleached flours but never saw any difference in the crust color between the two. This was important for us to know at the time as the industry was moving towards the use of un-bleached flour and we wanted to know what other affects might be encountered (aside from a creamy/yellowish colored crumb) in all types of bread production.

Tom Lehmann/The Dough Doctor  
2941

**General Pizza Making / Re: Effect of sugar on crust flavor**

Sucrose will not be detected flavor wise in the finished crust until you get into the 4% and above range. Try a Papa Murphy's pizza if you want to see what 5% sucrose tastes like in the crust...sweet. Remember, with malt you have two decisions to make, diastatic or non-diastatic. Diastatic malt is enzyme (amylase) active and it

PRODUCES sugar in the dough by converting damaged starch already present in the flour into dextrins and/or maltose (sugars which are fermentable by bakers yeast) and also participate in the browning reaction to provide crust color. You typically don't get a sweet flavor from malt like you do from high levels of sucrose but you will get a malty (think malted milk balls) flavor instead and you can also get the baggage of unwanted dough softening, the amount you get will be determined by the degree L of the malt you're using as well as the total amount of damaged starch present.

Non-diastatic malt is used just for its flavor impact as well as a little sweetness it can provide to the crust with residual malt participating in crust color development. In many cases non-diastatic malt powder is used for its darker (more reddish) the correct term is "foxy red" crust color contribution, this is why it is so widely used in bagel production. Because you don't have the limitations, due to enzymatic activity, with the non-diastatic malt you can use as much as you want/need to achieve your end goals for using it. At lower levels it provides what is described as a "nutty" flavor but as the level of malt increases this turns into the classic malty flavor.

There has been much discussion on malt and how to use it if you're not familiar with using it.

Tom Lehmann/The Dough Doctor  
2940

### [\*\*Newbie Topics / Re: do overs\*\*](#)

And unlike taxidermy as a hobby, you can eat your mistakes! :-D

Tom Lehmann/The Dough Doctor  
2939

### [\*\*General Pizza Making / Re: Effect of sugar on crust flavor\*\*](#)

Sucrose is inverted into the sugars dextrose and fructose which are nutrients for the yeast during the dough mixing process by the enzyme "invertase" which is present in the yeast. It is only the residual sugars that participate in crust color and flavor (sweetness) development. Sucrose by itself will not caramelize (this is why angel food cakes remain so white in color). Try making an angel food cake using dextrose (a reducing sugar) to replace the sucrose and you will end up with a very muddy brown colored cake, not just on the outside but on the inside too.

Tom Lehmann/The Dough Doctor  
2938

### [\*\*Neapolitan Style / Re: Recipe Help\*\*](#)

Hey Steve;  
Welcome!

Just over the past few days we had some discussion on hand mixing dough as well as use of different yeast types in hand mixing situations.

What dough weight are you planning to use for each skin? This will give us an idea of the dough weight needed for 10 skins allowing us to size a dough formula appropriately for you.

Do you have a scale capable of weighing in grams?

Tom Lehmann/The Dough Doctor  
2937

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: good source of wood in Arizona\*\*](#)

Actually, I was going to say "trees" :-D

Tom Lehmann/The Dough Doctor

2936

**Prep Equipment / Re: Best Spiral Home Mixer**

When it comes to mixing pizza doughs I've not seen a better mixer type than a spiral.

Tom Lehmann/The Dough Doctor  
2935

**Neapolitan Style / Re: Recipe Help**

Steve;

Assuming a total dough formula percentage of about 167% you will need to have 10 X 260-grams = 2,600-grams of total dough weight. If you divide 167 by 100 = 1.67. Now just divide 2,600-grams by 1.67 = 1556.88-grams of flour. To allow for bowl loss round that up to 1,600-grams of flour. So, your dough will need to be based on 1,600-grams of flour to have sufficient dough to make 10 dough balls at 260-grams each. Sorry about the math, I'm "old school".

Here is a potential starting dough formula:

Flour: 100% (12.2 to 13.8% protein content aka strong bread flour) (1,600-grams)

Salt: 2% (32-grams)

IDY: 0.3% (variable depending upon your dough management procedure) (4.8-grams)

Oil: 1% (16-grams)

Water: 66% (variable) (1,056-grams)

Total % = 167%

I'm not sure I'd really want to get that oven dirty! :-D

Tom Lehmann/The Dough Doctor  
2934

**New York Style / Re: How to Mix Pizza Dough so it's ready to use?**

The dough looks pretty decent, the photo of the opened skin shows that you have too much dough out close to the edge so you're getting a thin center section.

Continued practice will address that issue over time. It's something we all have to suffer through as part of the learning curve.

QD had asked about the "window pane" test where the dough is stretched using your hands to determine how clear of a gluten film can be formed by the stretching of the dough. While this can be used to determine when a pizza dough is properly mixed it is really hard for the novice to learn as there is nothing to compare it against. In bread production this is a very viable test for determining when the dough is properly mixed as we are looking for what is referred to as a "clear" film, none of the common spider webbing from undeveloped gluten that we see almost universally in pizza doughs (because pizza doughs are under mixed by choice). All of the work that we've done over the years points to minimum gluten development as being best for making pizza BUT we still need to mix the dough sufficiently so it isn't too sticky to handle reasonably well (especially during scaling and balling) without the need for excessive use of dusting flour or oil on the bench to facilitate dough handling. Once the dough takes on the mentioned smooth appearance the dough is almost always within 3-minutes of completion. Lower absorption doughs may be ready to go as soon as they've been mixed to a smooth appearance while a higher absorption dough might need those extra three minutes. It's impossible to

be more specific than this as all doughs are different in so many ways, only experience will tell you for sure just how much mixing is actually needed. The one rule in mixing that I do follow essentially all the time is: If the dough is too sticky/tacky at the bench during scaling and balling in all probability it hasn't been mixed enough.

NOTE: If you are using a reducing agent in the dough (PZ-44 or "dead yeast"/RS-190) you will want to mix the dough JJJUUSSTT until it BEGINS to take on a smooth appearance...NO MORE! It will have a slightly sticky/tacky feel to it at the bench but that's normal for a dough with a reducing agent in it. The reason why mixing is so critical when a reducing agent is used is because the reducing agent continues to work all the way to the oven, it's going to continually get softer even if it's just sitting there in the cooler as a dough ball.

Tom Lehmann/The Dough Doctor  
2933

### New York Style / Re: Old school

Walter;  
I haven't seen that done in eons! When we used to make bread I would pick-up the hot loaves not 5-seconds out of the pan to place them onto a rack for cooling. There is a little trick to it, it has to do with the way you place your fingers on the crust...not all at once.

Tom Lehmann/The Dough Doctor  
2932

### Neapolitan Style / Re: Recipe Help

Everybody has their own favorite method of dough management, here's mine:  
Add water to the bowl first, then add salt and sugar (if used), add flour, add IDY, Mix at low speed just until you don't see any dry flour in the bowl, add the oil and mix at low speed for 1-more minute.

Mix at medium speed for 8 to 10-minutes, or just until the dough appears smooth and has a satiny appearance.

Take the dough directly to the bench for scaling and balling.

Lightly oil the dough balls and place into individual plastic Food Storage Bags (NOT ZIP LOCK)

Twist the open end of the bag into a pony tail to close, tuck the pony tail under the dough ball as you place it into the fridge.

Allow dough to CF for 48-hours.

To use the dough, remove from fridge, allow to temper AT room temperature until the internal dough ball temperature reaches 60F.

Roll the top of the bag down to the dough ball, invert the bag allowing the dough ball to fall from the bag onto a floured surface.

Retain the plastic bags as they can be reused.

Open the dough balls into skins by your preferred method.

Place opened skin onto a dusted wood prep peel and dress to the order. (I like to use equal parts of flour, semolina and fine corn meal for my peel dust), everyone has their favorite concoction.

Peel the dressed skin into the oven.

Peel the baked pizza out of the oven using a metal blade peel.

Place hot pizza onto a screen or cooling rack for a minute prior to cutting and placing onto a serving tray. This allows the pizza to "steam-off" a little thus reducing the chances of the pizza getting soggy on the serving tray. There are any number of really good commercial items available to put between the pizza and the serving tray to further guard against the pizza getting soggy (just look to see what

is being locally used in the pizza box for delivery pizzas). If nothing else, a corrugated pizza circle works well. For home use buy the size for the largest pizza you plan to make and let one size fit all.

Note:

If you want to get some great olive oil flavor in your pizzas pour some EVOO on the pizzas IMMEDIATELY upon removal from the oven, the heat of the pizza will "pop" the flavor.

Tom Lehmann/The Dough Doctor

2931

### **Neapolitan Style / Re: Recipe Help**

You certainly can, and it's my error, Oops!

The number should be 169.3, it is the sum of all of the ingredient percentages.

The new ingredient amounts based on this correction are as follows:

Flour: 100% (2,600-grams divided by 1.693 = 1,535.73-grams of flour needed) Due to bowl loss we will round this off to 1,600-grams. The remaining ingredients will remain unchanged as the 1,600-grams of flour will still provide sufficient dough to make our 10 dough balls at 260-grams each with a small amount of dough to account for any bowl loss. In short, we're still "good to go" with the original dough formula.

I apologize for the error and confusion.

Tom Lehmann/The Dough Doctor

2930

### **Prep Equipment / Re: Proper term for this kind of dough mixer?**

In the U.S. they're called Artflex Mixers. They're designed to replicate hand kneading action. The most common application for these mixers is in making sweet and Danish doughs where you are looking for ingredient incorporation without excessive gluten development.

Tom Lehmann/The Dough Doctor

2929

### **General Pizza Making / Re: Effect of sugar on crust flavor**

C.G.;

When you say "yeasty" do you mean that the crust has a flavor like yeast or do you mean that it has a fermentation flavor/aroma? A good example of where we find a "yeasty"/yeast flavor is in Mom's home made bread and in some dinner rolls at restaurants where they are making them using a frozen dough.

Tom Lehmann/The Dough Doctor

2928

### **Prep Equipment / Re: Proper term for this kind of dough mixer?**

We used to have a pair of small bench top Artflex mixers when I was at AIB. They were about 20-quart capacity but lotsa luck finding one of those!

If you're interested in a dough mixer take a look at one of the 20-quart spiral mixers, they work great, very dependable, and pretty cheap too. We have had lots of discussion on spiral mixers here.

Tom Lehmann/The Dough Doctor

2927

### **Prep Equipment / Re: Berkel Mixer**

Have you looked at the Eurodib mixers? I was looking at them while at Pizza Expo and I was impressed. You can get them in 20-quart size configuration/ 110v for well

under \$1,000.00

Tom Lehmann/The Dough Doctor  
2926

### **General Pizza Making / Re: Effect of sugar on crust flavor**

Unless you were adding enough sugar to slow the fermentation rate (highly doubtful) a small amount of sugar (2% or less) added to the dough formula would potentially speed up the rate of fermentation resulting in more of the classical "fermentation" flavor in the finished crust. Your comparison would be valid only if the finished (mixed) dough temperature for both doughs was the same as this will have a significant impact upon the rate of dough fermentation. Graig's idea of making the two doughs side by side and documenting everything is a good one, if you do it please let us know what you find out.

Tom Lehmann/The Dough Doctor  
2925

### **Newbie Topics / Re: Dough Texture to shoot for**

Once you've seen the color change there is no missing it, I usually just mix until I see the color change and give it another minute, or so, before checking the dough to make sure it's sufficiently extensible to ball without tearing. As for mixing speed, I like to use the highest speed possible WITHOUT undue strain on the mixer.

Tom Lehmann/The Dough Doctor  
2924

### **Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand**

Steve;

You might be right! I do remember that it was a "hill", and at my age that's an accomplishment by itself! :-D

Tom Lehmann/The Dough Doctor  
2923

### **General Pizza Making / Re: Effect of sugar on crust flavor**

A "normal" dosage for a 20L malt powder is 0.25%.

Tom Lehmann/The Dough Doctor  
2922

### **Neapolitan Style / Re: Advice.**

Two things jump out at me, your dough absorption at 60% might be a bit too low for what you are trying to accomplish, I suggest increasing it to 65% and the salt level is at 4% (about twice of what it should be) which is probably inhibiting the dough fermentation. Bring the salt level down to 2% (9.6-grams) and try it again to see if it's any better. Your IDY level is also outrageously high at 4%, I suggest bring it down to 0.5% (2.4-grams).

Make sure the water temperature is adjusted to give you a finished/mixed dough temperature of about 80F.

Tom Lehmann/The Dough Doctor  
2921

### **Prep Equipment / Re: Proper term for this kind of dough mixer?**

Zaroh;

If you buy a spiral mixer you'll probably never need to buy another mixer again.  
Tom Lehmann/The Dough Doctor

2920

**[General Pizza Making / Re: Effect of sugar on crust flavor](#)**

That's the amount of malt needed to bring an unmalted flour up to the same malt level as a regular malted flour.

Tom Lehmann/The Dough Doctor  
2919

**[Dessert Pizza / Re: What types of crust for dessert pizza?](#)**

As one who is a FIRM BELIEVER in the KISS principle I try not to make things any more difficult or confusing than necessary so I always use my regular white pizza crust dough formula, after opening the ball into a skin I brush it with melted butter and then sprinkle it with a cinnamon-sugar mixture and begin building my dessert pizza from there. Aside from being simple and easy to make I've also found that by using this method the pizzas bake very similar to my regular pizzas....assuming I'm not baking at HIGH temperatures.

When making dessert pizzas in a hot oven (over 600F) I have found that baking the pizza on a screen for most of the baking cycle helps to control crust color while allowing the pizza to be sufficiently baked.

Tom Lehmann/The Dough Doctor  
2918

**[Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand](#)**

Peter;

I checked the referenced post and the 45 to 95F water temperature for suspending CY (compressed yeast) is indeed correct. Since CY is already hydrated it is not sensitive to cold water temperatures like the dry yeast forms are. It's the hydrating of the dry yeast in cold water that has the deleterious effect of pulling glutathione out of the yeast, thus impairing its ability to ferment in the normal manner. In the commercial baking industry we use a form of yeast not discussed in these pages very frequently, this is cream yeast (yes, it is also known as CY) but it is a more common practice to refer to it as "cream yeast" so I don't have any concerns over referring to compressed yeast as CY BUT if the reference is in regard to a LARGE wholesale manufacturer I always make sure to confirm the type of yeast being referenced. Cream yeast is available only by the refrigerated tank car (like milk) and it is highly perishable so it is kept at a temperature between 38 and 42F throughout distribution as well as in the holding tanks at the bakery. At the bakery it is pumped directly from the holding tank to the mixer for immediate incorporation into the dough. The main reason for using cream yeast is \$\$\$\$\$ it's cheaper than any other form of yeast as it does not go through as much processing (to remove water) and there is no packaging involved except to pump it through a heat exchanger and into a refrigerated tanker for immediate delivery to the user. Compressed yeast (CY) contains roughly 70% water while cream yeast contains roughly 80% water which allows it to be fluid. By the way, cream yeast has a shelf life of 3-days at the bakery (when held beyond this time the yeast level in the products being made must be increased to maintain dough performance and product quality which can erode or wipe out any cost savings resulting from the use of cream yeast.)

Tom Lehmann/The Dough Doctor  
2917

**[Dessert Pizza / Re: What types of crust for dessert pizza?](#)**

Peter;

While I cannot say too much about PJ's, I can confirm your suspicion that they do not use a special dough for their dessert pizza.

Tom Lehmann/The Dough Doctor  
2916

### **Dough Clinic / Re: NEED HELP WITH MY PIZZA DOUGH**

Judith;

About all I can help you with at this time is to say that your flour to semolina ratio is way off. The total flour should not consist of more than 25% semolina flour unless you want to have finished crusts that would make a great substitute for shoe leather after delivery or carry out, or even just a slow eating experience in a dine in store.

In order to help you we have to get your dough changed from a "recipe" into a "formula" based on actual weight measures as opposed to volumetric portions as you have it now. As presented, I can't even determine what the dough absorption is as I have no indication of how much liquid is being added to the dough (a pitcher is a volumetric portion not a weight, and there can be many different speculations as to how big a "pitcher" actually is).

What you need to do is to have a scale capable of weighing your ingredients, then portion out each ingredient as you normally do but BEFORE you put it into the bowl weigh it and record the weight, this must be done for each and every ingredient, make the dough to ensure everything looks normal, or as it always looks. Repeat this three times, when done find the sum weight of each ingredient and divide the sum by three, this will give you the average weight of each ingredient in your dough "formula" from which we can accurately determine what corrective measures will need to be taken to achieve a crispier finished crust.

NOTE:

The dough formulation is only half of the equation we will also need to be able to see your dough management procedure as this can also have a great impact upon the final crispiness of the crust.

What are you baking your pizzas on (baking platform)? Pan, disk, screen? What is the color of the baking platform?

Tom Lehmann/The Dough Doctor  
2915

### **Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand**

Peter;

It doesn't bother me at all in that here we do things so differently. As I've said so many time before, when making pizzas for friends and family at home we can stretch the rules and take corrective action as we see it needed but in a commercial (pizzeria) setting FAILURE IS NOT AN OPTION, so we always recommend playing the conservative card, plus just ask any pizzeria operator if they feel comfortable letting the person who is mixing the dough make changes to the dough based on their own personal opinion.....betting there won't be many. But with the participants here we are much better versed in making pizza dough, recognizing problems/potential problems, and taking immediate corrective action which allows us to "bend" the rules, there is an inescapable price to pay for this though as you have heard me say many times, and that is that the pizza will be different...good or bad, different is BAD at a pizzeria but it can be good for us in that it might be one of those ah-ha moments allowing us to make a better pizza the next time and those who are being treated to a pizza dinner will rarely complain if

it isn't just like the last time they had your pizza. In my world I wear two hats, one is for the pizzeria where consistency and KISS is the name of the game and the other is worn when I'm making pizzas for family and friends in which case eating my pizza is like a trip to Walmart (if you find something you like at Walmart you had better buy it as they probably won't have it the next time you go there) the same is true for my pizza and cooking/baking in general, I'm always working to improve so it's never the same two times in a row (the one exception is my line of cakes: Double chocolate, coconut, nut cake; Lemon coconut cake and my orange cake, there were mentioned in an earlier post about desserts) In my opinion they're at my pinnacle of quality. But everything else is in a constant state of flux as I keep trying new/different things.....in my opinion, this is what keeps pizza going, my philosophy regarding pizza is "Dare to be Different" with the caveat if you are a pizzeria you must also be consistent.

Tom Lehmann/The Dough Doctor

2914

### [\*\*Dough Clinic / Re: Need Some Help Making Larger batches of dough by Hand\*\*](#)

vtsteve;

30-seconds? That's forever and a day :-D

Tom Lehmann/The Dough Doctor

2913

### [\*\*General Pizza Making / Re: Effect of sugar on crust flavor\*\*](#)

The visual change in dough density is not a very reliable means of assessing the fermentation rate. I think the key factor to zero in on will be the finished dough temperature and running the doughs side by side will help to rule out any environmental factors which might influence the dough.

Tom Lehmann/The Dough Doctor

2912

### [\*\*Pizzeria/Restaurant Recommendations / Re: Which are must try pizza places in Chicago?\*\*](#)

Nancy's, Gino's, and Uno are the old timers in the Loop area. (Actually north of the Michigan Avenue bridge). Be sure to hit the Billy Goat Inn on Michigan Avenue immediately north of the bridge (west side), SNL made it famous...."cheeseburger, cheeseburger, cheeseburger".

Tom Lehmann/The Dough Doctor

2911

### [\*\*Dough Clinic / Re: NEED HELP WITH MY PIZZA DOUGH\*\*](#)

Judith;

Let's begin by looking at your dough formulation:

Flour (semolina)	62.5%
Flour (high gluten)	37.5%
Dark beer (50-oz.)	19.53%
Ice (50-oz.)	19.53
Water (75-oz.)	29.29%
Dry yeast (type?) (weight?)	????
Salt (weight?)	????
Sugar (weight?)	????
Oil (20-oz.)	7.81%

I need to ask you to fill in the blank spaces before I can complete the formulation.  
Tom Lehmann/The Dough Doctor  
2910

**Newbie Topics / Re: newb dough question + UK ingredients help!!**

Also, if you can share your dough formula (in weight measures) as well as your dough management procedure it will help us to further assist you.  
Tom Lehmann/The Dough Doctor  
2909

**Neapolitan Style / Re: How does this happen?**

Both PMQ and Pizza Today use what are called "stock" or "file" photographs, that's why they always look so pretty and set-up. We used them at AIB too, admittedly not always the best choice.

Remember the old adage about judging a book.

Tom Lehmann/The Dough Doctor  
2908

**Newbie Topics / Re: newb dough question + UK ingredients help!!**

Well, it's hard to pin anything down there so I'll just add that insufficient salt can/will have a major impact upon the flavor of the finished crust and failure to allow the dough to warm to 50 to 60F prior to opening will reduce the amount of oven spring your dough can achieve which results in a more densa, compact crumb structure. Baking your pizzas at too low of a temperature can also have the same effect. While there are slight differences in flavor resulting from differences in flour the Allison bread flour (12.5% protein content if I remember correctly) and a regular flour (whatever that might be) will be negligible at best. Since your pan breads are typically made using very short fermentation processes and you liken the flavor of your crusts to those breads I'm thinking that your "recipe" might be out of balance and thus impacting total dough fermentation. You say that you are hydrating/activating the ADY in "warm" water, have you measured the temperature of the water to make sure it's within the recommended 100 to 105F temperature range? I have seen where the ADY was being hydrated/activated in "warm" water that was 122F (warm is a relative expression) which was adversely affecting the ability of the yeast to ferment the dough.

Tom Lehmann/The Dough Doctor  
2907

**Dough Clinic / Re: Poolish diminishing returns ?**

A poolish is really nothing more than just a "liquid ferment" aka "brew" in baker's terms. The flavor imparted is not much different than that achieved through any other room temperature fermentation process so if you are using a poolish and fermenting the dough for 4 to 5-days the poolish will just contribute to the total fermentation equation adding to the fermentation flavor, aroma and all the other good stuff that comes with longer fermentation times but it will NOT distinguish itself by contributing a different flavor so there is really nothing to be lost, it's just part of the fermentation profile.

Tom Lehmann/The Dough Doctor  
2906

**Dough Clinic / Re: Poolish diminishing returns ?**

The only time you're going to see any real flavor change between CF and RT is if you use 100% of either one.

Tom Lehmann/The Dough Doctor  
2905

**[Dough Clinic / Re: Poolish diminishing returns ?](#)**

That is correct BUT do keep in mind that you are getting a MUCH accelerated rate of fermentation at RT and you do under CF conditions so in a sense, yes your procedure is giving you a different crust flavor than "the same time of CF" but when presented to a trained sensory panel our experience is that they are unable to distinguish a combination CF and RT crust as compared to 100% CF or 100% RT. The method that we used at the time to ascertain that the amount of TOTAL fermentation was as close as possible to the same for all doughs was measurement pH and total titratable acidity.

Tom Lehmann/The Dough Doctor  
2904

**[Newbie Topics / Re: 8 questions](#)**

Yael;  
Great responses! :)

The only thing I might add is with regard to #4, what you call a "plate" we call a "peel". A wood peel is referred to as a prep peel (it is the peel that the skin (dough) is dressed (topped) on and then peeled into the oven with. A small amount of flour, or more typically a blend of flour, fine corn meal and maybe semolina flour, (other materials are also used such as wheat bran and rice flour) is put onto the peel to facilitate peeling the dressed skin into the oven, this is referred to as "peel dust". A solid blade metal peel is referred to as an "oven peel" as it is the peel used to remove the pizzas from the oven with. While on the topic of peels, there is also a small round head peel which is used to spin the pizzas in the oven during baking, these peels are known as "spinning peels".

Tom Lehmann/The Dough Doctor  
2903

**[New Forum Members / Re: PIZZA AND DOUGH LOVER](#)**

Paul Pizza;  
Welcome!

You are absolutely correct about the dough being therapeutic, it keeps the mind active through creativity and problem solving plus it instills a lot of patience while providing us with a tasty reward in the end. Best of all, if things don't go exactly as planned, it's still pretty good tasting! :chef:

Tom Lehmann/The Dough Doctor  
2902

**[Dough Clinic / Re: Neapolitan dough at 9000'](#)**

How are you planning to mix the dough?

The highest elevation that I've made pizza at is 9350-feet above sea level, is that close enough?

Due to the lower atmospheric pressure you can reduce the yeast level to 0.1 to 0.15% IDY. I would also increase the dough absorption to 65% or higher (absorption is dependent upon the flour used) but in your case you want to maximize it. Salt should be in the 2.25 to 2.5% range. Other than that, no changes to the ingredients. Any typical bread type flour will work well for you. My "go to" flour for home use is Pillsbury Bread Flour (targeted specifically for use in bread makers), the protein content is about the same as Full Strength (12.6%).

Tom Lehmann/The Dough Doctor

2901

**General Pizza Making / Re: Round pie, square slice. What is up with that?**

So, what's your point? I used to think that all pizzas were delivered in a paper bag....until we moved away from the Chicago area in the mid 70's. :-D

The only down side to the party cut is that there are only four pieces which have any resemblance to being crispy, like you said, the rest is pretty soft but still GOOD! ;D

Tom Lehmann/The Dough Doctor  
2900

**Dough Clinic / Re: Neapolitan dough at 9000'**

John;

See if you can wrangle up a reverse spiral dough arm for your mixer too, you will be forever glad you did as the dough just keeps climbing up on that silly "J" hook. Even starting the dough using a flat beater aka paddle doesn't really help. You might be better off using biochemical gluten development to your advantage for now. To do this you can use your mixer with a flat beater to blend the dough ingredients together into something of a homogeneous mass and then transferring it to a suitably sized container. Oil the container, scrape the dough from the mixing bowl onto a floured surface, roughly form the dough into a ball and place it into the container, loosely lid the container and allow the dough to ferment for several hours, turn it out of the container and knead several times (you will see a huge improvement), then portion into desired weight pieces (250-grams) and form into balls, wipe with salad oil and place into individual plastic Food Bags (like bread bags), twist the open into a pony tail and tuck it under the dough ball as you place it into the fridge to cold ferment for 24+ hours. When you're ready to use the dough, remove from the fridge, allow to temper AT room temperature until the dough balls reach 65F (internal temperature) then open into skins by your preferred manner, dress and bake.

This is a pretty fool proof and low cost method to get started with, as you get more confident and hone your pizza making skills you can begin experimenting with different dough management methods.

Tom Lehmann/The Dough Doctor  
2899

**New Forum Members / Re: Research. Interested in developing a Pizza Chain.**

And then two, followed by three, and if you're a micro-manager by any stretch of the imagination you will probably have changed your mind by that time, if not continue your quest to build an empire.

How can you tell if you're material for a multi-store operation with the potential of building it into a regional chain?

If you're a micro-manager....you are not.

If after opening your first store your life is in shambles....you are not.

If within 18-months of opening your first store you have not yet taken a vacation (and left your cell phone at home).....you are not.

If you feel that for whatever reason you cannot leave the store (you're a closet micro-manager).....you are not.

And there there's the financial backing....we won't even go there for now.

It's a lot of hard work but if you have the necessary skills and aptitude you have a reasonable chance to succeed. A very good friend of mine has three stores and he could go for more but right now finding good managers has been an ongoing

problem.

Tom Lehmann/The Dough Doctor  
2898

### **General Pizza Making / Re: Round pie, square slice. What is up with that?**

Make your first series of cuts top to bottom then rotate 45-degrees and cut to to bottom again, is that the one you are looking for?

Tom Lehmann/The Dough Doctor  
2897

### **Pizza Ovens / Re: heip with ferris wheel Pizza oven**

We used reel type ovens quite a bit at AIB, two of which were Middleby-Marshall and two were Reed Oven Company. This is the same oven used in Chicago as the work horse for making both thin and thick crust pan style pizzas. Typical baking temperatures are in the 450 to 500F range though some will go as high as 550F. The difference being that our ovens, as well as most of those used in Chicago have a composite deck material as opposed to the steel decking which is really quite thin. Get a few pieces of un-glazed floor tile and place them on the shelves to preheat, then bake on the tiles to see if that helps the bottom bake. When we made pizzas in these ovens at AIB we actually had to use screens under the pan pizzas to prevent the bottom of the pizzas from getting too dark.

What was your baking time? In Chicago it runs right around 30-minutes.

Tom Lehmann/The Dough Doctor  
2896

### **Dough Clinic / Re: Neapolitan dough at 9000'**

Don't worry about what the dough is looking like during the three hour period, this is to allow time for biochemical gluten development to take place, you will see what I mean when you do it. No, DO NOT use snack, sandwich, quart, two quart, one gallon or larger size Zip Lock bags, they are not the same and will NOT work as well as the recommended Food Bags. Why you ask? Because the Zip Lock bags will not drape over the dough in the same manner leaving air pockets where the plastic is not contacting the dough leading to condensation and stickiness of the dough as well as sticking in the bag. Additionally, you DO NOT want to zip the bag to close, if you do the gas pressure can/will either tear the bag at a seam or pop it open at the closure resulting in a dry, crusted dough. By twisting the open end of the Food Bag into a pony tail and tucking it under the dough ball you allow the bag the ability to burp itself and expand as necessary. The bags can be saved and reused any number of times....but they are so cheap that this really isn't necessary for home pizza making.

If you can get the reverse spiral dough arm just mix the dough until it appears smooth, immediately scale and ball, oil and bag and place in the fridge (did you notice....no kneading). The dough will be ready to use in about 24-hours but it might be even better after 48 hours. This is where you can experiment to see what you like.

By the way, the oil on the dough ball is to help get it out of the bag after the fermentation period, the bag is what keeps it from drying out.

Don't over think it, now just get crackin' and makin' some pizzas, you've got friends and family depending upon you! :chef:

Let us know how your pizzas turn out.

Tom Lehmann/The Dough Doctor  
2895

## [\*\*Dough Clinic / Re: Home oven versus wood-fired oven\*\*](#)

TD;

Have you tried using the broiler function of your oven for baking the pizza? Even if it has a self cleaning function you might be able to get the oven up to a temperature where you can achieve some of the wood fired oven (hot bake) characteristics. If you go back through the archives here you will find discussion on both of these approaches. Have you considered a charcoal grill? Some members here use them quite successfully. As for a gas fired pizza oven as opposed to an electric one it all depends upon how hot the gas fired oven will get. In many cases there isn't much of a difference in maximum temperature but in other cases the gas oven can be hotter by 100 to 150F so you'll need to do some comparisons to see if a gas pizza oven is in your future or not.

Tom Lehmann/The Dough Doctor

2894

## [\*\*Dough Clinic / Re: Neapolitan dough at 9000'\*\*](#)

John;

You can buy Food Bags from just about any supermarket in a roll for less than \$3.00 or you can buy a box of bread bags on the internet for about \$10.00 (just Google "plastic bread bags"). Your dough formula numbers look fine. Adjust the water temperature to 75F and be sure to record the finished/mixed dough temperature.

Tom Lehmann/The Dough Doctor

2893

## [\*\*Dough Clinic / Re: Neapolitan dough at 9000'\*\*](#)

John;

The produce bags CAN work BUT they are made very thin (probably 0.5-mil. in thickness whereas the Food Bags and bread bags are about 3 to 4-times that thickness. The thinner bags have a propensity of rupturing so if you are planning to use them be sure to double bag the dough balls. The bags that I use are 1.5-mil. in thickness and they work great, (1.5-mil. is the thickness of the average bread bag).

Tom Lehmann/The Dough Doctor

2892

## [\*\*General Pizza Making / Re: Round pie, square slice. What is up with that?\*\*](#)

They put a whole new meaning to "folding the pizza" :-D

Tom Lehmann/The Dough Doctor

2891

## [\*\*General Pizza Making / Re: Results of my Diastatic Malt Powder Enzyme Tests\*\*](#)

Amylase is an enzyme which hydrolyzes only starch. Native (intact) starch granules do not absorb water, only the starch granules which are damaged through the milling process are capable of absorbing water before being heated to the gelatinization point (140 to 180F+/-). The conversion of damaged starch to sugar is responsible for the noted stickiness and the slacked dough consistency resulted when the starch was hydrolyzed and gave up its water holding ability. The resulting simple sugars were responsible for the darker color of the gluten after drying. As there is very little proteolytic activity present in the malt there would be little or no impact upon the gluten forming proteins. Washing gluten is a fairly imprecise technique, though it can be relatively accurate when done by a skilled technician. This is why we use the Glutamic Gluten Washing Machine today for all of our wet

and dry gluten assays. While we typically report protein as an indication of flour strength, when protein is reported, total protein present is actually being reported, flour has seven different proteins but only two are gluten forming (glutenin and gliadin) it is the property of these two proteins in forming "gluten" that is being reported by either wet or dry gluten weight%. In some cases we can have a moderately high total protein content but still have a low wet/dry gluten weight% due to the poor quality of the glutenin and gliadin either genetically or through chemical manipulation as in the case with a chlorinated high ratio cake flour.

Tom Lehmann/The Dough Doctor  
2890

## **General Pizza Making / Re: Results of my Diastatic Malt Powder Enzyme Tests**

Craig;

For some reason amylase and protease enzymes seem to go hand in hand, meaning where you find one you will typically find the other. Ingredient manufacturers have really done their home work in trying to minimize one over the other so if you have an amylase preparation the protease is really minimized and if you have a protease preparation the amylase is really well minimized. This is important as the commercial baking industry (the main user of these ingredients) wants ingredients with ONLY very specific effects upon their doughs and because there is a greater need for amylase than protease in the industry the work has been really concentrated on getting rid of the protease contamination (minimizing it). The method used for protein determination is the Kjeldahl Test, a method by which the protein is broken down and the nitrogen released is measured and multiplied by a factor of 5.7. I don't remember the entire procedure anymore but if you go to the AACC (American Association of Cereal Chemists) web site you should be able to find it or possibly just Google the Kjeldahl Test and or AACC. This is a slow, time consuming and somewhat dangerous test as the technician is dealing with flasks of boiling acid at face level, but it is still considered the most accurate. A great percentage of protein measurements today are based in NIR measured protein level which is fast, easy and with essentially no danger associated with it. In both of these cases "protein is protein" meaning that only TOTAL protein is being measured not just the two gluten forming proteins glutenin and gliadin, the only way to isolate these two proteins and measure their amounts is to first mix the flour in water causing the glutenin and gliadin to bind resulting in what we call "glutin" and then, using ice cold water, wash the remaining materials away so what you are left with is a relatively pure wet gluten ball.

I think you may have the "ash" procedure confused with the protein procedure. When the ash content is measured the flour is burned in a Muffle Furnace leaving behind an ash residue which is measured and reported as "ash content". This is also an AACC procedure if you want to learn more about it.

Tom Lehmann/The Dough Doctor  
2889

## **Neapolitan Style / Re: Workflow preparing multiple pizzas before baking**

Have you tried FINE corn meal? The larger particle size slows the hydration rate substantially over that of flour so it allows for a longer peel time, plus it acts like little ball bearings under the skin to facilitate peeling the pizza onto the steel baking plate. It will also add another dimension of flavor and crispiness to the baked crust. Just be sure to use fine corn meal as anything else will be gritty.

Tom Lehmann/The Dough Doctor  
2888

## [\*\*Commercial Ovens / Re: Uk- Lincat 630-2 oven\*\*](#)

What is your confirmed baking temperature?

Tom Lehmann/The Dough Doctor  
2887

## [\*\*General Pizza Making / Re: Results of my Diastatic Malt Powder Enzyme Tests\*\*](#)

By law, all flour sold in the United States must be labeled with the constituent ingredients, malted flour will typically show "malted barley flour" or "fungal amylase" as an ingredient. The Falling Number value of unmalted flour is carefully controlled through the selection of the wheat used in milling the flour. Wheat that has sprouted in the field will have a very low FN value (over malted), since you can't get the amylase activity out of the flour a sprouted flour is normally used for what is referred to as an "industrial flour", well drilling paste is a good example of this, but in some cases it can be blended with good, sound wheat to provide a flour with the desired FN value so what you end up with is a flour which is "natural" but with no additives and it still has decent baking performance characteristics for the baker desiring such a flour. When we buy organic flour this is a little different in that the wheat has to be certified as organic and no additives are typically added, in this case the flour will be completely unmalted and have a high FN value, but it can be malted if the sprouted barley flour is certified as "organic", in which case the malted barley flour will be shown as a constituent ingredient. With the growing popularity of "00" type flours flour millers have taken to producing specific flours without any type of malt (cereal or fungal amylase) added to the flour, these flours are commonly referred to as being "untreated".

Tom Lehmann/The Dough Doctor  
2886

## [\*\*Starters/Sponges / Re: IDY vs Sourdough\*\*](#)

Craig is "spot-on". The acid in the SD weakens/breaks down the gluten forming proteins in the flour much like marinating a tough cut of beef in beer or wine will help to tenderize it. If you look very carefully at the IDY label you may find ascorbic acid as an added ingredient to the IDY. While AA is used in the baking industry as an oxidant to strengthen dough in this specific case it is added to the dough in an amount calculated to address only the small amount of dough softening which MIGHT be noticed with the IDY. This slight dough softening results from the presence of dead yeast cells within the IDY (yes, some of the yeast cells are killed during normal processing) and these dead yeast cells release their glutathione into the dough (glutathione is very much like L-cysteine hydrochloride/PZ-44). The AA added negates this slight softening effect. Dead yeast is also used in products where a cleaner label is desired than which is possible with L-cysteine, this is because since all yeast ends up dead (thanks to the oven) it is allowed to be lumped right in with the live yeast on the label, in short, you can add a reducing agent without the need to show it individually on the label whereas L-cysteine must be individually shown on the label. By the way, both glutathione and L-cysteine are amino acids (protein building blocks), there is nothing to fear from either but the name.....kinda scary to some.

Tom Lehmann  
2885

## [\*\*Dough Clinic / Re: Dough not very smooth, small bubbles everywhere\*\*](#)

The amount of ADY is higher than what I personally use too. It calculates out at

0.92% which is equivalent to almost 2% compressed yeast. Unless I'm making an emergency dough for my pizzas I seldom ever use more than 0.5% ADY, comparable to 1% CY. Combined with dough temperature? this could also contribute to a somewhat gassy dough with large bubbles.

Now I'm two cents poorer.

Tom Lehmann/The Dough Doctor  
2884

**Dough Clinic / Re: Swimming upstream with NP hybrid dough?**

JPB;

I'm guessing that when you reduced the dough absorption the dough became less fluid during those first few critical seconds in the oven when oven spring occurs. Before getting too far out on the limb I'd suggest going in just the opposite direction...go up in dough absorption, that should give you an improvement in oven spring which in turn will result in greater crust porosity resulting in a crispier finished crust characteristic. How much should you increase the dough absorption to? I'd suggest increasing it as high as you can while still retaining ability to handle the dough. This judgement should be passed only at the time you are actually opening the dough into a skin. You may also find that making an autolyze using all of the flour and all of the water may help with high absorption while retaining handling properties of the dough. It wouldn't surprise me if you are able to reach 70% absorption. Let me know where this direction takes you.

Tom Lehmann/The Dough Doctor  
2883

**General Pizza Making / Re: Results of my Diastatic Malt Powder Enzyme Tests**

Some of the added ingredients in our flours are measured in "ppm" (parts per million). These include such things as potassium bromate, ascorbic acid and azodicarbonamide.

Tom Lehmann/The Dough Doctor  
2882

**Dough Clinic / Re: NEED HELP WITH MY PIZZA DOUGH**

Judith;

In addition to what Qwerty Juan pointed out regarding your dough weights the following should be added to the previous formulation which I converted into bakers percent for you.

Yeast (IDY): 1.56%

Salt: 1.56%

Sugar: 1.56%

OK, let's look at it now.

The total dough absorption is 48.82% which is about right for a thin crispy type of crust which has a dough loading of about 0.08845-ounces per square inch of surface area. By this calculation your 14-inch pizzas are heavy for a formulation of this type. Your 14-inch pizza should have a dough weight of 13.6-ounces (13.5-ounces) and the 16-inch should have a dough weight of 17.7-ounces (17.5-ounces). The amount of IDY is pretty high at 1.56% especially in view of the 5-day CF. More typically I would expect to see it down around 0.1 to 0.2% assuming a finished dough temperature in the 70 to 75F range (what is your finished dough temperature?) (what is your dough management procedure?). Knowing these would help me to nail down the yeast level a little better.

The sugar level at 1.56% is OK but normally for this type of dough we don't use any sugar which allows the pizza to be baked longer to help develop the crispy characteristic this type of dough is formulated for, but depending upon the finished dough temperature and how the dough is managed it might be an important aspect in yeast survival over the 5-day CF period?

Assuming you're opening the dough balls using a dough sheeter/roller and docking the opened skins?

Just out of curiosity, is the 14-inch pizza more of a "problem child" than the 16-inch pizza? I ask this because it is the 14-inch pizza that is heavy for its size while the 16-inch pizza is about right.

Tom Lehmann/The Dough Doctor  
2881

**Dough Clinic / Re: Swimming upstream with NP hybrid dough?**

You can get some very good oven spring with a high absorption dough IF you have the oven temperature to support it. I think lowering the temperature might be the wrong direction to go. Lower temperature = less and slower steam generation during those first few critical seconds in the oven which equates to less oven spring which in turn results in a less porous crumb structure which ....well you see where this is going :-D

Keep us posted on your progress.  
Tom Lehmann/The Dough Doctor  
2880

**Dough Clinic / Re: Neapolitan dough at 9000'**

Not a bad start! Not bad at all! ^^^

Develop your proficiency by tuning the dough and toppings and you'll be ready to rock and roll when you get your oven back!

Try my favorite sauce...nothing more than a lightly oiled skin to which thin slices of fresh, ripe tomato are added, flavor with fresh basil leaves and top with some fresh mozzarella cheese. If you can't get the fresh, ripe tomatoes just open a can of stewed plum tomatoes, tear apart by hand, drain well and place pieces over the lightly oiled skin along with the fresh basil leaves then add the mozzarella and a sprinkling of Parmesan cheese.

OK, so why the generic stewed plum tomatoes? Saving the good stuff for when you get your oven back. :chef:

Tom Lehmann/The Dough Doctor  
2879

**Dough Clinic / Re: Percentages of Flour added to white?**

I would suggest replacing 30% of the total white flour with a blend of 20% whole wheat flour and 10% dark rye flour and benchmark from there. Rye flour doesn't contribute much of a brown color to the dough or finished crust, instead it is best described as a "muddy" grayish brown color, this is why caramel coloring is so widely used in rye breads, now you know the "real" reason why rye bread/dough has a brown color. Most of the color you're seeing is most likely from the whole wheat flour, hence the greater amount of whole wheat flour. There appears to be particles in the dough which could be from the use of a "stone ground" (an expression used today to describe a coarse ground flour) whole-wheat flour or it might be due to the use of a pumpernickel rye flour but I can't tell from a photograph which one it might be.

Remember that the use of these flours will INCREASE the dough absorption. If the

dough is not tacky when removed from the mixer your absorption is most likely too low.

Tom Lehmann/The Dough Doctor  
2878

**General Pizza Making / Re: Results of my Diastatic Malt Powder Enzyme Tests**

Scott;

You have never smelled a fresh baked, still hot angel food cake right out of the oven. Egg albumen takes no back seat to VWG, but both change considerably upon cooling when used in correct context. When I worked in production I ran a cake line for several months and I can still smell those things, but once they're cooled.....it's "game-on" ! ;D

Denaturing of proteins can create some pretty disgusting aromatic fragrances.

Tom Lehmann/The Dough Doctor  
2877

**Dough Clinic / Re: Dough FAIL!!!!**

0.5% ADY is equivalent to 1% compressed yeast (CY) which is wwaayy too much yeast for a 24-hour room temperature fermentation period especially with Caputo "00" flour which isn't especially fond of long fermentation times. Using Caputo "00" flour the longest I have been able to ferment it is 24-hours CF, at 48-hours it was deemed to be marginally usable. I would suggest starting at 0.1% and work up from there. You can always give a dough extra fermentation time but it's difficult to take it away.

No yeast? Sure no "added" yeast. A sourdough leavened dough might be said to have no yeast, no added yeast that is, but within the sourdough itself you have both yeast and bacterial fermentation taking place which will leaven the dough quite nicely. I only wish I had a dime for every time someone said we don't use any sugar in our dough, but strangely, there is honey in it....guess honey doesn't qualify as a form of "sugar" even though its constituent ingredients are fructose and dextrose. As for your question on mixing, the optimum mixing time for most pizza doughs appears to be JUST enough mixing to allow the dough to be balled without the skin tearing as the ball is formed, this is assuming you're not trying to make your dough balls tighter than a golf ball is wound. You can see the change in the mixing bowl during mixing as the dough will begin to stretch (sheet is the correct term) thus reflecting light creating what appears to be a brighter colored dough with a satiny appearance. If your mixer has a "J" hook you may never be able to see this due to the poor mixing action of the "J" hook.

Tom Lehmann/The Dough Doctor  
2876

**Dough Clinic / Re: Dough not very smooth, small bubbles everywhere**

JPB;

You bring up a good point there. I've seen a lot of pizzerias where the "bubble popper" is the tool of the day. Additionally, correct docking of the dough can go a long ways in addressing unwanted bubbles.

Tom Lehmann/The Dough Doctor  
2875

**Dough Clinic / Re: Percentages of Flour added to white?**

That being the case there might be more rye flour in the dough than what the pictures showed. I would reverse the percentages of rye and whole-wheat flour

from my original recommendation. With 20% rye flour there are three issues to contend with regarding dough absorption. One is that rye flour has a high absorption value by itself (70% on average) and second, it has little gluten forming protein so it dilutes the gluten forming protein in your white flour making for a weaker dough structure and three, rye flour produces a sticky dough characteristic (an inherent characteristic of rye flour), this is why getting the dough absorption correct on a rye based dough is a bit tricky...HECK! It's the most difficult of all the doughs to hit the absorption correctly on. In the baking industry we use VWG to improve the handling properties of doughs with rye flour (15% of the weight of the rye flour is a good starting point if you want to add VWG to the dough). If you opt not to add VWG I would suggest starting at 72% absorption and cautiously working up from there if deemed necessary. Table stretching the dough might be a better option in this case than hand tossing or hand slapping when opening the dough balls.

Tom Lehmann/The Dough Doctor  
2874

#### **Dough Clinic / Re: Percentages of Flour added to white?**

It all depends upon how much fermentation the dough will be getting.

Tom Lehmann/The Dough Doctor  
2873

#### **Dough Clinic / Re: Dough not very smooth, small bubbles everywhere**

When you buy a dough docker just make sure you get one with flat/blunt docking pins. The Heavy Duty Plastic Roller Docker # DD5274 or DD5705 at American Metalcraft <[www.amnow.com](http://www.amnow.com)> are good examples of dough dockers that really work well. You might be able to find them at a local restaurant supply store or online too.

Tom Lehmann/The Dough Doctor  
2872

#### **Dough Clinic / Re: Neapolitan dough at 9000'**

The only reason for wanting the dough balls to retain their "ball" shape is when placing them into plastic dough boxes for storage in the cooler (think pizzeria), aside from that there is no valid reason why the dough has to retain a ball like shape. So what if it flattens out a bit? You're going to do more of the same when you form it into a skin. If the dough is properly fermented the dough will be sufficiently extensible so that even if it is a little out of round it will still be very easy to form a round skin from it. We do it every day at pizzerias across the country where we need to dig/scrape a dough ball out of a dough box (which results in a mis-shapen dough ball) and then open it into a round pizza skin.

Placing the dough into a larger container will allow for significant head space between the dough and the top of the container which can lead to condensation forming in the container resulting in a wet or sticky dough...there is no head space when a plastic bag is used and you don't need to place the dough in the fridge uncovered for several hours to allow for consistent cooling of the dough prior to lidding the container.

How to handle the kids: Look kids, we all like pizza...right? In order to make pizza daddy needs to make his dough and if you put something on top of the dough balls he may not be able to make the pizza crusts from his dough and without the crusts there can be no pizza, so be careful around the bags of pizza dough. Case solved. Just moving the dough balls won't hurt them, neither will pushing anything up against them cause any harm either. If you ABSOLUTELY must put the bagged

dough balls into something, after they have been in the fridge for at least 3-hours place them into plastic tubs (we use the plastic tubs that whipped topping comes in) but DO NOT apply the lid. When we go to a friend's home to make pizza this is how we transport the dough balls....works great. :)

Tom Lehmann/The Dough Doctor  
2871

### **Pizza News / Re: PMQ Article: Favorite Pizza Styles/Crusts**

Surveys, like polls should ALWAYS be taken with a grain of salt. The results of either can be manipulated (on purpose or unintentionally) by the questions asked when conducting the poll/survey and the very people selected to participate in the poll/survey can have a tremendous impact upon the outcome too. Polls and surveys are useful when done with a specific objective (done by a major frozen pizza manufacturer to determine the most popular frozen pizza in Houston, TX...for example), but aside from that, in my opinion they make for talking points, that's all, and it's my guess that that's what PMQ was trying to achieve.

Tom Lehmann/The Dough Doctor  
2870

### **Dough Clinic / Re: Percentages of Flour added to white?**

The 24-hour fermentation period at room temperature will effectively build acid content of the dough which will effectively mellow the flour protein making the dough quite soft and extensible.

Tom Lehmann/The Dough Doctor  
2869

### **Dough Ingredients / Re: Grain Craft - Power Flour vs Mondako**

Power flour comes in at 13.5% protein content while the Mondako is at 12% protein content. As N.Y. type pizzas are typically made using high protein flours such as All Trumps (14.5% protein content) I would go with the Power flour. When deep-dish pizzas are made from excessively high protein flour the result is usually a very tough, chewy eating characteristic unless very long dough fermentation times are employed. When we did the AIB pizza seminars we found that flour with 12 to 12.6% protein content was a very good and acceptable "all around" flour for making both thin crust (including N.Y. style) and thick crust/deep-dish pizzas without the need to inventory two different flours.

Tom Lehmann/The Dough Doctor  
2868

### **Dough Clinic / Re: very sticky dough**

Two things:

- 1) Your dough absorption is 70% which is probably pushing the upper limits for your flour so I'd suggest reducing it to 62% (682-grams).
- 2) What your picture shows is a fully fermented dough. Without much more information on how you are handling the dough as well as temperatures employed I can't say if the amount of fermentation is excessive or not but it doesn't appear to have turned into "soup" so I'm assuming fermentation is OK. With that said, fermented dough as shown is always going to be sticky...it's the nature of the beast. Here's what to do. First, lightly oil the bowl that you are fermenting the dough in (this will make it easier to turn the dough out of the container). Turn the dough out of the container and very lightly dust the dough and then divide it into desired weight pieces, form each piece into a ball and handle normally from there. Remember, it will take at least 6-hours of additional fermentation time before the

dough balls will be ready to be opened into skins.

Tom Lehmann/The Dough Doctor

2867

**[Newbie Topics / Re: Why does my fresh dough do not bubble ?](#)**

Actually, fresh yeast/compressed yeast/CY does not need to be activated/hydrated, plus the addition of the honey and sugar is most likely suppressing the yeast activity for a period of time (assuming your yeast is fresh and in good condition, which a lot of times is a great unknown when using CY as it is highly perishable). Like bigMoose said, IDY is by far the best and easiest yeast to use, no need to activate, just add it right along with the dry flour and you're good to go.

Tom Lehmann/The Dough Doctor

2866

**[Dough Clinic / Re: very sticky dough](#)**

Considering the high dough absorption I don't think the dough is over fermented yet, slack doughs do collapse under their own weight a lot sooner than a lower absorption dough will, From the looks of the dough I would estimate that it is at the first full rise, this is the point in dough fermentation there the dough rises and then begins to drop (first full rise), the time required for the first full rise is typically about 80% of the total dough fermentation for making bread or about 50% when making pizza, assuming a good, strong flour is being used which would be the case for a N.Y. style pizza, but then we all know about that word "ASSUME". In any case, a dough which has been fermented to anything close to first full rise will exhibit sticky characteristics when first removed from the bowl.

Tom Lehmann/The Dough Doctor

2865

**[Sicilian Style / Re: Help with making a better sauce?](#)**

Another thing to keep in mind is that P.H. used to use a lot of tomato paste in their sauce which is why it had that very dark color.

Tom Lehmann/The Dough Doctor

2864

**[Newbie Topics / Re: Why does my fresh dough do not bubble ?](#)**

Yes, that is the recommended procedure when doughs are mixed by hand. The temperature of the water in which the IDY is dispersed should be a measured 95F. Temperatures that are as little as 5F off in either direction will impact the way the yeast ferments.

Tom Lehmann/The Dough Doctor

2863

**[Dough Clinic / Re: Neapolitan dough at 9000'](#)**

He who holds the pizza holds all the aces when it comes to kids. Try to get them involved in making the pizzas too, we used to make it a family effort when the kids were small and they absolutely loved it. Their best part was that we let them each make their own pizza with their favorite toppings. Our youngest son is now 48 and the oldest is 53 and dad still makes pizza for them...it's their favorite treat, but now the order has grown from three pizzas to a minimum of five plus calzones (both boys think of calzones as an appetizer.....go figure!) and desert pizzas too, or if we don't have desert pizza we will have one of my specialty cakes :chef: it's really not much work though as the grand kids like to roll up their sleeves and practice their pizza making skills too, that is until the pizzas begin coming out of the oven, at

which point I'm on my own. Best part of it? Both boys still talk about some of our more memorable cooking and baking episodes.

Tom Lehmann/The Dough Doctor  
2862

**[Newbie Topics / Re: Why does my fresh dough do not bubble ?](#)**

Peter;

You're absolutely correct. Tests performed back in the 1960's showed that it took a minimum of 4-minutes of machine mixing time to thoroughly disperse the IDY (5-minutes is usually recommended as a precautionary measure). Even when using the VCM (vertical cutter mixer) with a mixing speed of 1750 r.p.m. (variable with different models, but all at or above 1700 r.p.m.) it was found necessary to first suspend the IDY prior to addition to the mixer.

Tom Lehmann/The Dough Doctor  
2861

**[Other Types / Re: Stromboli and/or Calzones](#)**

They really don't reheat very well in a commercial application because everything is enveloped in dough which is an excellent insulator and by law you're going to need to reheat to an internal temperature of 160F minimum (165F actual). We have done calzones where they are fresh bake and held under a warmer to allow them to be served over a longer period of time and then given a quick pass through the oven to dry the crust prior to serving if that helps any. We did this for a store in Newark, N.J. where we did a killer business serving breakfast calzones to commuters (rail station literally right across the street). These were fresh made, held under a heat lamp to keep them warm, and placed into a paper sleeve and sold with a cup of coffee as a breakfast special. These were smaller individual serving calzones and while I hate to say this, overall quality had to take a back seat to convenience (sorta like delivery pizza). How successful was it? They had to purchase a 70-inch XLT air impingement oven just to keep up with the demand. I suppose you could hold the larger dinner size calzones in a temperature/humidity controlled box (Hatco) at 150F (145F is the minimum serving temperature IF the product has not cooled under 145F) and then refreshen it with a pass through the oven just before serving. This should expand the window for sales to around 2-hours, or so. The same would hold true for stromboli.

2860

**[Neapolitan Style / Re: Help with Ankarsrum kneading, please! My Neapolitan dough won't relax.](#)**

Mixing is not the issue here, it's fermentation. When using the Caputo Blue 00 flour I've used 60% absorption and 24-hours room temperature (70F) fermentation all in ball form and the dough just about opens by itself, maybe a little easier than I like, so if you find that to be an issue just begin working with lower dough absorption values. I've also used 36-hours cold fermentation with about 90-minutes at room temperature prior to opening, again all in ball form, no bulk.

Tom Lehmann/The Dough Doctor  
2859

**[Newbie Topics / Re: Why does my fresh dough do not bubble ?](#)**

It sure does but the total mixing time is only in the 60 to 75-seconds range. A similar type of mixer that you might know of is the Robot Coupe mixer.

Tom Lehmann/The Dough Doctor  
2858

### [\*\*Neapolitan Style / Re: Advice.\*\*](#)

15-minutes is a long mixing time unless you are doing all of the mixing in low/1st. speed. Please let me know all you can about your mixer and how you are mixing the dough. A video would help greatly.

Tom Lehmann/The Dough Doctor  
2857

### [\*\*Dough Clinic / Re: Percentages of Flour added to white?\*\*](#)

Using the bran flakes is indeed a good way to get an idea of how much whole wheat flour is being used.

Tom Lehmann/The Dough Doctor  
2856

### [\*\*Dough Clinic / Re: Percentages of Flour added to white?\*\*](#)

The trend with whole-wheat flour today is to mill the bran to a finer particle size before adding it back to the flour stream. The good news is that it speeds up the rate of hydration a bit but the bad news is that people complain that it doesn't look like whole-wheat flour as they're accustomed to the coarser particle size associated with stone-ground whole-wheat flour (not actually stone ground, just a particle size reference). Whole white wheat flour are following this same trend, in fact, most commercial premium whole-wheat breads are made using a fine ground whole white wheat flour as it provides an improved flavor over the more common whole-wheat flours made from hard red wheat varieties.

Tom Lehmann/The Dough Doctor  
2855

### [\*\*General Pizza Making / Re: Effect of sugar on crust flavor\*\*](#)

Your taste buds? :-D

The only REAL test would be for you to evaluate both side by side under a fully prepared pizza using a triangular test where two like and one unlike sample are presented and the subject is asked to identify the odd (unlike) sample. This is repeated three times. If the unlike sample is accurately identified each time we say that there is a decided difference between the samples but if it is identified accurately two of the three times we say that there is potentially a difference and if it is identified accurately only once there is no significant difference. This is how we used to sort out ingredients with a potential impact upon flavor or aroma.

Tom Lehmann/The Dough Doctor  
2854

### [\*\*Dough Clinic / Re: I am trying to achieve a 24 hr. RTF and something's wrong.\*\*](#)

Try using a stronger bread type flour such as Pillsbury Bread Flour (available at many supermarkets) or KABF, adjust the yeast level to 0.05% IDY and go up from there if necessary.

Tom Lehmann/The Dough Doctor  
2853

### [\*\*Off-Topic Foods / Re: Tomato choice: Rutgers or celebrity?\*\*](#)

Rutgers is a staple here in KS for us, we grow it every year. Not big (about the size of a baseball), but good yields and firm flesh with a great flavor if picked ripe. We also grow some Jet Star too but it doesn't yield as well for us.

Tom Lehmann/The Dough Doctor

2852

**[Neapolitan Style / Re: CF bulk and CF balls](#)**

Letting the dough warm to at least 50F helps a lot with opening the dough into skins.

Tom Lehmann/The Dough Doctor  
2851

**[General Pizza Making / Re: Can someone toss me a recipe with a 1/4" thick base for 16"](#)**

If you're machine mixing the IDY should be about 0.375 to 0.4% and it should be added dry right to the flour. If you're hand mixing suspend it in a small amount of 95F (use a thermometer) water and activated for about 5-minutes prior to addition to the dough water. As for scaling weight for a 16-inch pizza approximately what are you looking for in crust thickness? Most of the time I'm looking for a crust with a finished thickness of about 3/16-inch thick which equates to a dough loading of about 0.106 (ounces of dough per square inch of surface ares) or 21.3-ounces/605-grams. Your present 770-gram weight should be plenty to provide a good, thick finished crust if properly handled. As indicated your yeast/IDY level is much too low for this type of crust and I would also suggest that you consider baking the pizza on a solid, dark colored pan and allowing the dough to rise for a period of time prior to dressing and baking. I can't say how long to allow the dough to proof/rise for as there are just too many yet unknown variables but I would suggest starting with 30-minutes and then again at 45 and 60-minutes. This should give you the direction needed to zero in on the best time needed to achieve your end goal.

Tom Lehmann/The Dough Doctor  
2850

**[General Pizza Making / Re: Have you ever used stones thicker than 1½ ?](#)**

Within reason, the thicker the stone the better. A thicker stone allows for a more consistent bake. On the down side it takes longer to preheat. Some of the best commercial wood and soal fired ovens I've worked with have stones as much as 6-inches (15cm) thick. While some of the best commercial deck ovens have decks that are 1 to 1.5-inches thick (2.5 to 4cm approx.) thick.

Tom Lehmann/The Dough Doctor  
2849

**[General Pizza Making / Re: Can someone toss me a recipe with a 1/4" thick base for 16"](#)**

Since you are using ADY you must pre activate it by suspending it in about 5 times its weight of warm (100 to 105F) water for about 10-minutes, then add the activated yeast suspension to the dough water and begin mixing. Amount of ADY to use will be between 0.5 and 0.6%.

Tom Lehmann/The Dough Doctor  
2848

**[Neapolitan Style / Re: CF bulk and CF balls](#)**

We covered a lot of this in some recent posts here but in general, if your "bulk" dough is for only two or three pizzas there is little if any difference between bulk and ball cold fermentation...totally different story if we are talking about bulk dough weight of over 1Kg.

Bulk CF, then scale, ball and CF = just more CF.

Bulk CF, then allow to warm to at least 50F, scale, ball and CF = reactivation of

fermentation process so dough will receive more fermentation in the end.

Tom Lehmann/The Dough Doctor

2847

**[General Pizza Making / Re: Another stupid question from Nick At Nite..er I mean Nick57.](#)**

Nick;

That's a lot of 100L diastatic malt powder, but to your question, malt powder has a decided tendency to want to "pill" when it contacts water, because of this the best way to add it is to simply dry blend it into the flour with a few strokes of a hand whisk.

Tom Lehmann/The Dough Doctor

2846

**[Pizza News / Re: PMQ Article: Favorite Pizza Styles/Crusts](#)**

Like I said...."talking point"

The Dough Doctor

2845

**[General Pizza Making / Re: Can someone toss me a recipe with a 1/4" thick base for 16"](#)**

Yep, 120F is too hot.

Tom Lehmann/The Dough Doctor

2844

**[Dough Clinic / Re: Pan pizza](#)**

When making a pan pizza here is the basic procedure that I like to use;

Use your favorite dough formula but increase the yeast level to 0.4% IDY as this will significantly reduce the time required to fit the dough to the pan as well as the final proofing time.

Use the dough at 48-hours for best results.

I like to use a dough loading factor of 0.124 for my dough ball weights.

After removing the dough balls from the fridge allow them to warm to 60 to 65F.

Prepare the pan by either greasing with butter, lard, Crisco or butter flavored Crisco. The procedure is a little different if you want to use oil.

Place the dough ball into the pan and using your fingers push the dough out to fit the pan. If you want a flatter crust use a rolling/pastry pin to open the dough ball so it JUST fits into the pan.

Cover the pan and allow the dough to rise in the pan for 45-minutes, then press it out again, trying to keep it even. If you want to have a thin vertical edge (similar to a Chicago style pan pizza) pull the dough up onto the sides of the pan.

Allow the dough to rise in the pan a second time for about 70-minutes (time will vary depending upon how thick you want the finished crust to be)

You are then ready to dress the dough and bake (450 to 475F) until crust is browned.

If you want to par-bake the crusts open the dough balls using a rolling/pastry pin and carefully place it into the pan, set aside to proof for 45-minutes, then press out to completely fit the dough to the pan if necessary.

Allow the dough to rise in the pan again for 30 to 45-minutes, then bake at 400F JUST until the dough is completely set....DO NOT OVER BAKE.

Immediately upon removal from the oven de-pan the crust and cool it inverted on a wire rack or pizza screen.

To use your par-baked crust, lightly brush with oil, place back into the baking pan with a little oil in the pan, dress the crust and bake at 475F just until the top of the pizza is done (baking on a rack or screen is preferable to baking on a stone/steel.

If you want to use oil in the pan for a fresh baked thick crust pan pizza you will need to open the dough ball using a rolling/pastry pin to a size just a little larger than the pan and then place the skin into the pan. It should completely fit the pan. Set the panned dough aside to proof for 30 to 45-minutes and re-fit the dough to the pan if necessary by gently pushing the dough with your fingers, allow to proof for another 45-minutes before dressing and baking.

If you want to fit the dough to the pan using your hands with an oiled pan place the dough ball on a work surface and open to fit the pan, place the opened skin into the pan and set aside to rest for 1-hour, then re-fit the dough to the pan, set aside to proof again but this time for 30 to 45-minutes, re-fit the dough to the pan if necessary, then dress and bake as directed above.

Done right the crust will be 1/2-inch or more in thickness and have a light, tender eating characteristic. I've found that the best flour for this type of pizza is one with about 12 to 12.8% protein content and 58 to 60% absorption. Your deep-dish pans should be dark colored and at least 1.5-inches deep.

Tom Lehmann/The Dough Doctor  
2843

#### **[Off-Topic Foods / Re: Baking sub rolls in a stone deck pizza oven?](#)**

After proofing the rolls (you will need some type of temperature/humidity controlled cabinet (80% R.H. and 95F) the rolls are given three to four French cuts (diagonal cuts) across the top as a form of docking (they're actually called "docking cuts") which allows the individual rolls to expand during baking without tearing apart or bursting. Steam in the oven keeps the crust cool to allow for expansion (oven spring) but you can address this by spraying the rolls with water just prior to baking. Bake at 425 to 450F for about 12-minutes +/- . Immediately after baking remove the rolls from the pan and place onto a cooling rack, then while the rolls are still hot brush with melted butter. Rolls are ready to use when cool. They are best kept in a sealed plastic bag at room temperature. They will keep for up to 4-days. NOTE: If you will not be re-freshening the rolls at the time of use I suggest using them on the same day they're baked. Hoagie buns will typically contain 6 to 8% fat. The reason for the high fat level is to prevent moisture migration into the roll when it is made into a sandwich and also to provide the desired tenderness. If you want to have a more chewy roll reduce the total fat to 2%.

As you can see, these are a lot of work and might require equipment which you don't have or have room for, this is why so many stores opt to have them made for them by a local bakery.

Tom Lehmann/The Dough Doctor  
2842

#### **[General Pizza Making / Re: making dough without oil?](#)**

I know we have discussed at length the effects of the various dough ingredients on both the dough and

the finished crust but here it is in a nutshell:

Oil/fat/ shortening/lard/butter/margarine, etc.

They lubricate the dough for improved expansion properties during baking.

It helps to seal the cell structure to better retain leavening gas and water vapor for improved oven spring

It helps to reduce the migration of moisture from the top of the pizza into the crust.

It can provide a flavor.  
It will help to retain those aromas lost during baking to provide a more rounded flavor in the finished crust.  
It is known as a "tenderizer" as such it promotes a more tender eating finished crust (less chewy). Compare regular and fat free tortillas to see this first hand).  
It can help to promote crust color too, not so much as a true color shift but a change in the hue of the crust.  
It can also affect the mastication properties of the crust which can have a great impact upon how much or why someone likes a product.  
It satisfies the "human fat gene"...people like FAT. This is why processed foods are high in fat. This is also why "fat free" was never popular.

There are two "optional" ingredients in pizza dough, they are: fat and sugar. Do you need them in a pizza dough, of course not, flour, water, salt and leavening are all that's needed, but sometimes we need to modify the dough for specific purposes so we use fat or sugar. Sugar is used for crust color development, flavor and crumb color (depending upon the type of sugar used), and as a nutrient for the yeast. Any residual sugar remaining in the dough will be concentrated and act as a humectant to pull moisture out of the air and from the top of the pizza potentially impacting the crispiness of the finished crust.

Tom Lehmann/The Dough Doctor  
2841

#### **Off-Topic Foods / Re: Baking sub rolls in a stone deck pizza oven?**

After mixing the dough allow it to ferment for 1-hour, then scale into 7-ounce/200-gram pieces, form each piece into a hot dog shape, place about 2-inches/50mm apart on an oiled/greased sheet pan, proof as directed, dock, spray with water, bake OFF OF THE DECK to get a more uniform bake. We used to place a few 3/8-inch diameter steel rods on the deck to hold the sheet pans off of the deck.

Tom Lehmann/The Dough Doctor  
2840

#### **Dough Clinic / Re: Pan pizza**

Because a par-baked crust will be re-freshened, means the same as baked a second time, you can use it up to 4-days after making it. Just store them at room temperature, I recommend penny stacking them in a suitable plastic bag and placing them into a dough box for storage. I do not recommend holding them more than four days due to the probability of mold growth on the crusts.

While some might advocate refrigerating the crusts I do not as refrigerated temperatures accelerate the rate at which the crusts stale and you are going to need to make sure the crusts are ALL uniformly at room temperature when you go to use them. If you cannot use the crusts that you've made in four days you're probably being a bit overly optimistic as to how many you're going to be selling.

:D

Tom Lehmann/The Dough Doctor  
2839

#### **Off-Topic Foods / Re: Baking sub rolls in a stone deck pizza oven?**

When I say to "bake off of the deck" I mean do not place the pans containing the dough directly onto the deck/hearth of the oven, instead, place a few steel rods between 8 and 12.5mm in diameter on top of the oven deck/hearth. Then place the pan of dough on top of the steel rods which will hold the pan up off of the deck creating an air gap/space between the oven deck/hearth and the bottom of the pan.

This will allow the rolls to bake more uniformly. Breads and rolls bake differently from pizza. Pizza bakes from the bottom up, this is why we place the pizza directly onto the oven deck/hearth but breads and rolls bake more from the top down so we must keep the bottom of the pan up, off of the oven deck/hearth, if this is not done the rolls will be over baked on the bottom.

Tom Lehmann/The Dough Doctor  
2838

**[Off-Topic Foods / Re: Baking sub rolls in a stone deck pizza oven?](#)**

I forgot to answer your last question, "How will the rolls baked in a pizza oven compare to those made in a commercial bakers oven?" If you're not a baker by skill level there will be a learning curve for you to learn how to make the rolls, but once mastered you will be able to make something acceptable which is probably OK for your application where a little individuality in the rolls, like our pizzas is accepted, and expected, by our customers. When the baker makes them he strives to have them all look alike and be as perfect as possible.

Tom Lehmann/The Dough Doctor  
2837

**[General Pizza Making / Re: Safe sauce storage](#)**

three to four days on the outside, then you'll begin to detect some sourness...not a good thing :( when stored at refrigerated temperatures. Best to freeze as single use portions. This is not the best but it beats a sour sauce and it's about the best we can do to hold surplus sauce for an extended period of time. You do realize that the garlic you're adding to the sauce will catalyze the pectin in the tomato causing it to gel making tomato jelly? Best to add both garlic and onion (they both do this) directly to the pizza or if you want to add it to the sauce put it into a little water and microwave it until the water just begins to boil, this will denature the enzymes in the garlic/onion responsible for this dastardly deed and you won't need to worry about making tomato jelly.

Tom Lehmann/The Dough Doctor  
2836

**[Neapolitan Style / Re: Pizzeria Da Attilio dough in wooden boxes](#)**

Wooden dough boxes are wonderful for inoculating the dough with good bacteria. They were used in cracker production up until the early 60's then we had to get rid of the wood dough troughs and use steel troughs, when we did this the flavor of the crackers changed. We discovered the inoculation that was unknowingly taking place, replicated/cultured the bacteria and added it back to the dough as an ingredient, problem solved. Gotta love those wood dough boxes!

Tom Lehmann/The Dough Doctor  
2835

**[Forum Info / Re: Norma](#)**

Going to miss your posts but glad to see that you're sticking around. Keep us posted on what you're up to.

Tom Lehmann/The Dough Doctor  
2834

**[Neapolitan Style / Re: To what point is the optimum for kneading pizza dough?](#)**

There are three ways to develop gluten, hand kneading, machine mixing and biochemically.

What Bill is referring to is basically biochemical gluten development where we combine the ingredients together just until we get a smooth dough but not to develop the gluten to any extent, then we allow the dough to ferment for a period of time (usually 24-hours or more) during which time the gluten is developed biochemically resulting in a very extensible gluten film, it is then folded (kneaded) a couple of times to redistribute the gas cells within the dough and mixing is considered to be completed. Unless you're making bread or just want to have arms like the village blacksmith kneading the dough by hand in an attempt to develop the gluten structure is not needed or even desirable in pizza dough production. In fact, after a world wide trip back in the 1970's during which I documented how bread was being made in developing countries I reassessed my whole view of hand kneading the dough for making bread too and instead of extensive hand kneading I developed a method where the dough was made by literally stirring the ingredients together and fermented for 4-hours, the dough was then turned out of the fermentation container and kneaded a few times until a smooth dough was achieved. Because of the biochemical gluten development this was very fast and easy to accomplish (like Bill said), we could then mould the dough into the desired shape(s) and finish by proofing and baking. I saw this procedure being followed almost exactly as shown when I visited a very large bakery in Romania. Mixing bowls were about 4-feet across and 3-feet deep, water went into the bowl, then salt, sugar and yeast (I know, bad idea), followed by the flour (90kg.), this was mixed by two men with what looked to be boat oars each about 4-feet in length, they mixed/stirred until the "dough" had the consistency of thick oatmeal, then they went to the next one and repeated the process (there were 60 bowls in all in that bakery), when they were finished "stirring" they removed the dough from the mixing bowl and loaded it onto a wagon that was transported to the kneading area where several men would cut the dough into smaller size pieces, knead the dough for a few times and set it aside, then move on to another table and repeat the process. After they had chunked and kneaded the dough on five tables they returned to the first table, cut the dough into pieces for making beehive loaves, the pieces were loosely rounded and placed into prepared beehive baskets for final proofing, after proofing the dough was turned out from the baskets onto an oiled baking sheet and baked to a rich dark brown color. This was a continual process with truck loads of bagged flour arriving several times during the day. By the way, those two guys stirring the ingredients together.....not an ounce of fat between them, just muscle and sinew. Remember, this was communist Romania and everybody had a job....but not all jobs were easy. Point is, biochemical gluten development has been around for a very long time and it works quite well, especially if you want to have a well developed gluten film which is still very extensible and easy to work with. When the same level of gluten development is achieved through machine mixing you end up with a very tough, elastic gluten structure that is more difficult to work with unless long fermentation times are employed and you get something in between the two with hand kneading to full gluten development but like I said, you get quite a work out doing so.

Tom Lehmann/The Dough Doctor  
2833

### [\*\*American Style / Re: I try and i Try.... And i Try!\*\*](#)

Looks good enough to eat! ^^^  
Tom Lehmann/The Dough Doctor  
2832

### [\*\*Neapolitan Style / Re: Pizzeria Da Attilio dough in wooden boxes\*\*](#)

Wood bagel boards were banned a number of years ago but you can still find them occasionally and they would make a great liner for a plastic dough box.

There has been a fair amount of research done over the past few years on the anti microbial properties of wood (dough boxes, dough troughs, bagel boards, bench tops, etc.) and yes, it has been found to be safer than plastic which develops deep scratches and is all but impossible to clean/sanitize. Wood has the same problem but because of the anti microbial properties and because any microbes present tend to be the most predominant in the food/dough being made (typically some form of lactobacillus) there really isn't any problem....now, try to convince the food safety people of that.

Tom Lehmann/The Dough Doctor  
2831

### [\*\*Chitchat / Re: Members opinion / feedback on how banning is currently implemented\*\*](#)

I agree that this is the best forum to discuss everything pizza and pizza related but every once in a while someone gets too worked up over whatever or is just having a bad day. I can and do appreciate the burning desire we all have to make a better or different kind of pizza or just learn more about it but at the same time whether asking or answering a question or contributing in any manner it's important to consider how your communication will be perceived by others. I for one find it offensive when someone uses foul or offensive language/words in any context, even if it's part of their vernacular as you just know someone is going to take it wrong and think it's a personal attack or wrongly feel a level of hostility (especially with members who might have just recently joined us). In these rare instances I think a personal warning should be sent to the offender, then if after a couple of reminders they continue the offense this is when some kind of action would be justified.

Tom Lehmann/The Dough Doctor  
2830

### [\*\*Neapolitan Style / Re: To what point is the optimum for kneading pizza dough?\*\*](#)

One of the things we used to do with our students was to make the dough one day (the dough was well under mixed and all but impossible to open into a skin) then the dough balls were cold fermented for 24-hours, brought to 50F and we opened the dough balls into skins so thin you could actually read through it...a beautiful example of full gluten development. It was a strong gluten film too as we would have five or six students form a circle with each grasping a part of the dough skin, they would gradually pull on the dough to continue opening it to see just how big they could get it. We were usually able to finesse the dough out to 30-inches or more...that was for a 12-ounce dough ball. Biochemical gluten development and fermentation do go hand in hand as it is the by products of the fermentation process which result in the biochemical gluten development. If you add a sourdough to the dough and then mix it to full gluten development we always got an extensible but sticky dough for our efforts.

Early on in our research we used to make a dough and divide it into individual dough balls and place them into the cooler in individual plastic bags, then we would begin removing dough balls at 8-hour intervals and opening them into skins taking care to open them all in a similar manner, we would note how the dough handles as well as the quality of the gluten film that we got from each dough ball. In the end we were able to watch the progression of biochemical gluten development and find the best time to achieve optimum gluten development for the product being made (normally either bread or pizza). Anything which impacts the

fermentation rate of the dough will affect the time necessary to achieve a specific level of gluten development so the time will be specific to each dough formulation as well as dough management procedure employed. It's interesting to note that the dough will achieve full gluten development (this is where the gluten film is VERY THIN and CLEAR without any significant visual webbing seen in the film, once this has been achieved the gluten will start to become softer and more extensible (this can be a good thing when making pizza) until the dough finally becomes so soft and extensible (it is said to open itself) that it is difficult to handle. It was during these tests that we discovered that while the best bread is usually made when the gluten shows full development, the best pizzas are usually made after this point and closer to where the dough is becoming excessively soft and extensible. We also found out the hard way that dough which will be opened using a dough sheeter/roller should be closer to the full gluten development point than those which will be opened by hand or using a dough press/hot press, it has to do with the way the dough flows through the sheeting/reduction rolls, not enough development and the sheeter spits out chunks of dough rather than a sheeted dough mass, too much development and the dough is inconsistent in thickness or better yet it sticks to the sheeting/reduction rolls :(.

Tom Lehmann/The Dough Doctor  
2829

### **Chitchat / Re: Safety First**

One that I remember which was related to pizza was a lady with long hair in a pony tail as she was preparing something in a bench top mixer her hair became entangled in the spinning agitator...you can paint the rest of the picture.

Another one happened in a wholesale bakery back in the 1950's, a large dough (most likely about 1,500-pounds in weight) was being ejected "kicked out" of the mixer by the mixer operator, the mixer helper saw that the dough was beginning to be pulled back into the mixer (this is common with horizontal mixers aka barrel mixers) so he stood in front of the dough trough positioned in front of the mixer to receive the dough, as he grabbed the dough to hold it from being pulled back in, the gluten won the fight and quickly pulled the dough back into the running mixer, with the dough being somewhat sticky/tacky the helper was unable to free himself from the grip of the dough and was pulled into the running mixer along with the dough. The outcome was fatal. Then in the early 70's, same scenario, but this time a person was standing in front of the mixer as the dough was being kicked-out, the dough was successfully discharged into the dough trough but a large piece of dough that was clinging to one of the agitator bars was flung out of the mixer and seriously hurt the individual when it struck him in the head. I've seen my fair share of them first hand too, and they're never pretty. One that we all need to be highly aware of happened to one of my technicians, while mixing dough in a Hobart A-200 mixer she was standing next to the mixer watching the dough being developed, then for no apparent reason she simply put her hand into the mixer...OUCH!

Investigation showed that when a person watches a dough being mixed (probably anything spinning) you develop what is called the "strobe" effect, this is where you see the dough and the hook but don't visualize the movement. I had to test it for myself, yes it can and does happen! Bet you never saw that on a warning label on your dough mixer. I used to tell my group that every piece of equipment is like a predator, just waiting for you to make a single mistake, then it jumps out and grabs you, sometimes with dire consequences.

Moral of the story.....BE CAREFUL!  
Tom Lehmann/The Dough Doctor  
2828

## [\*\*Sicilian Style / Re: My first pan pizza!\*\*](#)

We would need to know more about the dough, like the finished (mixed) dough temperature and the type of yeast you're using. The amount calculates out to 0.8% (very high for IDY, a bit high for ADY and a bit low for CY) With a high yeast level and a finished dough temperature much over 80F fermentation could progress at a pretty lively pace. Maybe that's what you were seeing? As for placing a pan on top of the proofed dough to keep it from over proofing or getting too thick during the baking process, it is possible but I don't recommend it and it will take some pretty serious holding force to keep a run away dough in check during the oven spring stage of baking. After par-baking the crust be sure to de-pan the crust and invert it onto a cooling screen/rack immediately upon removal from the oven. Inverting the crust helps to flatten the top out.

Tom Lehmann/The Dough Doctor  
2827

## [\*\*Sicilian Style / Re: My first pan pizza!\*\*](#)

PB wheels;

IDY provides approximately 25% greater activity than ADY when used at equal levels. When substituting IDY for ADY just remember to reduce the amount of IDY by 25% for the same level of yeast performance that you got using the ADY.

Tom Lehmann/The Dough Doctor  
2826

## [\*\*Dough Clinic / Re: Swimming upstream with NP hybrid dough?\*\*](#)

JPB;

Before doing anything else I would suggest incrementally increasing the dough absorption as this will allow the dough to open more during oven spring allowing for better bake-out. See, the issue here is that we don't know if we have achieved maximum bake-out yet or not. So what's recommended is for you to do some more test bakes (I know how much you hate to do that by the look of your great pizzas!) using both maybe 700F as your long, low temperature bake and 800F as your high temperature bake, see if you can achieve what you are looking for at either of these temperatures along with the increasing absorption. If you find that at some point the finished crust starts going the other way, getting softer and more chewy go back to just before where this started and that will be your optimum (not to be confused with maximum) dough absorption and baking conditions for that SPECIFIC dough formulation and dough management procedure. Now you are ready to start all over again using a new/different dough formula or I would suggest just a different flour blend. In this case I think I would favor going with more of a weaker flour like the "00" flour in the flour blend. Reasoning being that the more extensible gluten structure will tend to promote more oven spring BUT keep in mind that "00" flours typically do not exhibit good fermentation tolerance and it will require a lower dough absorption so you will need to be looking at both of these aspects of your new dough during testing.

Now you're getting a taste of what the pizza side of my career has been like. It's like a never ending pizza party where you keep meeting new friends who you never knew you had. :chef:

Tom Lehmann/The Dough Doctor  
2825

## [\*\*Neapolitan Style / Re: To what point is the optimum for kneading pizza dough?\*\*](#)

Yes and no....allow me to explain. Yeast by itself cannot effectively leaven a dough, it must have a small air nuclei which is thus expanded into the cell structure we are accustomed to seeing in yeast leavened doughs. You are correct in that mixing and/or kneading the dough does incorporate air into the dough but it is not this air which creates the necessary nuclei, instead it is the air in the ingredients in the mixing bowl that provides the nuclei. Just make a dough sometime by just gently stirring the ingredients together without any kneading at all and you will see the development of the familiar cell structure. The ONLY way to mix a dough without this nuclei is to mix it under a strong vacuum which will pull all of the air out of the dough. There is a commercial mixing system that does this to some extent for making a finer crumb structure in pan bread, it's called the Tweedy Mixer or the Chorleywood Bread Making Process. Without the air nuclei the dough will just sit there as if it didn't contain any yeast at all, in the above mentioned bread making process a small amount of measured air is incorporated into the dough to develop a very small, fine cell structure desired by consumers in the U.K.

Tom Lehmann/The Dough Doctor  
2824

### **Sicilian Style / Re: My first pan pizza!**

Norcoscia is "spot-on" with his advice.

A par-baked crust is a crust that is baked either with or without sauce (typically about 1/2 of the sauce) and then removed from the pan and either held at room temperature for later use or immediately dressed and placed back into the oven to complete the baking process.

A pre-baked pizza is one which is completely baked on a raw dough, removed from the pan and allowed to cool for use at a later time but more commonly placed into a temperature/humidity controlled cabinet (like a Hatco cabinet) for use/sale by the slice. Pre-baked deep-dish pizzas DO NOT reheat very well at all, this is why they are almost always held in some type of a temperature/humidity controlled cabinet to keep them at serving (legal serving) temperature (minimum 140F).

All baked pizzas should be removed from the pan as quickly as possible after baking, failure to do so will result in moisture being trapped under the pizza resulting in a wet, soggy bottom crust...yummy!

Tom Lehmann/The Dough Doctor  
2823

### **New York Style / Re: camping pizza**

Bamajj;

And they used to call me "Camp Mama", my friend, you put me to shame! :-D I would make some dough balls, place in plastic bags, and freeze without any prior fermentation. First day at camp site is set-up day, so no pizza. That night remove frozen dough balls from the cooler and place in an empty cooler where they will cold ferment over night and into the next day, remove from the cooler as needed to make the skins and dress for pizza (the skins, not the attire as this will be an informal affair) :-D. That night make a dough using a dry mix that you made at home (all ingredients except oil and water). Add the mix to a suitably sized bowl (large plastic bucket can work quite well, and it already has a fitted lid and is easy to transport and you can keep your pizza tools in it when it isn't filled with fermenting dough). Make a dish in the center of the dry mix and begin adding water while hand mixing, when the dough is completely formed stop mixing, lightly oil the sides of the bucket, loosely lid the bucket and set aside to ferment over night. After breakfast on the following day remove the dough from the bucket and knead on a lightly oiled plastic table cloth/covering (about \$3.00 at Walmart), pick

a suitable color if you're so inclined, mine is red. Spring clamps work well to affix it to a table. Knead the dough a few times (don't get carried away), divide it into desired size pieces (eyeball it) this is a CAMPING TRIP, not a formal pizza party. Lightly oil each dough ball and get a few kids to help placing them into individual plastic bags, twist the open end into a pony tail and tuck it under the dough ball as you place it onto a sheet pan or other flat surface, mine is a piece of 1/2-inch Melmine laminate that serves double duty as a pizza cutting and serving table as the dough balls are removed. A 2 X 4-foot piece will cost you about \$10.00 at Menards. Allow the dough balls to ferment at ambient (hopefully in the shade), until you're ready to open them into skins, open the skins on that piece of Melmine laminate, dress and bake. Don't forget to bring extra dusting flour!

Dough Formula:

Flour: 100% (KABF or equivalent)

Salt: 2%

Sugar: 2%

IDY: 0.2%

Oil: 2% (this is portioned out using a measuring cup at the camp site)

Water: 60% (this is portioned out at the camp site)

Weigh all ingredients except for the oil and water together to make a single day's worth of dough..whatever that amount is.

Using a hand whisk blend together. You don't need to get carried away here either as this will be for a single dough.

Transfer to a plastic bag and close with a twist tie.

Repeat for as many days as you feel you might want to make pizzas on.

I bestow upon you my crown as "Camp Mama"....you will have truly earned the title! ;D

Have fun and send us some pics!

Tom Lehmann/The Dough Doctor  
2822

### **Neapolitan Style / Re: To what point is the optimum for kneading pizza dough?**

Why sift the flour?

1) To remove flour beetles.

2) Remove flour beetle larvae (wormy flour).

3) Clumpy flour (Indian meal moth infestation in your flour, sifting removes the larvae and the clumps)

4) Flour got wet and has clumped, sifting will remove the clumps but probably not a good idea to use the flour due to the potential for presence of aflatoxins due to fungi now growing in the flour.

If your flour is clean and relatively fresh there is no need to sift it unless the "recipe" being followed calls for volumetric portioning "sifted" flour.

Sifting of the flour will not impact air nuclei formation.

A dough docker is used to CONTROL bubbling on the top surface of a dough skin during baking, it is not used to aerate the dough in any manner. I've never seen a dough docker used on a finished (baked) crust of any kind.

Tom Lehmann/The Dough Doctor  
2821

### **General Pizza Making / Re: High rate of oil in the dough**

We did an analysis on commercial frozen pizzas a good number of years ago and we

found that fat content of commercially made pizzas was quite a bit higher than that found in many chain and independent pizzerias.

Why you ask?

PEOPLE LIKE FAT, people buy things that appeal to them and satisfy them, frozen pizza companies are in the business of selling pizzas to make a profit, more pizzas sold = more \$\$\$\$.

How much fat did we find in those commercial crusts? The lowest was I believe 16% and all the way up to about 25% if I remember correctly. To put this in perspective, this is about the same fat content as found in many rich sweet doughs and is even in the realm of a croissant. Tell me people don't like sweet rolls and croissants :-D. I don't remember who it was anymore but someone was even making pizzas on what they called a "croissant" crust.

Granted, it does make a different type of crust, it makes for a very tender eating crust and if made as a thin crispy crust it will not be heavy, or dense at all, just consider a pie crust, about the same fat content, dry and crispy. And don't forget that your favorite club crackers will contain upwards of 8 to 10% fat, thin and crispy but made using only about 35% dough absorption.

As for healthy eating, that's a personal thing. For a lot of families pizza is the main entree of a meal and calories count for them, granted, they may not all be good calories, but calories are calories (9-calories per gram of fat, regardless of the type). For me, Yes, I do try to eat healthy so I find a crust that I like and then control the calories by specifying what toppings I want on my pizza, makes it taste better that way too. :)

Tom Lehmann/The Dough Doctor  
2820

### **Dough Clinic / Re: Dough was like a rubber band!**

What happened is that you balled it up 3 to 4-hours before "TRYING" to open the dough balls into skins. Let's change your procedure to a more user friendly one. After the 72-hour CF scale and ball the dough, place it back into the fridge to CF until the next day when you are ready to make your pizzas. Remove the dough balls from the fridge and allow to warm AT room temperature until the internal temperature of the dough reaches 60F, then with minimal handling, begin opening the dough into skins.

Let us know how this works for you.

Tom Lehmann/The Dough Doctor  
2819

### **General Pizza Making / Re: High rate of oil in the dough**

I used to do a presentation on "healthy pizza" where we did a 50% wheat crust, with no added fat, just regular white bread flour, whole wheat flour, salt, yeast, and water. For cheese we did a 50/50 blend of a tofu based cheese from Galaxy Nutritional Foods and regular low fat, part skim mozzarella cheese which gave us a 50% reduction in cholesterol without a reduction in the actual amount of "cheese" added. Toppings were poultry pepperoni, bison pepperoni, chicken, meat and fish analogs and vegetable toppings. This was a very "passable" pizza and an excellent alternative for those who couldn't otherwise eat a slice of pizza due to dietary restrictions.

Tom Lehmann/The Dough Doctor  
2818

### **Dough Clinic / Re: Dough was like a rubber band!**

A dough/pizza skin is what keeps the sauce and toppings off of the oven deck, it's

what, when baked, becomes the crust. When you round the dough you tighten the gluten structure, this is very evident after the dough has been allowed to ferment a period of time (like 72-hours), when you do this 3 to 4-hours is not enough time for the gluten structure to fully relax, that is why you are experiencing so much dough memory/snap-back when trying to open the dough into skins. We just recently had some discussion on this very topic here at Pizza Making.

Tom Lehmann/The Dough Doctor  
2817

### [\*\*New York Style / Re: camping pizza\*\*](#)

Russ, you're not taking it....I'm bestowing it upon you! :chef: You pull this off, and I don't think you will have any problems in doing so, and you'll have rightfully earned it. I did it for 6 to 10 people, never 50 out in the woods.

For the toppings I just use a few cheap Styrofoam coolers with the ingredients packed on the bottom and a pound, or so, of dry ice on the top, be sure to place some crumpled paper between the dry ice and the ingredients and again over the top of the dry ice. Use one cooler for each days ingredients and tape closed to seal tightly, I have gotten up to 4-days of decent refrigeration in an unopened cooler, this is why you don't want to put everything into one single cooler.

While you're at it, make some extra dough, open it into skins, brush with melted butter and bake until very lightly browned, sprinkle with cinnamon and sugar mixture and put back into the oven for a few seconds, bring out and set aside to cool for a few minutes, while still warm drizzle with a powdered sugar-water icing, cut it and call it "dessert". For variety you can add streusel, chopped pecans, thin sliced apples (cored but not peeled), grapes cut in half, sliced strawberries or a few dabs of Ricotta cheese, any or all work well.....put those kids to work, they'll love the opportunity to help put the toppings on the pizzas! :)

Tom Lehmann/The Dough Doctor  
2816

### [\*\*Chitchat / Re: Safety First\*\*](#)

I like that, my kinda humor ;D

After all, he was sorry for her "loss" :-D :-D

I've got to remember that.

Tom Lehmann/The Dough Doctor  
2815

### [\*\*Shop Talk / Re: 7/11, Stanislaus problems?\*\*](#)

All of the Stanislaus tomatoes are grown immediately around Modesto, California with but a single harvest for their entire yearly inventory. I had the honor of being invited to view their tomato harvest and processing a few years ago, it's quite an operation. Between gearing up, for the harvest, processing, and sanitation they then shut down the entire processing facility for maintenance and up-grading which takes about 3-months bringing them right back to the cusp of the next harvest.

Tom Lehmann/The Dough Doctor  
2814

### [\*\*Dough Clinic / Re: Dough was like a rubber band!\*\*](#)

QJ:

You're absolutely right...you've been reading too many of my posts. :)

I just recommended what I did as it represented a more minimal change from that what he was already doing but doing as you suggest would without a doubt solve

any open issues and he would still have the option of allowing the dough to CF for 24 or more hours.

Tom Lehmann/The Dough Doctor  
2813

**[Dough Clinic / Re: Swimming upstream with NP hybrid dough?](#)**

Reduced fermentation tolerance means that the gluten forming proteins in a particular flour are not as resistant to the byproducts of fermentation (primarily acid attack) as other flours. A dough made using flour with a genetic characteristic of reduced fermentation tolerance will exhibit softer, more extensible and weaker characteristics with extended fermentation times than a dough made using a flour with good to excellent fermentation tolerance. Most, if not all U.S. flours intended for bakery application are milled from wheat varieties specifically selected for exhibiting better than average tolerance to fermentation. All of the "00" flours that I've worked with over the years seem to do pretty well at 24-hours CF fermentation but begin to get "squirrely" at 48-hours CF. It's just the nature of the beast.

Tom Lehmann/The Dough Doctor  
2812

**[General Pizza Making / Re: High rate of oil in the dough](#)**

You probably don't want to use lecithin in a pizza dough. Lecithin is an emulsifier, it binds water and oil together. With an emulsifier added to the dough, the dough will exhibit a propensity to allow water released from the sauce and toppings during baking to enter into the dough where it can be difficult to bake out AND it also sets the stage for the development of a "dreaded gum line" just under the sauce.

Without an emulsifier present the oil creates a barrier to water/moisture penetration/migration but with an emulsifier present you might say it exhibits an affinity to moisture.

Tom Lehmann/The Dough Doctor  
2811

**[Sicilian Style / Re: My first pan pizza!](#)**

When you prepare the dough for baking as Norcoscia outlines the crumb structure can be much more open and porous "airy" , it will bake out better and it will eat like cotton candy. Here's a little trick you might want to try. Use a plastic shortening in the pan initially, it grips the dough making fitting the dough to the pan MUCH EASIER, then AFTER par-baking the crust, immediately remove it from the pan, wipe out the pan with a clean paper towel, add about an ounce or so of oil (I personally like to use peanut oil) to the pan and immediately place the crust back into the still warm pan, dress as desired and place back into the oven to finish baking. That oil will give the pizza a fried bottom crust which is significantly different from that of the crust you get when using a plastic fat to grease the pan. You COULD use oil in the pan right from the get go but then the dough is more problematic to fit to initially fit to the pan. This gives you the best of both worlds.

Tom Lehmann/The Dough Doctor  
2810

**[American Style / Re: Same Day Dough](#)**

My formula is almost identical to GumbaWill's, after mixing I scale, round into balls, and allow to ferment at room temperature for at least 6-hours but occasionally it may go as long as 8-hours, or whenever we're ready to eat. Then I just plop it out of the bag onto a floured surface, open it into a skin, dress it and bake it at 500F. Nothing special, nothing to call the photographers in for, just fresh, hot pizza that

everyone eats without any complaints, at least none that I can hear.

Tom Lehmann/The Dough Doctor

2809

### **Shop Talk / Re: A year and half in pizza business. Need help.**

To summarize, we need to know specifically what issue you're having or seeing with your dough/pizza, your dough formula, flour brand/type/bag name, dough management procedure, type of oven, baking platform (screen, pan, disk, oven deck/hearth) and lastly what kind of cooler do you have (walk-in or reach-in). With this information we should be able to either identify the cause of the problem or give you some good direction to finding a resolution.

Tom Lehmann/The Dough Doctor

2808

### **Chitchat / Re: Deep dish not pizza?**

Hummm, I always thought lasagna was a pasta dish??? Have I been wrong all these years?

There are some arguments/disagreements that are just not worth the effort to participate in, in my books this is one of them. He is free to believe whatever he wants, I'd just leave it at that.

Tom Lehmann/The Dough Doctor

2807

### **Dough Clinic / Re: Beginner dough question**

If you use a "bulk" fermentation and then ball you will need to allow the dough balls to ferment again until the balls are sufficiently soft and extensible to be easily opened into skins. This could easily take 6-hours or more. Truth is, when making pizzas at home there is no difference between fermenting the dough in bulk or in individual balls, for this reason I firmly believe that it is much easier to just ball the dough right after mixing, place the dough balls into plastic bags or suitable containers (both methods previously discussed in great detail here) and then allow the dough to ferment for the desired length of time, then when you're ready to make your pizzas just turn the dough out of the bag or container onto a floured surface and immediately open the dough into a skin, dress and bake.

Tom Lehmann/The Dough Doctor

2806

### **Dough Clinic / Re: Sauce**

I'm assuming we're talking about Saporito Super Heavy Pizza Sauce and Full Red Pizza Sauce as opposed to Full Red Extra Heavy Tomato Puree? That being the case I would probably consider going a little higher on the Full Red to restore some of the more pronounced flavor that will be lost from the Saporito, but all cards would be "off of the table" if you're adding any water to this the sauce. If you're adding any water go ahead and make the substitution and add less water (Full Red Sauce will be thinner than Saporito) so you will want to adjust the amount of water being added to give you a similar viscosity as you got with the 7/11 and Saporito blend.

Tom Lehmann/The Dough Doctor

2805

### **Dough Clinic / Re: Sauce**

It'll give you a good flavored, slightly thick sauce base to build upon. The 7/11 will provide flavor while the Full Red Puree will provide extra body to the sauce, great

for a deep-dish as is but will most likely need to be thinned a little for most other pizza applications.

Tom Lehmann/The Dough Doctor  
2804

### **Dough Clinic / Re: Reheating slices in a food truck**

I have a hard time seeing where you can make and sell enough pizzas from this to make much of a profit BUT if you load the truck with ready made pizzas and re-freshen/reheat/re-crisp the slices using a small deck oven (about all that will fit in there) you might have yourself a little gold mine.

Tom Lehmann/The Dough Doctor  
2803

### **Dough Clinic / Re: Reheating slices in a food truck**

A small counter top oven like a small air impingement oven, or a small deck oven or possibly even a toaster oven would work well in this application. For display of the pizzas think of using something like a Hatco Pizza Display Cabinet with both temperature and humidity controls, and some good pictures too. Recon time will be around 1-minute or so.. If you want, you can also add a small amount of additional, fresh cheese to the top of the slice immediately before it goes into the oven for reheating.

Tom Lehmann/The Dough Doctor  
2802

### **Dough Clinic / Re: Sauce**

That would be my starting point for the base.

Tom Lehmann/The Dough Doctor  
2801

### **Chicago Style / Re: Steel Vs. Stone on A Deep Dish**

When I make deep-dish pizzas I like to use a stone but I also place a screen on the stone upon which I place the pizza for baking. I've found it to be somewhat problematic controlling the bottom crust color when I bake deep-dish pizzas directly on a stone or steel due to the heat transfer properties when the pan is in direct contact with the stone/steel. My usual baking temperature for deep-dish pizza is 450F. I've found that when I bake the pizzas in this manner the top and bottom are done at the same time, when I used to bake directly on the stone/steel I got a charred bottom crust all too often.

Tom Lehmann/The Dough Doctor  
2800

### **Dough Clinic / Re: Swimming upstream with NP hybrid dough?**

When looking at the picture of the slice it appears that the center of the crust is very dense while the edge/rim is open and porous. A dense crumb structure can result in tougher, more chewy mastication properties. If your dough formula doesn't include any oil you might see if the inclusion of 2% oil gives you something closer to what you're looking for....that dense crumb structure in the center of the pizza still concerns me though.

Tom Lehmann/The Dough Doctor  
2799

### **Sicilian Style / Re: Pizza Pan**

It looks to be a stamped steel pan about 1-inch deep with a well seasoned finish.

You might look on the Internet for a rectangular baking sheet pan or check with Lloyd Pans at <lloydspans.com> for a similar pan with a non-stick black finish.  
Tom Lehmann/The Dough Doctor  
2798

**Dough Clinic / Re: Swimming upstream with NP hybrid dough?**

JPB;

When the center section of the skin is too thin it does not provide the necessary insulating value between the hot deck and the sauce and other toppings....in short, heat from the deck passes right through the dough and is dissipated as steam during baking, this results in the crust never getting hot enough to provide maximum crispness. I would be looking at either of two options, 1) open to the same diameter but used more dough (test increasing dough weights), 2) open the same dough weight to a smaller diameter skin (test by opening the dough ball into skins of decreasing diameter (1-inch increments). This is the same reason why most super thin Neo pizzas do not retain their crispy bottom crust for more than a couple of minutes...if you're lucky.

Tom Lehmann/The Dough Doctor

2797

**Neapolitan Style / Re: Help with Ankarsrum kneading, please! My Neapolitan dough won't relax.**

Reduce the dough absorption to control dough flow during the fermentation process. Flouring the bowls will not work as the flour will just pull moisture from the dough turning it into "school paste".....not exactly a release agent. Oiling the container is still going to be your best bet. You don't need more oil than what is necessary to put a shine on the bowl. Do you have any specific reason for not wanting to use ANY oil?

Tom Lehmann/The Dough Doctor

2796

**Dough Clinic / Re: Unbromated flour**

Agreed, just plug in the unbromated flour and go on with life. No need to mix any differently, absorption stays the same (assuming the same flour just unbromated). The only place where you "might" see a slight difference is our at five days or so, but I don't think there are many pizzerias holding their dough that long (yes, the big box chains do but they manage their dough using excellent temperature control as well as a very effective dough management procedure that is built around the use of unbromated flour). For a typical pizzeria using a bromated flour and managing the dough out to 3, 4-days max, and changing over to an unbromated flour it is basically a "plug and play" proposition.

Tom Lehmann/The Dough Doctor

2795

**Dough Clinic / Re: Reheating slices in a food truck**

Well, let's go with the 4-hour food safety rule. Following this you can bake your pizzas and hold them for up to a total of 4-hours at a temperature under 140F and above 40F. So you can bake the pizzas and store in an insulated cabinet then transfer to the temperature/humidity controlled cabinet for display and warming as needed.

Tom Lehmann/The Dough Doctor

2794

## [\*\*Dough Ingredients / Re: Baker percentages\*\*](#)

Saturation? I think he may had said "absorption" which is a common term for the amount of water added to a dough. The amount of dough absorption used will vary with the type of pizza/dough you're making, for example, it can be as low as 35 to 45% for some cracker type crust doughs and in the high 60's to low 70's for Neapolitan pizza doughs to be baked in a very hot oven. On average, most pizza doughs will come in at about 62% dough absorption. The amount of yeast given is in line with compressed yeast (CY) for an average pizza dough. This is why it is important to ALWAYS know what type of yeast is being used or recommended. While many pizza dough formulations don't contain any oil or not much more than 1%, 2 to 3% oil is not out of line with what many like to refer to an an American style pizza. Again, when discussing dough formulations one has to know what type of dough/pizza is being discussed.

Tom Lehmann/The Dough Doctor  
2793

## [\*\*Neapolitan Style / Re: Help with Ankarsrum kneading, please! My Neapolitan dough won't relax.\*\*](#)

In referencing "reduce the dough absorption" means to reduce the amount of water added to the dough/use less water when making the dough. Try LIGHTLY oiling the bowl and I think you will find that the dough comes out a lot easier.

Tom Lehmann/The Dough Doctor  
2792

## [\*\*General Pizza Making / Re: Autolysis\*\*](#)

Actually, it has little to nothing to do with the gluten, it's all about getting the flour hydrated. If the flour is hydrated during the mixing process it adds about an additional 2-minutes to the mixing time (important in a commercial bakery). Gluten is formed when the flour proteins (flour) are agitated in the presence of water, in order for the gluten to be formed those proteins (glutenin and gliadin) have to be hydrated. This is where the autolyse is incorrectly said to develop gluten, it aids rapid gluten development but it does not specifically develop gluten. Salt and sugar will compete for the water and exhibit more osmotic pressure than the wheat proteins so either of these ingredients will slow the migration of water into the wheat proteins. This is the very same reason why in a commercial baking application a mixing procedure called the delayed salt mixing procedure is almost universally used today, it is also why when making pastry doughs such as sweet dough and Danish dough the sugar and salt are never added right up front, they are held back until the gluten has reached the desired stage of development. An autolyse will also improve the dough handling properties of a high absorption dough as it allows the use of a higher dough absorption than what could be used if just adding all of the water at the time of mixing.

Tom Lehmann/The Dough Doctor  
2791

## [\*\*Dough Ingredients / Re: Baker percentages\*\*](#)

Hey man! My brains get scrambled better than my breakfast eggs after a long day in the saddle too :-D.

Tim won't be doing anymore videos as he has retired from General Mills but Bill Weekly will be carrying the torch for him.

Tom Lehmann/The Dough Doctor  
2790

## [\*\*General Pizza Making / Re: Fresh yeast?\*\*](#)

RPF;

The typical use level for a "typical" dough formula is 1% compressed yeast. This works well when using up to 3-days CF (dough actually is in its prime at 2-days/48-hours). While some may argue that there is a difference in finished product flavor resulting from the type of yeast used our research has shown that there is no difference in flavor PROVIDING the dry forms of yeast are used correctly AND it is used at the CORRECT substitution level. I think this is why some people think there is a difference in flavor.....it is used at the wrong substitution level which results in a different fermentation rate resulting in a different flavor profile in the baked product.

Tom Lehmann/The Dough Doctor  
2789

## [\*\*General Pizza Making / Re: Autolysis\*\*](#)

Yeast is not typically used in the autolyse but it is used in the poolish and biga. The poolish is used to great extent in the commercial baking industry where it is known by a different name "brew" or "liquid ferment" or "liquid sponge". Brew is the most common term for it. In this application the brew is fermented for 2 to 6-hours under highly controlled conditions, it is then passed through a heat exchanger and brought down to 40F or a little less and maintained under these conditions with sweep agitation (1 r.p.m.) to prevent settling and used over the course of several hours of production with a specific amount metered into each dough at the time it's mixed.

Tom Lehmann/The Dough Doctor  
2788

## [\*\*Neapolitan Style / Re: Poolish vs. Biga vs. Criscito\*\*](#)

Good grief! We have discussed this topic at great length, all one needs to do is to spend a little time looking through some of the recent posts. By the way, those discussions were excellent and should help anyone not familiar with all of the different types of "pre-ferments" and how they impact dough rheology and finished product characteristics including flavor and aroma become better versed on aspects of making them, using them and how they will impact the finished crusts.

Tom Lehmann/The Dough Doctor  
2787

## [\*\*Dough Ingredients / Re: Tough Dough\*\*](#)

Jon;

What can you tell us about your dough formula, how you're mixing it (sounds like your hand mixing but we need the details) and how you're managing the dough. Caputo "00" flours are significantly lower in protein content and are not as strong, gluten wise, as All Trumps flour which has a typical protein content of just over 14%. More than likely dough absorption will need to be increased, mixing changed as well as some changes possibly in dough management to get more fermentation on the dough to address the stronger gluten characteristics of the A.T. flour.

Tom Lehmann/The Dough Doctor  
2786

## [\*\*Shop Talk / Re: Instant yeast vs. Compressed yeast\*\*](#)

The correct direct substitution of IDY for CY is 29%. This means that the amount of IDY needed to replace any specific amount of CY will be 29% of the weight of the CY.

As you are asking about a dough based on 50# of flour weight I'm assuming you're asking in reference to use in a commercial/pizzeria application. In this type of application allowing the dough balls to proof at room temperature prior to placing them in the cooler is not a preferred method as it can significantly contribute to inconsistencies in the dough which can result in dough failure (failure is not an option in a pizzeria) or variation in the finished pizzas (good or bad) which will be recognized by your customers with less than desirable results.

If you have specific questions or if you can provide more details I'm sure we can help you.

Tom Lehmann/The Dough Doctor  
2785

### **Neapolitan Style / Re: Poolish vs. Biga vs. Criscito**

When it comes to sourdough starters it's all about trial and error. All sourdough starters, unless inoculated with a known starter, and meticulously maintained, will vary in strength and composition. Once you have your sourdough made and you're successfully maintaining it you will need to experiment with the amount to use to make the pizza you are trying to achieve using YOUR specific dough management procedure. There are MANY posts here from individuals who have mastered the cultivation of a sourdough starter but have found like other things in life, it seems to have a mind of its own when it comes to amount to use. While one source might say to use 5% with your starter you need to use 20%, that's just the way it is. Then too we hear about someone who has had their starter going for some time and now it seems different, like I said...mind of its own. In some cases the microflora of the starter can change resulting in a totally different, and unexpected outcome. In cases like this sometimes it can be recovered or you may just need to start all over again and because it is the luck of the draw as to what the microflora will consist of the flavor may not be exactly the same, ditto for the use level.

Tom Lehmann/The Dough Doctor  
2784

### **Dough Ingredients / Re: Tough Dough**

Why salad oil instead of "20Xvirgin" olive oil? You can use olive oil if you wish, I just like to save my good olive oil for use on the pizza immediately after baking where you will get a significant flavor contribution so I use the cheapest stuff I have on hand to oil the dough balls and/or the dough container, call me cheap, call me practical, just DON'T call me late for pizza! ;D

Tom Lehmann/The Dough Doctor  
2783

### **Dough Clinic / Re: RT ferment Question**

Assuming equal times the dough with room temperature fermentation will receive significantly more fermentation than the same dough cold fermented for the same period of time. With the greater amount of fermentation it would make sense that the room temperature fermented dough might have more of the aromatic compounds formed during fermentation, hence your observation of a different aroma. Taste on the other hand, is a result of acids formed during the fermentation process as well as sensitivity to specific tastes (we all taste things differently). This is why we talk about "flavor" a combination of taste and aroma, as opposed to just taste.

As for the difference in crispiness, it is well recognized that there is a link between increased crispiness and fermentation, but like everything else, it has its limitations, just like there is a link between increased dough absorption and

increased crispiness.

As for a dough subjected to a 48 to 72-hour CF it has been my observation that our doughs (remember all doughs are different) are at their prime for producing great finished crusts at 48-hours and are still quite good but are beginning to exhibit some handling issues after 72-hours CF, mind you, this is based on a pizzeria environment, using my dough management procedure, bough boxes, a walk-in cooler and opening the dough balls into skins by hand.

Tom Lehmann/The Dough Doctor

2782

### **Neapolitan Style / Re: This evenings attempts**

Black pudding and eggs! My favorite!! :)

Tom Lehmann/The Dough Doctor

2781

### **Other Types / Re: pizza dough recipe for cone pizza machine**

Do you have the Konos machine?

Tom Lehmann/The Dough Doctor

2780

### **Pizza Toppings / Re: Sesame seeds**

I love to use sesame seeds on the bottom pf the pan when making any pan style pizza for the toasted sesame flavor they provide. If you lightly brush the edge of the crust with water immediately before baking you can sprinkle sesame seeds onto the edge crust where they will be toasted lending the same effect to any pizza. We have also carefully ground toasted sesame seeds using a food processor and blended the meal into the flour for a unique flavor in the finished crust (Note: when used in this manner the seeds must be toasted or a bitter flavor will be your only reward).

Tom Lehmann/The Dough Doctor

2779

### **Pizza Toppings / Re: Sesame seeds**

I don't like using oil to get the sesame seeds to adhere as they do not adhere well using the oil and just end up falling off unless handled very carefully. For home use it's probably OK but in a pizzeria application the water works better.

Tom Lehmann/The Dough Doctor

2778

### **Dough Clinic / Re: High gluten flours to try for NYC style pizza?**

A uniform golden hue on the crust is usually due to brushing the skin with olive oil immediately prior to baking...sorta like using an egg wash on a pastry dough to achieve the same effect on crust color. If semolina flour was used the crumb will also have somewhat of a yellowish tint to it.

Tom Lehmann/The Dough Doctor

2777

### **Newbie Topics / Re: Don't know what i'm doing wrong at the moment**

That's quite some dough formulation.

I would suggest reducing the IDY by 50% (use only half of what you're presently using. Then I would highly recommend eliminating the garlic powder since it is a reducing agent, meaning that it causes the dough to become soft, weaker and more extensible.

Start with those two changes and let us know how it works for you.

Tom Lehmann/The Dough Doctor

2776

### **Dough Clinic / Re: When to freeze?**

Yeast that is actively feeding (fermenting) does not tolerate freezing as well as yeast that has either not yet begun to ferment or has been fermenting for a shorter time. In essence, the sooner you can freeze the dough after mixing the better it will be. Studies have shown if you can freeze the dough before it has received 4-hours of fermentation you can expect to get up to 10 to 14-days of frozen shelf life, if you are only wanting to freeze the dough for a few days to a week on the outside you can freeze it at any point while the dough is still in good condition and the yeast is still actively fermenting. The best way to freeze the dough is to make flattened out dough balls (pucks), lightly oil the dough, wrap only once in stretch wrap and place into the freezer until solidly frozen (this will take 4 to 6-hours depending upon dough temperature and size) once thoroughly frozen the dough puck can be wrapped more securely with stretch wrap. To use your frozen dough, remove from the wrapping while still frozen, place into a suitable container and put into the fridge for at least 16-hours to slack-out (thaw), then bring out of the fridge and allow to warm for use or if you wish you can allow the dough to warm to 50F and then place it back into the fridge to cold ferment for whatever time you wish, just be sure to remove the dough from the fridge and allow it to warm to 55 to 60F before opening it into a skin.

Tom Lehmann/The Dough Doctor

2775

### **Dough Clinic / Re: tough dough question**

QJ;

By chance, do you have an external gas pressure regulator installed in the gas line just prior to the oven?

Tom Lehmann/The Dough Doctor

2774

### **Shop Talk / Re: Instant yeast vs. Compressed yeast**

If you are using 2-ounces of CY (compressed yeast) you would replace it with 16.47-grams of IDY (instant dry yeast) or 1-ounce (28.4-grams of ADY (active dry yeast). Your math is correct :).

Regardless of the type of yeast being used, the dough should be scaled, balled and into the fridge within 20-minutes of completion of dough mixing. Remember to adjust the water temperature to give you a finished (mixed) dough temperature in the 75 to 80F range. Most of the time this will require water at 65 to 70F. Don't forget to cross-stack for at least 2.5-hours, then down-stack for the remainder of the cold fermentation time.

This will give you the most consistent dough possible for use in a pizzeria over a three day period.

Tom Lehmann/The Dough Doctor

2773

### **Dough Clinic / Re: tough dough question**

QJ;

Assuming the oven is properly set-up for the gas that you are using, the Marsal ovens just don't have a recovery issue (huge burner capacity and thick decking). But is the dough is being over fermented resulting in collapse of the center section

of the pizza due to the weight of the toppings the pizza WILL NOT bake properly resulting in a guaranteed tough, chewy finished crust with about as much crisp as a wet noodle. 550F is a good baking temperature for what you are trying to achieve. The oven will take about 2-hours to come up to full baking temperature from cold (that thicker deck takes some time to completely heat up).

Tom Lehmann/The Dough Doctor  
2772

### [\*\*Newbie Topics / Re: Don't know what i'm doing wrong at the moment\*\*](#)

If they are making an emergency dough as you've described the garlic powder would make perfect sense as it would provide the necessary extensibility normally provided by fermentation for opening the dough into skins. As for the yeast level, 12.5-grams per kilo of flour would be a good starting point for such a dough. Mix the dough to a smooth consistency/appearance plus 3 additional minutes at medium speed or 5 minutes at low speed. The idea here is to achieve more gluten development through mechanical mixing as it will not be achieved through biochemical gluten development as there will be no fermentation period.

Immediately after mixing scale, ball, and lightly oil the dough balls, set aside and cover with a sheet of plastic and allow the dough to rest at room temperature until ready for use (60 to 90-minutes). One other thing, be sure to adjust the dough water temperature so as to achieve a finished dough temperature in the 90 to 95F range. Remember, this dough is going to be moving FAST, when it's ready for opening it's time to get busy...it will NOT wait for you.

Tom Lehmann/The Dough Doctor  
2771

### [\*\*Other Types / Re: pizza dough recipe for cone pizza machine\*\*](#)

They didn't provide a dough formula for you to work with?

Here is one to get you started:

Flour: Bread flour (11% protein content) 100%

Salt: 2%

sugar: 3%

IDY: 1%

Water: 58% (variable)

Hard fat flakes: 10% If you cannot source hard fat flakes use butter, margarine or shortening, place it into the freezer until THOROUGHLY frozen, then shave it and place the shaved pieces back into the freezer for about 30-minutes, then chop the shaved pieces into flakes with the largest being about 8-mm in width. Place the shortening back into the freezer until you're ready to use it for making the dough. The shortening can be prepared well in advance and stored in the freezer. The reason for doing this is to achieve a desirable open, course (porous) crumb structure.

Procedure:

Place water in mixing bowl (70F/21.1C) followed by salt and sugar then the flour and the IDY. Mix the dough at low speed for 2-minutes then at medium speed just until the dough begins to look smooth, change back to mixing at low speed and add the frozen fat flakes and continue mixing JUST until they are thoroughly incorporated, take the dough to the bench for scaling and balling. place the dough balls on lightly oiled sheet pans and cover with a sheet of plastic, allow to proof at room temperature until the dough forms smoothly without tearing or fracturing. If the dough needs to be softer/firmer adjust this by adding more or less water. Normal fermentation time for the dough balls is about an hour.

**NOTE:**

If you do not want to have the more open, porous crumb structure you can use and high quality shortening, butter or margarine to replace the fat flakes.

When building the cone put a small amount of sauce in first, then the meat and/or vegetable toppings with the cheese on top. DO NOT OVER FILL. You will also need to have a form for holding the cones upright for baking.

Tom Lehmann/The Dough Doctor  
2770

**[Dough Clinic / Re: tough dough question](#)**

Good point! A long mixing time can result in a tougher than normal eating characteristic. It's not a big deal where the salt is added when making pizza dough as the salt delays the gluten development, this is why large commercial bakeries almost universally use the delayed salt mixing method (the idea being to reduce total dough mixing time as much as possible). By this method the dough is mixed normally and at a point approximately 4-minutes before the dough is completely mixed, the salt is added and incorporated during the final four minutes of mixing.

Tom Lehmann/The Dough Doctor  
2769

**[Dough Clinic / Re: tough dough question](#)**

QJ;  
Keep us posted.

Tom Lehmann/The Dough Doctor  
2768

**[Home Ovens / Re: Home oven. Stone dropped in temp after setpoint was reached](#)**

Is it possible that your oven, as you said is so well insulated that it reached set temperature where the thermostat probe is located but the stone had still not fully come to temperature, the burner would then shut off but the stone would continue sinking heat from the oven chamber thus dropping its temperature?

Just a "SWAG".  
Tom Lehmann/The Dough Doctor  
2767

**[Newbie Topics / Re: Don't know what i'm doing wrong at the moment](#)**

Your common tap water, just so long as it doesn't smell like sulfur, should be just fine. Those minerals are good for the dough just as they're good for us. The most important aspect of the water you use is the temperature of the water, that's how the finished (mixed) dough temperature is regulated. For the most part, CF doughs will require a finished dough temperature in the 70 to 75F/21.1 to 23.8C range while RT doughs may perform best with a finished dough temperature in the 80 to 85F/26.6 to 29.4C range. As you will soon find out as you begin experimenting just about everything is variable to a degree when making pizzas, this is why we call them "rules" of formula balance not "laws" of formula balance. When it comes to dough management there are also great differences in how the dough is managed, some with good results, some with not so good results, this is something that you will need to work out for your SPECIFIC dough formulation and desired end results (that's the fun part) :chef:

By the way, I believe Peter has the function of ingredients cataloged, he should be able to direct you to them with his magic wand, he's the best of the best when it comes to searching for something here.

Tom Lehmann/The Dough Doctor  
2766

**Dough Clinic / Re: Swimming upstream with NP hybrid dough?**

Now that looks good enough to eat! :)

Tom Lehmann/The Dough Doctor  
2765

**Newbie Topics / Re: Don't know what i'm doing wrong at the moment**

A couple of questions come to mind;

- 1) What type of surface are you baking your pizza on?
- 2) What color is your aluminum pan? Bright, dark anodized, or dark seasoned?
- 3) Why not allow the dough to warm to at least 50F/10C prior to opening?

Tom Lehmann/The Dough Doctor  
2764

**General Pizza Making / Re: Anyone use parchment paper like this?**

Wood prep peels are much better than most metal peels. Metal peels should always be used to remove the pizzas from the oven.

Tom Lehmann/The Dough Doctor  
2763

**Newbie Topics / Re: Don't know what i'm doing wrong at the moment**

The seller of your pan gave you excellent advice to "season" your pan prior to use. Remember, DO NOT wash a seasoned pan, and NEVER allow it to soak in soapy water, NEVER, NEVER. If you do the seasoning will begin to peel off like a bad sunburn and you will need to strip all of the remaining seasoning off of the pan and start all over again :(. Don't worry about the dough "smelling bad" that's probably just the aroma of fermentation (a good thing). If your dough is fermenting too fast you will need to reduce the amount of yeast used in your dough formulation.

Tom Lehmann/The Dough Doctor  
2762

**Shop Talk / Re: Blodgett 1000 Aftermarket parts/mods?**

You might want to run your question across George Mills over at the PMQ Think Tank <[www.pmq.com](http://www.pmq.com)>. George is the resident expert on ovens over there.

Tom Lehmann/The Dough Doctor  
2761

**Dough Clinic / Re: Beef Fallow**

The only difference between Crisco, lard and beef tallow is the flavor imparted by each. NOTE: Essentially all lard sold outside of a specialty food shop will be deodorized lard, this means all of the flavors associated with lard have been removed by a distillation process which renders the lard essentially flavorless as compared to that which you get in Mexico or a specialty food shop selling non-steam distilled lard. Beef tallow imparts its own unique flavor as long as it hasn't been steam distilled. Crisco, made from vegetable oils is designed to have a neutral flavor (that's another way of saying it's flavorless). By the way, tallow, because of its high melting point (about 135F) needs to be melted and slowly added or it will crystallize as it contacts the cooler dough/ingredients thus forming lumps of hard tallow that cannot be mixed out of the dough.

Tom Lehmann/The Dough Doctor  
2760

## **General Pizza Making / Re: A question about reheated pizza.**

There was once a place actually called "Cold Pizza". Just ask any college student what the "other" name for cold pizza is....BREAKFAST.

Sure cold pizza is different from fresh pizza but never enough to cause me to turn my nose up at it...it's still good! If I'm going to reheat my pizza I've found that just "nuking" it for 30-seconds and then placing it in a hot frying pan to reheat and crisp up the bottom works well for me, sometimes I just nuke it for 45-seconds and eat it like it is, yes, the crust will be soft, but the whole thing will be acceptably warm and still "not bad".

I guess I'm just not a Pizza Snob"....I like it all, granted some more than others.

Like I always say"I've never had a pizza that I couldn't learn to like". ;D

Tom Lehmann/The Dough Doctor

2759

## **Dough Clinic / Re: tough dough question**

My experience is that a well managed CF dough will have a maximum use life of 3-days with 4-days on the outside. The yeast seems to deplete its nutrient between the 3rd and 4th day. This results in the yeast beginning to cannibalize itself thus releasing glutathione into the dough which weakens the dough as well as making it feel tacky and lack the desired amount of oven spring. With an added 2% sugar to the dough formula it's possible to stretch this out to a maximum of seven days.

Whey can be included in a dough formulation for the purpose of providing crust browning even with long fermentation times (whey is 70% lactose sugar which is not fermentable by bakers yeast).

Tom Lehmann/The Dough Doctor

2758

## **Shop Talk / Re: Instant yeast vs. Compressed yeast**

How much of what kind of yeast were you using?

Tom Lehmann/The Dough Doctor

2757

## **Chitchat / Re: Clear birdfeeder for window**

My oldest son is half owner of a large landscaping company in Olathe, KS and he owns a farm where they work out of, because of all the nursery stock he has an interest in keeping the insect population in check and to do that he encourages birds and bats to take up residence on the property. My part of this scheme is to keep him supplied in bird houses, bat houses, and bird feeders. One of his contractors installs a lot of privacy fencing and he saves his cut-off scraps for me to use in building the houses and feeders. With all of his vehicles he has a regular supply of license plates for me to use for roofing materials on many of the houses. A quick trip over to the local resale store always provides materials to use from chain to wire, to drawer pulls for perches, to small hardware such as hooks and eye bolts for next to nothing, then when I'm not building them I'm repairing them. If anyone wants to see pictures of these just P.M. me with your e-mail and I'll be glad to forward them to you from my phone.

Tom Lehmann/The Dough Doctor

2756

## **Shop Talk / Re: Instant yeast vs. Compressed yeast**

I'm guessing that your IDY level was too low as 0.58-ounce per 50# of flour weight calculates out at only 0.0725% while a typical IDY level would be between 0.25 and

0.4% (2 to 3.2-ounces).

Tom Lehmann/The Dough Doctor  
2755

### **Dough Clinic / Re: tough dough question**

QJ:

If you want to make a dedicated 3 to 4-day dough try this:

Reduce the finished dough temperature to between 65 and 70F.

Use normal yeast level (I use 0.375% IDY)

Manage the dough as per my printed procedure.

The dough will NOT be ready to use before 48-hours but it will be good at 72 and 96-hours.

Tom Lehmann/The Dough Doctor  
2754

### **Dough Clinic / Re: Sourdough dough too friable**

I totally agree with Steve's approach. A few things to keep in mind; With an ash content of 0.78% (not 78%) the amount of whole grain is quite high. The bran content of the whole-wheat portion exerts a cutting effect upon the gluten as it is forming which weakens it significantly, this is why vital wheat gluten is commonly added to doughs of this type as it provides the needed strength to be able to handle the dough after fermentation. Under the best of conditions I seriously doubt that you will be able to get more than 48-hours usable life from a dough made entirely with this flour. Due to the acidity of a sourdough there is additional weakening of the gluten so the dough strength is again being compromised.

Steve's suggestion is a good one, first learn to make decent dough using that flour without the addition of any sourdough starter, then after you have accomplished that, begin introducing increasing levels of sourdough starter (5% increments?) to see if the dough retains its integrity with your improved dough handling experience.

Also remember that dough made from a flour of this type will typically require a higher absorption than a dough made using white flour. This is due to the hydration properties of the bran which is present in greater quantity in your specific flour. Remember too that bran hydrates much more S L O W L Y than the protein and damaged starch in the flour so it is not uncommon to see a dough which feels great when mixed become hard or firm and difficult to handle after 30 to 60-minutes. If you go back through the archives here you will find discussion in which I outlined the procedure for finding the correct dough absorption to use with flours of the type which you are using.

Tom Lehmann/The Dough Doctor  
2753

### **General Pizza Making / Re: Dividing Dough - New method (for me)**

This is essentially the same procedure that we taught all of our seminar students to use. It is, by far, the best procedure to use when dividing a large dough (think pizzeria). What you do is cut the first piece and weigh it, then based on the actual weight cut the next piece longer or shorter and weigh again, when you have the correct length to give you the desired weight "fire for effect" meaning that you can cut a number of pieces and have them at or very close to the target weight. We used to make a contest out of it to see how many pieces each of us could cut that were "spot-on" weight wise. My personal best was eight (8) pieces. By using this method one person can divide 80+ pounds of dough into individual pieces weighing 9 to 12-ounces each, in 20-minutes or less. No other hand cutting method will allow

for this speed.

By the way, remember those delicious bagels you used to buy? All of the bagel formers are fed dough which is mechanically divided by the exact same procedure, an operator cuts the dough into "ropes" of about 3-feet in length and places it onto a narrow conveyor, then a cutter automatically cuts the dough to a length which provides the correct dough weight for the type of bagel being made. The dough pieces in this case are referred to as "plugs". Something to watch for the next time you're in a bagel shop. :)

Tom Lehmann/The Dough Doctor  
2752

### **New Forum Members / Re: Pizza Dough**

If the dough formula came from a local retail baker it was more likely than not something pretty close to that of a French bread dough formula (100% flour; 2% salt; 55% water; 1% compressed yeast; and maybe 1 or 2% oil). Nothing special as you can see, but if this all took place many years ago (30 or 40) there is a good possibility that he was using a direct dough process where he would mix the dough in the morning, allow it to ferment at room temperature all day, knocking it down if necessary, and then around 7:00 p.m. grab a hand full of dough, cut it free using a knife, flour the dough piece (DO NOT BALL), pass it through a dough sheeter two or three times, trim it to desired diameter, dress and bake. The trim scrap was saver for use later in the day/evening if necessary, if it wasn't needed it was added to the next new dough as scrap and the process repeated.

Can you provide a time frame as to when they opened?

Tom Lehmann/The Dough Doctor  
2751

### **Pizza Cheese / Re: Cheese for Deep Dish**

I try to slice mine between 1/16 and 1/8-inch thick. Being precise at cheese slicing is not my forte.

Tom Lehmann/The Dough Doctor  
2750

### **Sauce Ingredients / Re: How would you go about making a very spicy sauce?**

Red chili pepper flakes and if you want more try using jalapeno, serano, anaheim, Thai dragon peppers are also good (Thai chili flakes), and there's always habaneros.

Put whatever chilis you opt to use into a bowl, add a little oil and nuke to heat the oil thus extracting the good stuff from the seeds, then blend into your sauce.

Tom Lehmann/The Dough Doctor  
2749

### **Dough Ingredients / Re: Additions to Your Dough**

In reading the attached link one of the problems that I see is that they are continually vacillating back and forth between bread dough and pizza dough. The technology employed in making bread dough is significantly different from that used to make pizza doughs. I had to chuckle when I read the amount of ascorbic acid recommended.....it's measured in parts per million (ppm). A typical dose of A.A. is in the 30-ppm to 90-ppm range with maximum doses running at or close to 200-ppm. Granted, there is no Federal maximum use level for the baker to add (there is a limit to how much a flour miller can add) but there is a point of diminishing returns which comes in at around 200-ppm.

Lecithin, whether it comes from soy or eggs (yolk) is not a recommended ingredient in pizza dough as it is an emulsifier (binds water and fat together) so when lecithin is used in the dough the water is more difficult to bake out but more importantly the fat in the dough now binds the water rather than repulsing it which can be a major contributor to the development of "the dreaded gum line".

Tom Lehmann/The Dough Doctor  
2748

### **Sauce Ingredients / Re: How would you go about making a very spicy sauce?**

OK, now that the "whole" story has come out, the Thai dragon peppers/Thai chili flakes will probably be your best bet as it will provide the type of flavor your customers will be able to relate to.

Tom Lehmann/The Dough Doctor  
2747

### **Dough Ingredients / Re: Additions to Your Dough**

I'm not sure I understand your question but if it is in regard to needing to use a short fermentation time to achieve an open, porous crumb structure, just the opposite is true. To achieve a very open crumb structure a long fermentation time is used. Compared to bread doughs, typical pizza doughs receive considerably more fermentation.

Tom Lehmann/The Dough Doctor  
2746

### **Dough Ingredients / Re: GM Gold Neapolitan Flour**

Place your hand into the flour with your fingers spread apart and rake your hand through the flour, after capturing and clumps in your hand bounce your hand up and down, if the clumps break apart and just filter out between your fingers, all is good, if they appear to bridge the gap between your fingers and the flour appears to be stringy you have an infestation problem with Indian meal moths. If any question send us some pics.

Additionally, if you sift the flour and it all goes through the screen you're good but if it builds up on the screen the flour is infested as the flour particles are adhering to the moths web.

Tom Lehmann/The Dough Doctor  
2745

### **Dough Clinic / Re: Why does oil make dough elastic?**

First of all, oil does not make the dough more "elastic" (create more "snap-back") but to an extent it does contribute to the extensibility of the dough. This is due to the oils ability to lubricate the gluten allowing for easier stretching of the gluten/dough especially during the critical phase of oven spring. As for elasticity and extensibility, you are correct in that they cannot be used as synonyms as you have correctly stated:

Elastic/elasticity: The ability of the dough to pull back (snap-back) to regain its original shape after being pulled or deflected in shape.

Extensible/extensibility: The ability of the dough to retain its new shape after being pulled or deflected into a new/different shape.

The under fermented dough exhibited a very elastic characteristic while the over fermented dough was too extensible to handle easily.

Tom Lehmann/The Dough Doctor  
2744

### [\*\*Dough Clinic / Re: Beef Fallow\*\*](#)

Remember how GOOD McDonalds French fries USED to taste? That's because they WERE fried in beef tallow, but now since tallow is not consumer friendly they are frying their French fries in a different fat (I believe it used to be a blend containing a good portion of palm but I don't know what they use today).

I find it amusing how good people find the food to taste when they make it like it used to be made back in the good old days when food was good...yes, it has changed.

Tom Lehmann/The Dough Doctor  
2743

### [\*\*Newbie Topics / Re: Don't know what i'm doing wrong at the moment\*\*](#)

Remember that the garlic powder is also weakening the dough in addition to the fermentation so unless the fermentation chart is designed around YOUR specific dough formula and YOUR specific flour you should only use it as a guide, nothing more. Different flours exhibit a different tolerance to fermentation (a characteristic of the variety of wheats (grist) the flour is milled from). This is where YOUR fun begins!

Experiment with different dough temperatures (colder doughs ferment slower than warmer doughs) as well as different yeast levels (less effects of fermentation on the dough with lower yeast levels), and don't forget about the dough absorption too, while you might get an initially firmer dough with lower absorption it will exhibit greater strength characteristics and be easier to handle after the fermentation period. :chef:

Tom Lehmann/The Dough Doctor  
2742

### [\*\*Dough Clinic / Re: Why is my dough doing this?\*\*](#)

Yes.

Tom Lehmann/The Dough Doctor  
2741

### [\*\*Dough Clinic / Re: tough dough question\*\*](#)

QJ;

Now you know why I always say to "record" the finished dough temperature for each and every dough :).

Don't worry, that's how we learn our most important lessons.

Tom Lehmann/The Dough Doctor  
2740

### [\*\*Neapolitan Style / Re: Oiling/flowering dough balls surface & gluten test?\*\*](#)

I always put just a very thin coating of oil in the container and the dough ball just plops right out. When you "flour" the dough ball and place it into a container the flour just hydrates and becomes one with the dough, serving no useful purpose unless you have a very low absorption dough. As for the "window pane" test for gluten development, pizzas doughs are not mixed to full gluten development, they are mixed JUST to a point where the dough takes on a smooth appearance....no need to mix any more, so the gluten test is best left for the bread bakers who need to develop their bread dough to a much greater level of gluten development.

Tom Lehmann/The Dough Doctor

2739

**[Stones/tiles/steel, Pans & Accessories / Re: A man with 1 thermometer knows what temperature it is....](#)**

Here is a little tip;

When buying a dial/stem bi-metal type thermometer look for one with a hex nut located on the underside of the dial. This is the calibration adjustment. If it doesn't have one, save your money to buy one that has it. To calibrate use an oral thermometer (calibrated for 98.6F) then place into a bowl of water and adjust the temperature until you get a reading close to 98.6F, compare this temperature against your shop thermometer and adjust as necessary. This method is much better than using ice water since the calibration temperature will be closer to the actual working temperature of the thermometer making for more accurate readings.

Tom Lehmann/The Dough Doctor  
2738

**[General Pizza Making / Re: The importance of mixing](#)**

#4 is only performed after the dough has been fermented for a period of time and it works much better on a large dough than a small one such as is typically made by home pizza makers. The purpose of punching the dough is as follows:

- 1) To keep the dough in the container.
- 2) To help equilibrate the dough temperature.
- 3) To provide additional nutrient to the yeast.

Tom Lehmann/The Dough Doctor  
2737

**[Dough Clinic / Re: What causes dough to do this, and how to replicate](#)**

Commercial pizzerias accomplish it through the application of a special starch wash to the crust prior to baking. This starch is available from National Starch Company (Decatur, Illinois?). You can get another form of this but to a MUCH lesser magnitude and without the color from a cold dough, this is why we see it on crusts made from frozen dough.

Tom Lehmann/The Dough Doctor  
2736

**[Newbie Topics / Re: Don't know what i'm doing wrong at the moment](#)**

So, let me see, you're proposing to add the garlic after baking? Why not just add it to the pizza, on top of the dough just prior to application of the sauce or as an ingredient when dressing the pizza?

Tom Lehmann/The Dough Doctor  
2735

**[Dough Clinic / Re: Help with forming pan pizzas with high hydration dough](#)**

The process you have outlined is very similar to what I've seen done commercially. The par-baked crusts can be stored for a full day or more without any issues, just store at room temperature, not under refrigeration. Once you have an inventory built up you will be working from that inventory and making more par-baked crusts during the day. My advice is to work against a fixed daily inventory.

Tom Lehmann/The Dough Doctor  
2734

**[Starters/Sponges / Re: Avoiding cross contamination between starters?](#)**

Just be sure to use metal utensils, not wood or plastic.

Tom Lehmann/The Dough Doctor

2733

### **Dough Clinic / Re: tough dough question**

A cold dough going into the fridge will experience significantly less fermentation before it drops to 40 to 45F where yeast is relatively dormant than a warmer dough. There seems to be a point which appears to be at around 70F where, with a correctly functioning cooler, the dough will exhibit little gain in volume over the CF period. A dough of this type, unless exposed to CF for over 3-days or given a lot of post refrigeration proofing prior to opening, would be tougher than a "normally" fermented dough. Temperature is the number one driver of fermentation.

Tom Lehmann/The Dough Doctor

2732

### **Dough Clinic / Re: Chewy dough**

Oh my, sooo many things to consider;

Can you ferment the dough longer?

Can you use a lower protein content flour? Remember, N.Y. pizzas are made using All Trumps flour (14+% protein content) to achieve that chewy mastication property).

Make the dough skin a little thicker (use more dough to make the same size pizza).

Consider using oil in the dough.

Reduce or eliminate sugar fro the dough formula.

Bake longer at a lower temperature.

Use less sauce (try using thin slices of fresh, ripe tomato instead of your regular sauce as a test but be sure to VERY LIGHTLY brush the skin with oil before application of the tomato slices).

Dough absorption should be maximized for the flour being used (softer dough = crispier crust).

Depending upon oven spring characteristics of your dough, a SLIGHT increase in yeast level might provide more oven spring resulting in a better overall bake = reduced toughness and crispier crust characteristics.

If hand opening make sure not to get thin spots in the dough skin.

This is a good starting point for things to consider. All of them probably won't apply to your dough so you might be able to eliminate some right from the start, any not eliminated will need to be explored through testing. I see more pizza parties in your future :chef:

Tom Lehmann/The Dough Doctor

2731

### **Dough Clinic / Re: A question about sugar saturation**

The answer is "osmotic pressure".

Yeast feeds through osmosis and when you have much more than about 2% sugar in the dough it upsets the osmotic pressure around each yeast cell thus hindering the cells ability to draw nutrient through the cell wall membrane. If you were to place CY and sugar together (in direct contact with each other) the osmotic pressure exerted by the sugar (or salt) would be so great as to plasmalize the yeast by pulling the plasma (glutathione) out of the cells and giving you a brown sticky syrup. This is why we increase the yeast level in sweet doughs containing high levels of sugar (18 to 25%), if we didn't it would take forever to ferment and proof the dough.

Tom Lehmann/The Dough Doctor

2730

### [\*\*Newbie Topics / Re: Salt crumbs in the dough\*\*](#)

The salt will most likely dissolve in the water that it will pull from the dough and subsequent handling of the dough will take care of the dispersion of the salt. The worst thing that might happen is that you could get pronounced salty flavors if the dispersion is poor. When we use the delayed salt addition mixing method the salt is added right at the beginning of the last four minutes of the mixing cycle BUT the salt used in this application is a very fine salt (small particle size) which aids in both distribution and dissolving of the salt in the dough.

Tom Lehmann/The Dough Doctor

2729

### [\*\*Dough Clinic / Re: Activation of the CY and temperature targeting\*\*](#)

Why are you trying to activate yeast that is already activated? If you are machine mixing just crumble it into the flour and begin mixing, if you are hand mixing just place it into the dough water, regardless of temperature (within reason of course) and whisk it to achieve a yeast suspension, just takes a few seconds, then pour the yeast suspension into the mixing bowl and you're good to go.

Tom Lehmann/The Dough Doctor

2728

### [\*\*Newbie Topics / Re: Salt crumbs in the dough\*\*](#)

With regard to rate of fermentation it doesn't make any difference if the salt goes into the dough early or late in the mixing stage, all it's affecting at the mixer is the speed at which the gluten develops but since in pizza dough production we are not trying to achieve much gluten development it's a moot issue.

Tom Lehmann/The Dough Doctor

2727

### [\*\*Resources / Re: High Gluten Flour\*\*](#)

Here's the easy way to work with VWG;

- 1) Determine how much you want to increase the protein content of your existing flour.
- 2) Divide that number by 0.6 and that is the percent VWG you will need to add to whatever amount of flour you are using to bring the protein content up to whatever percent you wanted.

Example:

Your existing flour has 11% protein content and you want to increase it to 12.5% protein content.  $12.5 - 11 = 1.5\%$  protein increase is desired.  $1.5 \div 0.6 = 2.5\%$  VWG will need to be added to your flour to bring it up to the targeted 12.5% protein content.

NOTE: For each 1% VWG added to the dough you will also need to increase the dough absorption by 1.75%.

To add the VWG be sure to dry blend it into the flour using a whisk, just a few stirs with the whisk will be sufficient to disperse the VWG into the flour.

One other cautionary note:

There are different types of gluten, there is vital wheat gluten (VWG) and devitalized wheat gluten (DVWG), THEY ARE NOT THE SAME AND PERFORM VERY DIFFERENTLY.

There is also corn gluten which is NOT the same as VWG, in this case the word

"gluten" is synonymous with protein so corn gluten is nothing more than corn protein and since there is NO glutenin or gliadin in corn protein it will not perform as VWG.

Tom Lehmann/The Dough Doctor  
2726

### **[Dough Clinic / Re: Activation of the CY and temperature targeting](#)**

Just remember that CY has a limited shelf life (about 3-weeks) for home use and 2-weeks for pizzeria use, after that time it will begin to deteriorate showing progressively poorer fermentation properties and depending upon storage conditions, softer, weaker, more extensible doughs. CY must be held under constant refrigeration especially in warm climates (remove from fridge, weigh amount needed and immediately place back into the fridge). Keep in mind that depending upon your source/supplier, the CY may be anything from a few days old to well over a week old already so if you see deterioration in the yeast or in your doughs you will need to adjust the shelf life (time you can store the CY) accordingly.

Tom Lehmann/The Dough Doctor  
2725

### **[Pizza Cheese / Re: Beginner mozzarella cheese question](#)**

I also like to tear it apart (I liken it to peeling an orange) as this gives me the necessary thin pieces.

Tom Lehmann/The Dough Doctor  
2724

### **[Newbie Topics / Re: Salt crumbs in the dough](#)**

That sounds more like rock salt. Why not just use a finer grade of sea salt?

Tom Lehmann/The Dough Doctor  
2723

### **[Prep Equipment / Re: good deal on food scale](#)**

I'm not overly fond of the vertical viewing of the display screen but for the price I'd be willing to overlook that one objection. Look mom! No more excuses for not weighing the ingredients! :)

Tom Lehmann/The Dough Doctor  
2722

### **[Newbie Topics / Re: Salt crumbs in the dough](#)**

That would be correct, just so long as it's food grade.

Tom Lehmann/The Dough Doctor  
2721

### **[Prep Equipment / Re: good deal on food scale](#)**

Actually, 0.1-ounce = roughly 2.84-grams, not good for small dough sizes but OK for larger doughs, however in reading through some of the questions/answers I see a comment that it won't respond to less than 4-grams on the pan. I don't know if that means you need at least 4-grams on the pan to get it to respond or not. If so the tare of a container should take care of that. Would sure like to see a report back on this scale if anyone has one yet.

Tom Lehmann/The Dough Doctor  
2720

## [\*\*General Pizza Making / Re: Flat squares instead of round balls\*\*](#)

Due to the fact that you are using a sourdough starter at a high level, that's about par for the course.

Tom Lehmann/The Dough Doctor  
2719

## [\*\*American Style / Re: Same Day Dough\*\*](#)

SG;

Temperatures in the 90's as well as high humidity won't hurt the dough at all as it is essentially a no-time/short time dough process. I would recommend using cold water (50F) to make the dough as this will prevent getting a finished dough temperature above 90F which should be avoided if at all possible.

Once mixed allow the dough to ferment for a minimum of 2.5-hours (can easily go as long as 6-hours at room temperature under your conditions) before opening the dough balls into skins.

Tom Lehmann/The Dough Doctor  
2718

## [\*\*American Style / Re: Pizza baking sheet on top of steel\*\*](#)

Both PJ's and Domino's use air impingement ovens to bake their pizzas. The disks will NOT bake the same, or anything close, in any type of a deck oven as they do in an air impingement oven. I'm in agreement that your best bet might be to begin the baking process on a silicone baking sheet and then remove it after a couple minutes to finish baking right on the steel deck.

Tom Lehmann/The Dough Doctor  
2717

## [\*\*Dough Clinic / Re: Different thickness stones get the same result?\*\*](#)

- 1) Was there any sugar, eggs, milk, etc. in the dough formula?
- 2) Were you baking just undressed dough skins into par-baked crusts?

Typically what happens is that the thicker stone holds more latent heat thus not giving up as much of its heat to the pizza during baking so the bottom temperature remains more constant during baking thus providing a stronger bottom bake and the real test is when you place a second pizza on the same spot right after baking the first pizza.

If those were just crusts as they appear to be you most likely were not pulling much heat out of the stone so thickness wasn't as critical.

Tom Lehmann/The Dough Doctor  
2716

## [\*\*Neapolitan Style / Re: Slightly under-proofed?\*\*](#)

Place the basil leaves on IMMEDIATELY after removing the pizza from the oven, the heat will wilt the basil and release the flavor with no chance of charring it.

Tom Lehmann/The Dough Doctor  
2715

## [\*\*Dough Clinic / Re: My tough Dough\*\*](#)

It would help a lot to know your dough formulation as well as dough mixing and dough management procedures. How you bake the pizza can have a significant impact too, but for starters I'm guessing that you might be opening the dough skins too thin as this will result in a tough and chewy crust almost every time. Make another dough and when opening the dough into a skin experiment with different (thicker) skins. Thin cracker doughs are made much like a pie dough and as such I

really wouldn't call the dough "soft" by any stretch of the imagination, this is why it's important to know your dough formulation as well as procedures used in making and baking it.

Tom Lehmann/The Dough Doctor  
2714

**[General Pizza Making / Re: Flat squares instead of round balls](#)**

As pizza continues to morph we are seeing something of a trend for "free form" pizzas. The big box store chains will continue with the "cookie cutter" approach as it's somewhat necessary for portion control, and training, not to mention consistency of bake through a conveyor oven but for the independents with deck and stone hearth ovens we are beginning to break out of the round pizza mold. The most common departure appears to be an oval shaped pizza which still lends itself to cutting into relatively equal size pieces. I seldom ever strive for the perfectly shaped "round" pizza when I'm making pizza at home and I've not yet had a single person refuse it because it wasn't round, square or rectangular. :chef:

Tom Lehmann/The Dough Doctor  
2713

**[Dough Clinic / Re: Sourdough fermentation with hybrid dough..a question](#)**

Without knowing what the pH and TTA of the dough and SD started were I can only take a SWAG. I'm guessing that the amount of SD added lowered the pH of the dough to a point which was more favorable for the fermentation progress which was why you observed what might have been more rapid fermentation. Also, remember that with more SD the dough typically shows more softening (mellowing) due to the affects of the acid on the gluten forming proteins and dough softening can easily mimic the effects of over fermentation because in a way they are very similar in that an over fermented dough is more acid too, in this case you're just adding the additional acid in the form of the SD starter. I don't know if that bucket holds water or not, like I said....it's just an educated SWAG.

Tom Lehmann/The Dough Doctor  
2712

**[Dough Clinic / Re: too elastic](#)**

Brent;  
It sounds like the dough is over fermented and has developed the "bucky" characteristics of an over fermented dough.

Tom Lehmann/The Dough Doctor  
2711

**[Dough Clinic / Re: Why is my dough doing this?](#)**

Pizza Garage;  
You and I are of the same mind! ^^^  
Cold dough can even do that.Impossible to say which one is responsible without the details.  
Tom Lehmann/The Dough Doctor  
2710

**[Dough Clinic / Re: detroit style in a convection?](#)**

How big of an oven are we talking about here? If "big" is the answer how about a Garland Air Deck oven? No recovery time.

Tom Lehmann/The Dough Doctor  
2709

## [\*\*Dough Ingredients / Re: Sam's Club Bread and Pizza Flour\*\*](#)

I've not tried it but from the specs it falls in the General Mills Remarkable to All Trumps range so it should work quite well for a N.Y. style of pizza.  
Tom Lehmann/The Dough Doctor  
2708

## [\*\*Dough Clinic / Re: detroit style in a convection?\*\*](#)

Doughball;  
Everything has to be baked in a pan or on a disk or screen in the Garland Air Deck Oven. It is essentially an air impingement oven without a moving conveyor. Just to clarify: When you say "convection" do you really mean convection or do you mean air impingement? Huge difference between the two. If you mean "air impingement" then Shuboyje is absolutely correct in his response. I've worked in a number of pizzerias making Detroit style pizzas using air impingement ovens. If you are not familiar with air impingement ovens I would HIGHLY encourage you to learn as much about their operation as possible before buying one. If buying new you can have the oven set up with a top and bottom finger profile specific to your SPECIFIC needs. XLT and EDGE both do a very good job of this.

Tom Lehmann/The Dough Doctor  
2707

## [\*\*Dough Clinic / Re: detroit style in a convection?\*\*](#)

Db1;  
Thank you for clearing that up. We have tried and tried to make decent pizzas in those kinds of ovens but were never truly successful. Best to leave that oven to its intended purpose in my opinion.

Tom Lehmann/The Dough Doctor  
2706

## [\*\*Dough Clinic / Re: detroit style in a convection?\*\*](#)

In our research we saw this bottom characteristic more often when the doughs were not sufficiently fermented so you might try giving a couple of your dough balls an extra day of fermentation to see if that is indeed the issue in your case. Let me know what you see. I see no reason why you couldn't do canned vegetables for catering as well as chicken and just about anything else in a Garland Air Deck oven, you might need to place some of these items on a double sheet pan and cover the pot/tray that they're being heated in (this will protect them from the airflow thus turning your oven into something more like a convection or "hot box" oven). My "partner in crime" Jeff Zeak used to work the XLT booth at Pizza Expo and make just about anything you could imagine in their air impingement ovens using just a regular pizza top and bottom finger profile. You might contact XLT Ovens in Wichita, KS and ask them about the different things that Jeff made in their ovens. I mention this because the air deck oven is just like any other air impingement oven except that it has a stationary grid for a deck as opposed to a moving conveyor which gives the operator the ability to bake items for whatever length of time they wish as the oven is operated/tended just like any other deck oven.

Tom Lehmann/The Dough Doctor  
2705

## [\*\*Off-Topic Foods / Re: water buffalo ribeyes!\*\*](#)

I had some of those when I was in Australia....very good indeed but as I remember the meat is a ruby red making the steaks look like they were taken from an animal

that had been beat to death with a bat. But still very good!

Tom Lehmann/The Dough Doctor

2704

### [\*\*Newbie Topics / Re: Too much oil in dough ball container\*\*](#)

Just a few drops is all it takes, if you can see a shine on the inside of the container you have enough oil. Don't worry about extra oil, the pizzas coming out of the big box chains are made from dough balls that are brushed liberally with oil, it actually contributes to the crust color.

You pizzas look great!

Tom Lehmann/The Dough Doctor

2703

### [\*\*Dough Clinic / Re: detroit style in a convection?\*\*](#)

While on the topic, the second most common cause of the bubble that you're seeing is when baking the pizzas on a solid deck, especially a hot one. To test this theory try placing a screen under the pan for the first half of the bake. What happens in this case is the dough is expanded too quickly resulting in coalescing of the gas cells in the dough which creates one large bubble which is trapped under the crust. Where we had no choice in reducing the baking temperature a screen can help by slowing the heat transfer to the bottom of the pizza or if you want to take a reformulation approach reducing the dough absorption can also help, in this case the amount will be variable depending upon what the present dough absorption and dough viscosity are but usually a 3 to 5% reduction helps.

Tom Lehmann/The Dough Doctor

2702

### [\*\*Dough Clinic / Re: Why is my dough doing this?\*\*](#)

What kind of cooler are you working with tight now, a reach-in cooler?

Tom Lehmann/The Dough Doctor

2701

### [\*\*Off-Topic Foods / Re: water buffalo ribeyes!\*\*](#)

I've got a .375 Ruger that would put three of them in the freezer. :D

Tom Lehmann/The Dough Doctor

2700

### [\*\*Prep Equipment / Re: good deal on food scale\*\*](#)

Thank you for the report. It looks like it would be a great little scale for anyone who doesn't have one or who is short on cash or storage space. It would be nice if we could post this to an equipment page for future reference.

Tom Lehmann/The Dough Doctor

2699

### [\*\*General Pizza Making / Re: Dough Mangement\*\*](#)

Jerry:

Easy one to answer, leave the lid off of the container for about 3-hours after placing it into the fridge then apply the lid and forget about the dough until you're ready to use it (keeps this way up to at least 3-days). This should address the wet dough and big bubbles. The wetness is due to condensation forming inside the container and the bubbles are due both to the wetness and the heat build-up in the dough due to covering it right away. This issue is exacerbated when you have a high finished dough temperature (above 85F). One good way to get around the problem is to use

plastic "food" bags (not ZIP-LOCK bags). This has been discussed in detail fairly recently here.

Tom Lehmann/The Dough Doctor  
2698

### **Off-Topic Foods / Re: water buffalo ribeyes!**

OK, you've convinced me, I'll just admire them and dream of those great tasting steaks. Believe it or not, it wasn't too long ago when they were considered a nuisance, like deer in New Zealand (South Island). They taste good too! :drool:

Tom Lehmann/The Dough Doctor  
2697

### **Sauce Ingredients / Re: Is this that garlic-caused pectin gel that Tom Lehman has talked about?**

Typically, the entire mass just thickens usually to the point where spreading the sauce becomes problematic unless lots of extra water is added to thin it back out again to spreading consistency. I've never seen anything like those little "jelly balls" form but if I had to take a guess it would be that within the core of each of those balls is a small piece of garlic....something to take a close look at.

Tom Lehmann/The Dough Doctor  
2696

### **Prep Equipment / Re: Dimensions for a wood proofing box?**

The size of your dough fermentation box will need to be based on the spacing of the shelf rails in the wine cooler. If it doesn't have shelf rails then we typically size the boxes to be 25mm narrower and 50mm shorter than the inside dimension of the cooler box. As for height I'd suggest something about 75mm in height.

Tom Lehmann/The Dough Doctor  
2695

### **Prep Equipment / Re: Dimensions for a wood proofing box?**

Plan on placing the dough balls 2 to 2.5-inches apart which is a pretty standard spacing to allow for expansion of the dough balls. But do keep in mind that expansion of the dough balls is something that I cannot predict as it is influenced by a number of factors such as dough temperature, dough absorption, dough viscosity, amount of yeast used in the formulation, dough management procedure being employed, and how tightly the dough balls are rounded.

Tom Lehmann/The Dough Doctor  
2694

### **New York Style / Re: Need some input on how much IDY yeast is correct amount for a 24 hr CF**

June;

Malt (powder or syrup/diastatic or non-diastatic) = sugar. In some dough formulations malt may provide a slightly different finished crust flavor than regular sugar but in my humble opinion this is more important in bread making than pizza making due to the toppings masking crust flavors. Take your pick, sugar or malt, or use both if you want but keep in mind that if you use both at 2% you have just increased your total sugar level to 4%, twice of what it was originally and you will get more crust browning, maybe a little inhibition of yeast activity (depending upon the yeast level) and possibly a little sweetness in the finished crust. If you are familiar with Papa Murphy's Pizza crust you know what 5% total sugar tastes like.

Tom Lehmann/The Dough Doctor

2693

[\*\*Sauce Ingredients / Re: Is this that garlic-caused pectin gel that Tom Lehman has talked about?\*\*](#)

JKB;

That was my first thought too, they look like the grape tomatoes that I grew a couple years ago...about the same size too.

Tom Lehmann/The Dough Doctor

2692

[\*\*Dough Clinic / Re: problem with large air bubbles/blisters in the cornice\*\*](#)

What is your total flour weight?

Tom Lehmann/The Dough Doctor

2691

[\*\*Sauce Ingredients / Re: Is this that garlic-caused pectin gel that Tom Lehman has talked about?\*\*](#)

Very carefully dissect a few of the balls to see if somewhere within the ball you can find/see a small particle of your garlic. You might also do a "positive" test by simple making another sauce without the garlic to see if the balls develop in the sauce without the garlic, if they don't you've got both the answer and solution.

Tom Lehmann/The Dough Doctor

2690

[\*\*Dough Clinic / Re: How does pizza dough differ from dough intended for rolls/sandwiches?\*\*](#)

The answer to your question is : French Bread, Vienna Bread, Italian Bread, Bagels, Pretzels.

A typical formulation for pizza doughs would cover the formulation for all of the above. One year when we did our pizza seminar we had our students make pizza from commercially made frozen dough for each of these products to prove the point and the resulting pizzas were all very similar.

Tom Lehmann/The Dough Doctor

2689

[\*\*Dough Clinic / Re: Dough comes out too sticky at 60% hydration :\(\*\*](#)

Additionally, how are you mixing the dough and what is your dough management procedure?

Tom Lehmann/The Dough Doctor

2688

[\*\*Dough Clinic / Re: How to get crispier crust?\*\*](#)

Ted; There is a plethora of things which impact the crispiness of the crust. The protein content affects the potential crispiness of the finished crust. The main things that affect crispiness are:

Dough absorption: Higher is better (within reason)

Fermentation: Longer fermentation times promote more crispiness.

Baking: A longer, slower bake promotes more crispiness.

Hand forming the skin: Hand formed skins typically produce a crispier finished crust than those opened by machine or rolling pin (only applies to full diameter opening).

Less toppings is better: The fewer the toppings the easier it is to get a crispy crust.

Par-baked crusts: Par-baked crust will almost always give a crispier finished crust

than one that is baked from raw dough.

Tom Lehmann/The Dough Doctor

2687

**Dough Clinic / Re: Safest PH level and temperature for water?**

Where to begin?

Here goes.....

Dry yeast is hydrated/activated in water at between 95F (for IDY) and 100 to 105F (for ADY). Don't know where that 120F came from but it is TOO HOT.

The temperature of the remainder of the water (after a small portion has been used for hydration/activation of the yeast) is adjusted to whatever temperature is necessary to achieve the desired/targeted finished dough temperature (normally something between 75 and 85F).

Most tap water from a municipal supply is adjusted to a pH of 6.9 to 7.0, if you have sulfur water it will be more alkaline and need to be adjusted to 7.0 through humidification (vinegar or MCP/mono calcium phosphate).

Distilled water is not preferred to hard water (this has been discussed in these pages a number of times). The minerals in hard water are good for the dough and actually serve to help strengthen it.

The most economical way to measure water pH is through the use of pH test strips. These are available on-line as well as at most pharmacies and pool supply stores. When making no-time/emergency doughs 2% of the water is sometimes replaced with an equal amount of 50-grain strength white vinegar to help speed up the fermentation rate but this serves no practical purpose when not making no-time/short-time doughs. Adding baking soda to very acid water would indeed neutralize the acid BUT if there is any un-reacted soda it will serve to make the water alkaline which will, without question put the brakes on fermentation.

Are you having a water issue?

Tom Lehmann/The Dough Doctor

2686

**Dough Clinic / Re: How many times can I let dough warm-proof?**

The dough should be dense when you're kneading it. In some cases I will knead the dough for a couple of minutes and then allow it to rest for 15 to 30-minutes (this is to allow for flour hydration) and then continue kneading it for a few more minutes. I never try to knead a dough to develop the gluten, just enough to get a somewhat smooth dough and then I let biochemical gluten development do the gluten development for me.

Tom Lehmann/The Dough Doctor

2685

**Dough Clinic / Re: problem with large air bubbles/blisters in the cornice**

Not including the flour that was used in the starter (that flour is pretty well shot), how much flour are you putting into the mixing bowl?

Tom Lehmann/The Dough Doctor

2684

**Dough Clinic / Re: problem with large air bubbles/blisters in the cornice**

The "sweating" of the dough might be what is causing the problem. When you put a large bulk dough in the cooler it really doesn't cool down very much due to the inefficiency of trying to cool a single large dough mass which is actually increasing in temperature with time due to heat of metabolism. The warm dough and the cold air in the cooler result in condensation forming on the dough. Since the

condensation only forms where there is head space the idea is to eliminate any free head space. This is easily done by lightly oiling the top of the dough and then covering it with a sheet of plastic/polyethylene pressed tight to the surface of the dough. Try this and see if it addresses the problem.

Tom Lehmann/The Dough Doctor  
2683

**[Dough Clinic / Re: Dough comes out too sticky at 60% hydration :\(](#)**

Yael;  
I'm going to pay you the same compliment a professor once paid to me.  
"You're getting to be one smart cookie!" :).

Tom Lehmann/The Dough Doctor  
2682

**[Dough Clinic / Re: How to get crispier crust?](#)**

While flour strength and protein content are not always synonymous for the most part (at least in the U.S.) it is so for that reason I will say yes, as I pointed out in my initial response protein content/flour strength impacts the "potential" crispiness. This means that ultimately you can get a crispier crust from a higher protein content flour than a lower protein content flour, but to achieve maximum crust crispiness with any flour you must do your part to get that crispiness, that's the challenge.

Tom Lehmann/The Dough Doctor  
2681

**[General Pizza Making / Re: Advice- dough for tonight](#)**

I don't know your dough so this is just an educated SWAG.  
While the dough was actively fermenting when you balled it I think the smaller dough balls (as opposed to bulk) will cool a little better, though not as well due to the gassy nature of the dough, so they will continue to ferment more than normal even while in the fridge. It's not the 1-hour extra time up front, it's the condition that it created that is problematic, (gassy dough is difficult/impossible to cool properly), so with this said, I think if you handle the dough as LITTLE as possible and open it carefully you will probably be OK. Take a look at the dough in the afternoon if you can, this will tell the story, if the dough balls have even a remote resemblance to normal all is good, but if they are flattening out/collapsing or blowing the news is not good, but even then a skilled pizza maker can do wonders to salvage a dinner party.

Good luck, let us know how the pizzas come out.  
Tom Lehmann/The Dough Doctor  
2680

**[New Forum Members / Re: Need Napolitan pizze at home](#)**

Welcome! You came to the right place. Just to bring us up to speed can you share with us what you have at hand for making Neo. pizzas? How will you mix the dough? Tell us about your oven. Do you have a specific flour in mind? Over here TMI (too much information) is seldom an issue. :)

Tom Lehmann/The Dough Doctor  
2679

**[Dough Clinic / Re: problem with large air bubbles/blisters in the cornice](#)**

If you're going to bulk ferment it is always best to do so in a container which presents the smallest top surface like a tall cylindrical container. By immediately

subdividing the dough into individual pieces and balling, then boxing and oiling the top of the dough balls then cross-stacking for 2 to 3-hours (time varies with the type of cooler and dough ball weight) then down-stacking and cold fermenting for a period of time (usually 2 to 3-days) you completely avoid the sweating issue and you get a much more consistently performing dough yielding more consistent quality pizzas which is the name of the game in commercial pizza production where failure or variability is not an option.

Tom Lehmann/The Dough Doctor

2678

### **General Pizza Making / Re: Please tell me why?**

You have nothing else to do? It seldom ever takes me more than 10-minutes and that includes scaling the ingredients and cleaning up (not much to clean-up).

Tom Lehmann/The Dough Doctor

2677

### **Dough Clinic / Re: Why is my dough doing this?**

The reason why I asked is because a walk-in cooler performs differently than a reach-in when it comes to dough fermentation. The walk-in is going to be MUCH more efficient at cooling the dough so with all things equal you may find the dough lacking in fermentation when you begin using the walk-in cooler. To compensate for this we typically recommend increasing the finished dough temperature by 5F when going from a reach-in to a walk-in cooler.

Tom Lehmann/The Dough Doctor

2676

### **Dough Clinic / Re: Dough comes out too sticky at 60% hydration :(**

POD;

If your dough continues to be sticky even after weighing all of your ingredients here is something to try;

- 1) Mix the dough ingredients together as you have been.
- 2) Drape a damp towel or piece of plastic over the mixing bowl and allow the dough to ferment for 2-hours.
- 3) After the 2-hour fermentation period scrape the dough out of the bowl onto a floured surface.
- 4) Very lightly oil your hands and begin kneading the dough using a series of stretch and folds.
- 5) Continue the stretch and folds until the dough begins to look smooth.
- 6) Immediately scale into desired weight pieces and form into balls.
- 7) Lightly oil each dough ball and place into individual plastic bags (bread bags), twist the open end of the bag into a pony tail and tuck it under the dough ball.
- 8) Place dough balls into the fridge to CF (cold ferment) for 24 to 48-hours.
- 9) Remove dough balls from fridge and allow to warm AT room temperature for at least 1-hour.
- 10) Remove dough ball from bag by rolling the bag down around the dough ball and then inverting the bag allowing the dough ball to fall out of the bag onto a floured surface.
- 11) Begin opening the dough into a pizza skin.
- 12) Dress the skin and bake.

Tom Lehmann/The Dough Doctor

2675

### **Dough Clinic / Re: Why is my dough doing this?**

I took this to mean that upon the second pass through the sheeter (we usually use two or three passes through the sheeter, turning the dough 90 degrees between passes) but if the dough is indeed being re-balled at any time just prior to sheeting the dough will tighten up and the sheeting rolls will end up destroying the dough as Yael has stated.

Treefetty can you please clarify this for us?

Tom Lehmann/The Dough Doctor  
2674

### **Dough Clinic / Re: Ok to freeze low diastatic malt**

The biggest problem with malt powder is that it's dog gone hygroscopic. My advise is to repackage into smaller bags so you're not opening the large bag continually which will just lead to one large lump of malt powder. I DO NOT recommend freezing it, not that it'll hurt it but when cold meets warm condensation is formed which is what you DON'T want.

In summary:

3 to 5# bags (double bag).

store at room temperature.

Remove what you need and IMMEDIATELY reseal the bag.

Tom Lehmann/The Dough Doctor  
2673

### **Dough Clinic / Re: diastatic malt vs sugar**

They both provide sugar for the yeast to feed upon during fermentation with any residual sugars helping to promote crust color but if you use too much sugar the dough just ferments slowly, the crust tastes sweet and it will have excessive crust color. If you use too much diastatic malt the dough will become sticky with no way to correct it. With excessive diastatic malt the crust can develop a "malt" flavor, much like that of a malted milk ball (candy). If you have a flour with a high level of damaged starch sugar will have little or no impact upon the dough but diastatic malt, at just about any level, will essentially liquefy the dough within an hour or so of mixing.

Tom Lehmann/The Dough Doctor  
2672

### **Dough Clinic / Re: dough ball size for 12 inch pizza**

My preference is 11-ounces (312-grams) but some like to use 10-ounces (284-grams), the heaviest I use is 12-ounces (340-grams).

Tom Lehmann/The Dough Doctor  
2671

### **Dough Clinic / Re: dough recipes**

Mike;

If you go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and go into the RECIPE BANK, use "pizza" for your search word and look for my home made pizza dough "recipe". It might help you get started making pizzas. That alcohol aroma is a good thing....you only smell it in the dough. Alcohol is a byproduct of the fermentation process and it's part of the flavor development process vital to a good crust. Also, I DO NOT recommend using a glazed tile, instead, get an un-glazed tile (they're used on floors), or you can also go with a baking steel or a biscuit stone.

Tom Lehmann/The Dough Doctor  
2670

## [\*\*Dough Clinic / Re: Ok to freeze low diastatic malt\*\*](#)

Malt Products Corporation is also a major supplier of malt to the industry

<[www.maltproducts.com](http://www.maltproducts.com)>

Tom Lehmann/The Dough Doctor  
2669

## [\*\*Dough Clinic / Re: Dough comes out too sticky at 60% hydration :\(\*\*](#)

Those large bubbles are due to the very short fermentation time you used. They will go away once you begin giving the dough normal fermentation. If you can, allow the dough CF for a little longer than 24-hours, I'd suggest going for 30-hours or a little more for your first pizza and then begin experimenting with increasing the CF time in 12-hour increments to find what works best for YOU under YOUR specific conditions. Once you've done this and you have developed your skills and confidence to a level where you are making good pizzas (this actually comes pretty quickly) you can begin experimenting with other aspects of your pizza. Be aware though that there are some potential ramifications to experimenting with pizza.....potential weight gain, and finding new friends weekly are but two of them :-D

And remember, when experimenting with pizza, even the mistakes will taste pretty good! :)

Tom Lehmann/The Dough Doctor  
2668

## [\*\*Off-Topic Foods / Re: Flavored and Infused Oils\*\*](#)

JKB;

Just don't hold the garlic butter over from one day to the next and you'll be fine. I usually prepare my garlic butter while the dough is proofing so it's rarely made more than 90-minutes prior to use. If you are just putting garlic butter onto a commercially made bread make the garlic butter about an hour, or so, prior to meal time then dispose of any remaining product (I never have any remaining product as it gets divied-up between all of the slices).

Tom Lehmann/The Dough Doctor  
2667

## [\*\*Dough Clinic / Re: Ok to freeze low diastatic malt\*\*](#)

Just be careful to mind the water temperature, once you reach 140F you are in the enzyme deactivation temperature range and by 180F you essentially have non-diastatic malt syrup as all of the amylase will have been destroyed.

Tom Lehmann/The Dough Doctor  
2666

## [\*\*Dough Clinic / Re: Watermarker?\*\*](#)

JPB;

My opinion is that it's pure, unadulterated nonsense. They are partially right in that the water can/will impact the flavor of beverages, we all know that, but from there on it's hogwash. The video tells it all. The system replicates the molecular structure of New York City water. Most of us know what the molecular structure of NYC water is, it comprised of two hydrogen molecules and one oxygen molecule, anything else is not water!

That's my story, and I'm stickin' to it! :-D  
Tom Lehmann/The Dough Doctor  
2665

## [\*\*Sauce Ingredients / Re: Watery tomato sauce\*\*](#)

How are you milling the tomatoes?  
Tom Lehmann/The Dough Doctor  
2664

## [\*\*General Pizza Making / Re: Dough Formula for Heavy Topped Pizza\*\*](#)

Dough formulation won't have a great impact upon the strength (resistance to collapse) with a par-baked crust, but here is a dough formula that might fit your needs:

Flour: 100% (strong bread type flour)

Salt: 1.75%

Sugar: 1.5%

Oil: 2%

IDY: 0.375%

Water: 62%

By using a dough ball weight of 12-ounces for a 12" pizza you will have a dough loading of 0.106-ounces (very close to what you asked for) per square inch of surface area.

Tom Lehmann/The Dough Doctor  
2663

## [\*\*Detroit Style / Re: Flour question for Detroit style pizza\*\*](#)

I'd be looking at the one with 13% protein content (Cuoco) as my first choice.

Tom Lehmann/The Dough Doctor  
2662

## [\*\*Dough Clinic / Re: Dough too stretchy\*\*](#)

A couple of questions to ask:

- 1) What was the finished dough temperature (after kneading)?
- 2) Why so much ADY? 0.5% would have been plenty.
- 3) Did you hydrate/activate the ADY prior to addition to the dough? If so what was the water temperature?
- 4) Why leave the dough at room temperature for 7-hours prior to opening? The dough will handle much better for you if you just allow it to warm to 50 to 60F (internal temperature) prior to opening.

The condition which you described for the dough soon after kneading is completely normal as biochemical gluten development will do the gluten development for you as kneading is a pretty poor way to develop gluten.

Tom Lehmann/The Dough Doctor  
2661

## [\*\*Dough Ingredients / Re: Vital Wheat Gluten\*\*](#)

It all depends upon the type of wheat that the all-purpose flour was milled from, if it was milled from a good quality hard red or white wheat variety you could get some of the characteristics of All Trumps flour from the ap flour through the addition of VWG BUT when supplementing flour of a lower protein content with VWG the resulting blend while having the same protein content as All Trumps (14% +/-) will always tend to produce a tougher, more elastic dough. The reason for this is because what you are supplementing with is all gluten forming protein while a portion of the 14+% protein in All Trumps is not gluten forming protein. Also, since the VWG is already fully developed gluten the doughs containing VWG usually

exhibit a slightly tougher, more elastic characteristic.

Tom Lehmann/The Dough Doctor

2660

**Dough Clinic / Re: Dough comes out too sticky at 60% hydration :(**

I have a question regarding the picture, is the crust really that light in color or is it just the lighting? What does the bottom of the crust like? Pizzas are baked from the bottom up so looking at the bottom of the crust might give a better idea of the bake the pizza is getting.

Also, you are saying dry but then you are saying that your jaws get tired of chewing (I know the feeling first hand), which would indicate toughness in the crust.

Keep hanging in there, you'll master it :chef:

Tom Lehmann/The Dough Doctor

2659

**Dough Clinic / Re: Dough comes out too sticky at 60% hydration :(**

Every bit of that, that's why I'm questioning the color represented in the photograph. If the crust is indeed that color it is most likely not thoroughly baked which would result in a "different" flavor as well as a more chewy mastication characteristic.

Tom Lehmann/The Dough Doctor

2658

**Dough Clinic / Re: Dough too stretchy**

For the way you're managing the dough I would suggest targeting a finished dough temperature of 70 to 75F, you can always change it if necessary later on. Use a dial/stem type thermometer to take the temperature of the dough both immediately after the mixing/kneading stage and again when you're ready to begin opening the dough balls into skins (here you're looking for a temperature between 50 and 60F. Pick a temperature and try to be consistent. Again, to measure the dough temperature at this point just insert the thermometer into the dough ball and record the temperature indicated.

When hydrating/activating ADY use a small amount of water at 100 to 105F (again, use the thermometer here too).

You don't say how you're CF the dough but my preference is to put the dough into a plastic bag (NOT A ZIP-LOCK BAG), lightly oil the dough ball, drop it into a plastic Food Bag (like a bread bag), twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the fridge. To remove the dough ball from the bag, just roll the bag down around the dough ball, invert the bag allowing the dough ball to fall out onto a floured surface. With this method there is no need to leave the dough container uncovered for several hours prior to putting the lid on it. Any problems with the dough sweating in the container are also eliminated when using the bags. As for a scale, there was just a number of posts on a pretty neat scale that might work well for you and the price point was around \$10.00....sorry guys, I didn't make a note of it or commit it to memory....feel free to jump in regarding this or any other scale.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

2657

**Dough Clinic / Re: Base of my pizza won't char**

Pictures of the top and bottom of the pizza would help but to me it sounds like the deck is not heating or getting fully heated for whatever reason. Have you

confirmed gas pressure? Correct hook-up? Have you contacted their support group yet?

Tom Lehmann/The Dough Doctor  
2656

**Dough Clinic / Re: Dough comes out too sticky at 60% hydration :(**

Toughness is highly subjective so it'll be hard to specifically address that attribute but the direction needed to achieve a crust that is crispy on the outside and soft on the inside is to bake the pizzas at a higher temperature and to include some oil in the dough formulation if it is not already being used. The amount I'd suggest for you to begin with is 3%, this can be olive oil or any type of vegetable oil you might have on hand (you can always experiment with using different oils if it works). The crust itself really doesn't look too bad so I don't think the bubbling issue is in the dough but instead with the way the skin is being opened/formed. It seems that you are leaving a lot of dough out on the edge of the skin which is resulting in that large edge crust where the bubble formation is. Getting that part of the crust thinner will also reduce the perceived toughness of the finished crust. Also, what is the total weight of the dough ball and the diameter of the skin you are opening it up to?

In the meantime, you might want to go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and view Part 3 of my video on making pizza dough, in this segment we show how to open the dough so the center of the skin is not too thin nor is the rim too thick/heavy.

Tom Lehmann/The Dough Doctor  
2655

**General Pizza Making / Re: Dough recipe for oven that gets up to around 650F (PizzaQue Oven)**

The "00" flour is not well suited to baking at the low temperature at which you are baking your pizza so I would suggest changing to a common bread type flour with about 13% protein content which has been malted. You should be able to find this flour in the baking section at just about any supermarket. Here is what I think might be a better dough formulation for you to begin with.

Flour: 100%.....1100-grams.

Salt: 2%.....22-grams.

Water: 63%.....693-grams. 70F/21.1C

Yeast:(ADY) 0.18%...2-grams. (be sure to hydrate/activate the ADY in a small portion of water at 100 to 105F/37.7 to 40.5C.

Target a finished dough temperature in the 70 to 75F/21.1 to 23.8C range.

You're going to be hard pressed to get much charring at your present baking temperature unless you include some sugar in the dough formula. I would suggest making the pizza first without any added sugar and then if you feel you need more crust color add 2% (22-grams) of sugar for the next pizza. You can then fine tune the sugar level as necessary.

Tom Lehmann/The Dough Doctor  
2654

**New Forum Members / Re: Proportions**

Here are the proportions for a "typical" generic pizza crust in bakers percent.

Flour: 100% (typical bread type flour with 12 to 13% protein content)

Salt: 2%

Yeast: 0.3% IDY

Water: 62%  
Sugar: 2% (variable/optional)  
Oil: 2% (variable/optional)

Tom Lehmann/The Dough Doctor  
2653

### **Dough Clinic / Re: Dough comes out too sticky at 60% hydration :(**

When the dough gets too thin in the middle the heat isn't absorbed into the dough during baking, instead it just passes right on through the dough where it is dissipates as steam when it reaches the sauce and toppings which are roughly 90% water. In almost every case this overly thin center section will be excessively tough and chewy...maybe that's what you are finding objectionable?

Tom Lehmann/The Dough Doctor  
2652

### **Dough Clinic / Re: How many times can I let dough warm-proof?**

No, I would:

Put my ingredients in the mixing bowl and stir to combine, then turn out of the bowl onto a floured surface, lightly oil my hands and knead (stretch and fold the dough) until it becomes cohesive, lightly oil the bowl and place the dough back into it for 15 to 20-minutes, then turn the dough out of the bowl onto a floured work surface and begin kneading the dough again until the dough begins to look somewhat smooth. After that I cut it into desired weight pieces, ball, lightly oil, plastic bag and CF for 24 to 46-hours (occasionally longer). After the CF period, remove from fridge, allow to warm AT room temperature until the INTERNAL temperature of the dough reaches 50 to 60F (anything in that temperature range will work well), then roll the bag down around the dough ball, invert the bag allowing the dough ball to fall onto a floured surface and begin opening the ball into a skin for immediate dressing and baking.

If I'm making a pan pizza, after the CF period and warming of the dough I open it to fit the pan, set the pan aside to proof for at least 30-minutes or more, then go back to it once again and carefully fit the dough to the pan so it completely fits the pan, I then set it aside to proof about 20-minutes more (occasionally longer) before dressing the proofed dough and baking the pizza.

Tom Lehmann/The Dough Doctor  
2651

### **Dough Ingredients / Re: Additions to Your Dough**

How are you determining that the dough is over fermented?

The only real way to make this determination is by observing the way the dough looks, handles and feels. Over fermented dough will collapse at the mere thought of being touched if it doesn't collapse on its own (this is not to be confused with the first full rise of a large bulk fermented dough which occurs several hours after the dough is mixed. When making BREAD the FFR is usually a pretty good indicator that roughly 75 to 80% of the full fermentation time for the dough has been achieved, but it has little significance in pizza dough since they receive considerably more total fermentation). The things to look for as indicators of an over fermented dough are as follows:

- 1) The dough feels lifeless with no elasticity.
- 2) The dough deflates easily during opening of the dough ball.
- 3) The dough will typically have a rough appearance to it.
- 4) It will feel sticky or tacky to the touch.

5) Little or no oven spring during baking.  
6) The baked crust will have a light or mottled crust color.  
Tom Lehmann/The Dough Doctor  
2650

### [\*\*General Pizza Making / Re: Dough Formula for Heavy Topped Pizza\*\*](#)

Mo;  
When par-baking those crusts be sure to bake at a lower temperature than you do for pizza, 400 to 450F is a good temperature. Also DO NOT bake right on the oven deck, instead, bake on a screen (the heat transfer is too fast on the deck and you will end up making pita every time). Bake just until the dough is COMPLETELY set.....no more. If the dough is not completely set you will see what appear to be oil spots on the crust as it cools, these are NOT oil spots, instead, they're areas where the dough was not completely baked and has collapsed (if you make a pizza from a crust like this those collapsed areas will become hard and "flinty". What is "flinty"? Think about eating a Chinet Plate.

When you see these characteristics the crust just needs to be baked a little longer. Immediately after baking invert the par-baked crusts onto a cooling rack. After thorough cooling par-baked crusts can be wrapped and stored at room temperature for up to 3-days. To use a par-baked crust first brush on a very thin coat of oil on the crust, then dress in the normal manner. If you plan on using the par-baked crust right away the approach is a little different, apply about 1/2 of the normal amount of sauce to the dough skin and then par-bake as directed above, As soon as the crust begins to show some color it is fully baked (you might need to experiment a little but in this case color is a pretty good indicator as to when the crust is fully baked). Remove the crust from the oven and place it on a cooling rack or pizza screen to cool for about 5-minutes, then apply the other 1/2 of the sauce and dress as desired, really heavily topped pizzas are best baked at 475 to 500F. Depending upon the amount of toppings used you might want to experiment baking both on the deck and on a pizza screen as the longer bake can result in excessive bottom crust color development when baked on the deck.

Tom Lehmann/The Dough Doctor  
2649

### [\*\*General Pizza Making / Re: Differences in preparing pizza dough\*\*](#)

Amen! ^^^  
Tom Lehmann/The Dough Doctor  
2648

### [\*\*Dough Clinic / Re: Neapolitan Sourdough Pizza error\*\*](#)

From the looks of the pizzas in your pictures I'm guessing that your dough weight might be too much for the size of pizza you're making (raw dough is a good indicator of this). If that doesn't address the issue you might try adding not more than 1% DIASTATIC malt to the dough for better crust color development during baking.

Tom Lehmann/The Dough Doctor  
2647

### [\*\*Dough Clinic / Re: Frozen dough balls - finished dough temperature\*\*](#)

If you're lucky, really lucky, those dough balls will have a frozen shelf life of 10 to 15-days at the very best.

Tom Lehmann/The Dough Doctor  
2646

## [\*\*Pizza News / Re: A new pizza box design\*\*](#)

Let's just hope it's not a "cracker" crust pizza! ;D  
Tom Lehmann/The Dough Doctor  
2645

## [\*\*Dough Clinic / Re: Frozen dough balls - finished dough temperature\*\*](#)

Yes,  
1) The dough will be both sticky and slack (overly extensible).  
2) The dough will not exhibit much, if any, oven spring during baking.  
Tom Lehmann/The Dough Doctor  
2644

## [\*\*Starters/Sponges / Re: Sourdough starter worth it for pizza couple times a year?\*\*](#)

Most of the dried sourdough "starters" are not starters at all, they are just dried sourdough that is inert as far as providing fermentation is concerned, this is why many call for the addition of yeast. Using these products will not adversely affect the yeast or gluten development but because they are acidic they will have a slight potential softening effect upon the dough as well as provide the "tang" you're looking for in the finished crust. Properly stored, (tightly sealed container in a cool place) these dried sourdough flavorings will last forever. We use these products commercially in many frozen pizzas as well as frozen pizza dough to add another dimension of flavor. In most cases the use level will be about 2%.

Tom Lehmann/The Dough Doctor  
2643

## [\*\*Dough Clinic / Re: Enzymes and yeast\*\*](#)

Actually we don't look for great flavor/flavors in the dough but instead in the finished/baked product be it bread, pizza crust, etc. While enzymes do contribute to flavor development (in a round about way) they are not the major contributor. What do I mean by this? Enzymes present in yeast leavened doughs function by converting starch into sugars (amylase) and they also hydrolize proteins (protease) which are then more easily denatured during the baking process which contributes to the flavor of the baked product, and then there is cellulase which breaks down cellulose into sugars much in the way the amylase works on the starch fraction of the flour but since there is so little cellulase present this is not a major contributor to any flavor development. In short, enzymes do not directly impact flavor, but they can do so by an indirect manner.

If you were to mix just flour and water together and allow it to rest for any period of time you would be making what a baker calls a "soaker". Soakers are extensively used to allow for complete hydration of whole-wheat and multi-grain type flours as well as grains which are only partially milled so they are in pieces rather than a fine or coarse flour. All of these are difficult to completely hydrate as they require some time for this to happen, hence a soaker is used which allows the flour/grain mixture to be fully hydrated without any fermentation taking place. In commercial practice this is usually limited to something less than 4-hours at room temperature due to food safety concerns but in some cases, due to scheduling, the soaker must be made and allowed to hydrate for much longer than this, in those cases the soaker is stored under refrigeration until needed to make the dough.

Additionally, very little gluten is actually developed during any kind of a hydration period regardless of how long it is carried out for, the biochemical gluten development will not begin in earnest until the yeast is added.

When a soaker is used we just add it back to the mixer along with the rest of the ingredients and begin the mixing process, no special handling is required.

By the way, many people also like to refer to a soaker as an autolyze which is commonly used in artisan bread and pizza production.

When it comes to flavor development the oven takes first prize for being the most significant contributor which is followed by fermentation and all the good things which happen during and as a result of fermentation.

Tom Lehmann/The Dough Doctor

2642

### **Dough Clinic / Re: Difference between "knead" and "stretch and fold"?**

Kneading and "stretch and fold" are both considered to be the same however for some there is indeed a difference. Kneading a dough the old fashion way calls for grasping an edge of the dough and pulling it back over the main body of dough and using the heel of the hand to drive the dough down into the main body of dough, the bowl is turned slightly and this is repeated for any length of time. Stretching and folding on the other hand is more like the way we incorporate roll-in fat into a Danish dough. The dough is elongated, the two lateral ends are folded back to the center line of the elongated dough piece, we then fold the dough over onto itself (like closing a book), in the production of Danish dough this is referred to as a 4-fold or a "book" fold. The dough piece is then rotated 90-degrees and the process repeated until the dough either develops a smooth appearance or it becomes too tight to continue stretching and folding in which case the dough is set aside and allowed to rest until it is sufficiently extensible to allow the stretching and folding to be continued. Is there a difference between the two types of "kneading"? There can be, using the stretch and fold method results in more of the dough being exposed to the air for a longer period of time which can result in a drier dough and if the humidity is sufficiently low it can also promote a more open porous crumb structure in the finished crust with proper handling of the dough.

Tom Lehmann/The Dough Doctor

2641

### **Dough Clinic / Re: Neapolitan Sourdough Pizza error**

You use 270-grams of dough for what size of pizza? 270-grams would be about right for a 12 to 13-inch diameter pizza.

If your starter is too strong the acidity will inhibit crust color development resulting in a lighter than desired finished crust but it will not result in raw dough in the crust after baking. Since your pizzas are lightly topped we can rule out excessive topping weight so we are left with too much dough weight for the size of pizza being made or the oven deck is not sufficiently hot. If the raw dough is in or close to the very center of the pizza there is a possibility that you are getting the dough too thin in the center section which would allow heat from the deck to pass through the dough and into the toppings (sauce) where the heat will be dissipated as steam without allowing the dough to reach sufficient temperature to fully bake it within the short baking time employed. Too much dough for a specific size pizza can require a longer baking time to allow the dough to fully bake but if the pizza is being baked as a larger size pizza employing the same dough weight it would be expected that the crust may not get fully baked. These issues are more prone to happen when short, hot bakes are used as opposed to longer bakes at a lower temperature.

Tom Lehmann/The Dough Doctor

2640

## [\*\*Dough Clinic / Re: Dough troubleshooting\*\*](#)

One piece of critical information is missing...the finished dough temperature. You don't mention anything about cross-stacking or leaving the dough tray open for at least 3-hours in a home fridge as you indicated that you put the dough balls into a covered tray. What this all means is that in all probability the dough was over fermented to the point where the dough had become bucky, super elastic and difficult to open....sound familiar?

My recommendation is to use water at a measured 65F when making the dough, then measure the temperature again just prior to placing in the fridge (this is the critical finished dough temperature) as you will be looking for something in the 70 to 75F range. Now, when using dough boxes it is critical that the boxes/box be left uncovered for at least 3-hours when first placed in the fridge as this is going to allow the dough to cool properly and consistently, after that you can cover the box for the remainder of the CF period. As for leaving the dough out of the fridge for 3-hours prior to opening, this might be a bit excessive, instead, try leaving it out just long enough for the internal temperature of the dough balls to reach 60F before you begin opening them into skins.

Just for grins, try this: After adding the oil continue mixing the dough just to a point where it is taking on a smooth appearance, measure the temperature, IMMEDIATELY scale and ball the dough, place into the dough box, oil the top of each dough ball and place in the fridge uncovered for 3-hours, or until the internal temperature of the dough reaches 50F (whichever comes first), then cover and CF. After the CF period, remove the dough box from the fridge and allow to warm AT/AT room temperature until the internal dough ball temperature reaches 60F before you begin opening the dough balls into skins.

Keep us posted on your findings.

By the way, 0.5% IDY is, by most, considered to be pretty high for a 48-hours CF dough. I'd suggest reducing it to 0.250 to 0.375%. Additionally, the salt level is quite low at only 1%, I'd suggest increasing it to something between 1.75 and 2.25%. Both of these, the high yeast level and low salt level are significant contributors to excessive fermentation.

Tom Lehmann/The Dough Doctor

2639

## [\*\*General Pizza Making / Re: Flat squares instead of round balls\*\*](#)

And don't forget about surface tension too.

Tom Lehmann/The Dough Doctor

2638

## [\*\*Neapolitan Style / Re: Problems with uniform dough discs\*\*](#)

Huh?

Remove the dough ball from the box, place bottom side down onto a floured surface, flip the dough ball over so the top is now down and proceed to open the dough ball into a skin. If the dough has correct absorption, and has been fermented properly it should open easily, with the proper technique the dough can be opened having a relatively uniform thickness across the entire center section. You might go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> to get some tips from my video on making dough (part-2). Place the opened skin onto a wood prep peel using a little peel dust under the skin to facilitate transfer to the oven deck. For peel dust I like to use equal portions of flour, fine corn meal and semolina flour, but use whatever works best for you. Peel the dressed pizza into the oven (I place it just inside the oven door or slightly off to one side or the other) Leave the pizza set undisturbed for about 1-minute, if you try to move it too soon it will adhere to the deck (this is similar to

searing a steak), as the dough bakes into a crust it will shrink and pull up slightly from around the edge allowing plenty of space for a turning/spinning peel to get under the crust. If the dough is too flat against the deck to get a peel under it your dough absorption or fermentation time are most likely too high/too long.

Tom Lehmann/The Dough Doctor  
2637

### [\*\*Dough Clinic / Re: Dough troubleshooting\*\*](#)

Dustin;

Try that first, then if that works for you see if you can begin incorporating some stretch & folds back into the process. Start with just one or two and increase the number gradually, and enjoy your pizzas along the way :chef:

Keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
2636

### [\*\*General Pizza Making / Re: Dough recipe for oven that gets up to around 650F \(PizzaQue Oven\)\*\*](#)

No problem at all in using IDY instead of ADY, just make sure to use the correct amount. You might want to refer to one of the charts for the recommended amount to use for your fermentation schedule.

Tom Lehmann/The Dough Doctor  
2635

### [\*\*Starters/Sponges / Re: Sourdough starter worth it for pizza couple times a year?\*\*](#)

I've never done a comparison as the dried sours are just too easy to use and they're readily available from most major bakery ingredient suppliers.

Tom Lehmann/The Dough Doctor  
2634

### [\*\*Dough Clinic / Re: Incorporate high oil content into dough\*\*](#)

We do it all the time using as much as 16% oil addition to the dough. There are two tricks to doing this, one is to make sure you have a full size dough as this will ensure the best mixing action. The fact that you said the hook was just dragging the dough around in circles is an indication of a significantly under size dough for the bowl capacity/size. Second, you MUST be able to mix the dough at second or medium speed. One other thing to keep in mind is that it is absolutely critical that the oil be added at the correct stage of mixing. Put the water in the bowl first, add salt and sugar (no need to stir) followed by the flour and IDY, mix at low speed JUST UNTIL you don't see any dry flour in the bottom of the bowl, begin pouring the oil in over a 1-minute period of time and continue mixing for 1-minute at low speed after all of the oil has been added, then mix at second/medium speed just until the dough takes on a smooth appearance.

NOTE: It is important to make sure the bowl to hook clearance is properly set before starting the dough mixing process. This is important for proper mixing of all doughs but it is doubly important with high oil content doughs. How to set the bowl to hook clearance? Place a nickel in the bottom center of the bowl, raise the bowl fully, if you can move the nickel you have excessive clearance, lower the bowl and adjust it just a turn or two into a higher position, continue this until the hook JUST contacts the nickel, remove the nickel, raise the bowl only partially, run the mixer at low speed, SLOWLY raise the bowl to its full up and locked position, do you hear at "tink, tink, tink"? if you do the hook is contacting the bowl and you will need to

lower the bowl ever so slightly, if you don't, shut off the mixer, lower the bowl and CAREFULLY adjust the bowl a little higher and repeat the above process until you hear the "tinkling", then lower the bowl JUST until the sound goes away and you have the clearance set to minimum gap, you are now ready to begin mixing. Mind you, this is all based on the premise that you have a reverse spiral dough hook, if you have a "J" hook the first order of the day is to get a reverse spiral dough hook for your mixer and then begin the above process.

One other thing, look at the bottom of your mixing bowl, if it's dented, now is a good time to remove those dents. If it's severely dented you can not achieve the correct bowl to hook clearance.

Tom Lehmann/The Dough Doctor  
2633

### **Chicago Style / Re: A little too much Moisture Issue**

I've never heard of any benefit to letting the pizza sit in the pan for several minutes after baking as this allows the pizza to sweat in the pan and since the pan is cooling the moisture condenses onto the pan sides and bottom Hummm? The next time you make your pizza try removing the pizza from the pan immediately after taking it out of the oven and placing it onto a wire cooling rack or pizza screen to steam off and set-up a couple minutes before cutting.

Tom Lehmann/The Dough Doctor  
2632

### **Chicago Style / Re: A little too much Moisture Issue**

I think where you may have gotten confused from other posts is where we suggest allowing the pizza to steam off for a short time before cutting and boxing the pizza for carry out or delivery. The last thing you want to include in the pizza box is steam. In the restaurants that I've been in where the pizza is served in the pan we remove the baked pizza from the pan and allow it to set on a cooling screen for a minute or so which allows it to steam off as well as set up a little, we then cut it using a rocker knife and place it back into the pan for serving. From a commercial (pizzeria) stand point this makes for additional work as the pans now need to be thoroughly washed, sanitized and dried before they can be put back into use again. When we serve the pizza without the pan we normally just wipe the hot pan out using a clean bar towel and either put it right back into service again or we place it into a container for the pans which are ready for use.

Tom Lehmann/The Dough Doctor  
2631

### **Dough Clinic / Re: Incorporate high oil content into dough**

Yep, the bowl looks fine and that indeed is a reverse spiral dough arm. To adjust the hook/agitator to bowl clearance on a Hobart planetary mixer there is a stainless steel cover on the pedestal just behind the bowl and below the bowl lifting arm, remove this cover and you will see a threaded rod with an adjusting nut. Don't forget to re-tighten the two locking nuts when you're finished.

Tom Lehmann/The Dough Doctor  
2630

### **Prep Equipment / Re: immersion blender?**

I use mine for a lot of chores around the kitchen even making myself an iced mixed drink occasionally but the one thing that I do not use it for is pureeing tomatoes unless I'm making tomato soup. It beats the tomatoes up too bad and ruptures many of the juice sacks contained in the tomato resulting in excessive syneresis of

the sauce which ultimately leads to a "swamp" pizza.

Tom Lehmann/The Dough Doctor

2629

**Prep Equipment / Re: good deal on food scale**

Place a suitably sized container on the scale platform, zero the scale, add the IDY to the measured amount that you want to use, remove from scale and use as directed.

Tom Lehmann/The Dough Doctor

2628

**Prep Equipment / Re: immersion blender?**

Scott;

I'm not aware of any other economical alternatives either. If you place a spoon full of your sauce onto a flat china plate and wait 15-minutes do you see water being released from the sauce?

Tom Lehmann/The Dough Doctor

2627

**Dough Clinic / Re: Dough too stretchy**

Not too bad at all :).

Experiment with your malt or sugar level if you want more color on the crust.

Tom Lehmann/The Dough Doctor

2626

**Dough Clinic / Re: Dough troubleshooting**

Be sure to get a pic of the dough balls as you remove them from the fridge for tempering prior to opening.

Tom Lehmann/The Dough Doctor

2625

**Prep Equipment / Re: good deal on food scale**

When I have an amount that I cannot weigh on my scale I just double or triple the amount I need and then put it into say three ounces of water (95F) for IDY, I suspend the yeast in the water and then portion out 1-ounce of the water for my dough....presto! I just toss the rest out, call me wasteful if you want.

Tom Lehmann/The Dough Doctor

2624

**Prep Equipment / Re: immersion blender?**

You don't see the tomatoes getting watery during the blending process but it's after the blending process when the that the syneresis becomes the issue, namely, when you sauce the pizza any water released from the sauce will go down into the dough where it contributes to the dreaded gum line and if, like me, you're in the habit of pre-saucing the skins during a multiple pizza bake, it just gets a whole lot worse. In a pizzeria you will easily know if the problem exists, the first of which is to observe your make people, if you see then stirring the sauce with the ladle, ask yourself why? The answer is because they saw separation of the sauce and they're just trying to recombine it. Again, if you're pre-prepping the skins for slam periods you're setting the stage for a gum line.

Tom Lehmann/The Dough Doctor

2623

## [\*\*Dough Clinic / Re: Frozen dough balls - finished dough temperature\*\*](#)

The mixing speed appears to be OK but for whatever reason the dough is not developing sufficiently to even pull off of the bottom of the bowl.

Is the clearance between the agitator and bowl excessive? If the clearance is excessive the dough will do as seen in the video. Is the flour protein content too low? It should be at least 12%.

As for the finished dough temperature there are two things you can do to get it lower.

1) Replace 20% of the dough water with ice (either shaves or chipped ice, never ice cubes or tube ice).

2) Place a large pan under the mixing bowl and fill it with ice, water and salt. Place something under the brine water bowl to hold it up as close to the bowl as possible, this will help to keep the dough colder during mixing.

Tom Lehmann/The Dough Doctor

2622

## [\*\*Prep Equipment / Re: good deal on food scale\*\*](#)

Speaking of scales, if you Google Etekcity Digital Kitchen Scale you will find a bunch of low cost scales.

Tom Lehmann/The Dough Doctor

2621

## [\*\*Dough Clinic / Re: Different thickness stones get the same result?\*\*](#)

It's hard to be an arm chair quarter back but I'll take a SWAG at it. Is it possible the thicker stones are losing heat during baking but don't have sufficient time to recover their latent heat before the next pizza is placed on it so now you would see a lighter bottom bake on each subsequent pizza while the thinner stone without the ability to hold as much latent heat is literally just transferring heat directly from the burner beneath it, as a result there would be no recover time for the thinner stone. This is much the same principal that deck ovens used for baking bakery products (not pizza) work on. When you have a thicker stone you need a larger (more BTU) burner to enable maintaining the heat in the stone. When the bakery type deck ovens are used to bake pizzas they fail miserably when the oven is fully loaded with pizzas as the burner cannot maintain the temperature of the deck with a full load, but with just one or two pizzas in the oven it bakes reasonably well, like I said, just a guess.

Tom Lehmann/The Dough Doctor

2620

## [\*\*Dough Clinic / Re: Maximum absorption vs Whoops\*\*](#)

The reason why there are so few answers to this question is because the true answer is....there isn't any. In the baking industry we depend upon the Farinograph or sometimes the Mixograph for the absorption of the flour but even this is just a standardized test for flour absorption as the baker ends up using what is called a Fariongraph factor for the "dough" absorption which is different from the flour absorption. One of the last projects I was working on before leaving AIB was with Dr. Rick Dempster on a concept for a fully automated bakery operation. Part of our work was to use NIR (near infrared) to control the mixing parameters of the dough. Since a commercial bakery pulls its flour from multiple flour silos with each silo containing flour from a different milling lot code and at some time another shipment of flour is put into each of the silos which combines with the remaining flour still in the silo for even greater variability in the flour being conveyed to each of the mixing stations within the bakery we had to develop a procedure where we

could effectively determine the "actual dough absorption" through a real time measurement (about 15-seconds) so that the dough absorption at each mixer could be adjusted as necessary to accommodate the flour being delivered to the mixer for that specific dough. Rick was able to accomplish this using NIR at the flour weigh hopper located above each mixer. How accurately were we able to measure dough absorption based on this NIR measurement? Consistently well within 0.5% of the actual dough absorption as determined by a highly skilled baking technician. The ultimate test came when I challenged Rick to determine the actual dough absorption of a whole-wheat flour using his NIR measurement, after a full day at the bench doing multiple doughs and test bakes we had the answer, when this was presented to Rick his only question was "What took you so long?" His measurement gave a dough absorption that was again within 0.5% of what a skilled baking technician found AND it only took him 15-minutes, not a full day! We had been communicating with a number of the big pizza commissaries about installing the equipment for a field test but the project was scrapped when we left AIB :(

Tom Lehmann/The Dough Doctor  
2619

### **Prep Equipment / Re: immersion blender?**

Steve;

Yes, garlic induced gelling would help to counter the issue but extreme care must be taken so as not to over thicken the sauce or it will be like tomato jelly on the finished pizza. When I was in Guatemala I was consulting for a company making their own sauce for their local pizza chain. At the commissary they were using a large industrial immersion blender to make their sauce and it bled out so bad they were adding a starch paste to it to help stabilize the sauce so it would retain its water, that worked BUT the resulting sauce was more like tomato leather after the pizza was baked. We resolved the problem by going over to grinding the tomatoes instead and it worked fine for them, problem solved.

But the challenges faced by the home pizza maker are not the same as those faced by pizzeria and commissary operators so if you're satisfied with that the immersion blender is doing for you continue using it, just be aware of its limitations.

Tom Lehmann/The Dough Doctor  
2618

### **Dough Clinic / Re: Dough troubleshooting**

You're welcome Dustin, those great lookin' pizzas say it all! :chef:

Tom Lehmann/The Dough Doctor  
2617

### **Neapolitan Style / Re: Dough Improvements**

Here are some places to begin.

1) DO NOT suspend IDY in cold water. Only suspend it in 95 to 100F water. In your case I'd put the cold water (60F) in the bowl first followed by all of the flour, add the salt and IDY right on top of the flour and begin mixing for at least 4-minutes at low speed, stop the mixer and allow the dough to rest for 15-minutes, begin mixing again just until the dough comes together and begins to smooth out, remove from the mixing bowl and begin your series of slap and folds.

2) I didn't see anything where you lightly oil the tops of the dough balls and left the dough box uncovered for at least 3-hours after placing it in the fridge. Failure to do this contributes to erratic fermentation rate as well as sweating of the dough balls in the box which can result in an overly soft, weak and sticky dough condition.

3) Four hours is a long time to remove the dough prior to opening, instead, leave

the dough balls out of the fridge, at ambient temperature (still covered) ONLY until the internal temperature of the dough balls reaches 55 to 60F, then you can begin opening the dough balls into skins for your pizzas.

Tom Lehmann/The Dough Doctor  
2616

### **New York Style / Re: opening dough with breadcrumbs?**

Actually, there is a commercial product that is designed specifically for this application called Pizza Crisp, it looks like bread crumbs but it really isn't. We use it in some wholesale, high speed, high volume pizza manufacturing facilities in much the same manner as dusting flour is used. Where we use in most is on sheet and die cut lines where we are making thick crust pizzas which require post cutting/forming proofing of the formed dough pieces on a tiered/waterfall type final proofer. The Pizza Crisp is used rather than corn meal or flour as it provides for a better release from the proofer belts as the dough skins are transferred from one level to the next. FAILURE OF THE DOUGH TO PROPERLY RELEASE FROM ANY OF THE PROOFER BELTS IS NOT AN OPTION. If the dough were to stick to a proofer belt it would start a cascade event of dough pieces getting stuck to the conveyors and falling out of the proofer, in no time at all you can have 500 or more pounds of dough piled up in/on the proofer which will require an hour or more of line down time to clean-up, sanitize, and put back into production. In the mean time you have over 1,000-pounds of dough already on the line to contend with. This is not something one wants to contend with so the added cost of the Pizza Crisp is cheap insurance.

Tom Lehmann/The Dough Doctor  
2615

### **Dough Clinic / Re: mixing flavor into dough**

Sure it's done but for the most part those days are gone, by about 15-years now. You need to be careful when adding onion and/or garlic to the dough as it will act as a reducing agent, making the dough softer and more extensible. There is a commercial product made from onion and garlic specifically for this application called Basic Natural from Cain Food Industries, Dallas, TX. The only difference is that in this application they are deodorized just like the Garlique Brand health supplement. Our research showed that this dough softening begins when the amount of dry onion and/or garlic exceed 0.15% of the total flour weight.

Little Lady Foods manufactures a type of crust referred to as a "dirty" crust. It's made using a blend of herbs, similar to the old PH herb crust. Cheese crusts can be made but they work better as a thick or pan style crust rather than a thin crust due to the propensity for burning. This is one reason why cheese dough has typically been reserved for bread sticks and rolls. Rather than using our regular cheese we found that using a white cheddar cheese powder at 5 to 10% of the flour weight made a much better product than when using wet cheese or grated/powdered cheese.

Old World Spices and Flavorings, K.C. Kansas used to have a really good herb blend that they made specifically for pizza crust applications.

Tom Lehmann/The Dough Doctor  
2614

### **Prep Equipment / Re: Making your own dough sheeter**

And don't forget to do some research on the speed of the rollers (r.p.m.) that's an important aspect too, too fast and you shred the dough, to slow and the dough doesn't pull through the rolls as it should. Used dough sheeters are just too cheap

to mess with. If you want to see something that is commercially made and somewhat similar to what you are describing check with National Manufacturing in Lincoln, Nebraska. They specialize in different types of small scale dough making and testing equipment and amongst their toys is a dough sheeter/moulder that is used when making small scale "pup" loaves in a baking lab. I had two of them at AIB.

Tom Lehmann/The Dough Doctor  
2613

### **Dough Clinic / Re: Incorporate high oil content into dough**

With a spiral mixer you should have the bowl filled to a capacity where there is a continuous strip of dough in the bottom of the dough, in other words the agitator should be in continuous contact with the dough, for most mixers this will probably mean something close to 75% of the stated bowl capacity.

Tom Lehmann/The Dough Doctor  
2612

### **Neapolitan Style / Re: Dough Improvements**

The "Instant" part of IDY stands for instant hydrating (actually fast hydrating) and each one of those IDY cylinders if full of cracks and fissures which are what allows for the rapid hydration. If the IDY is put into cool water (below 95F) the water enters into the yeast and exerts a flushing effect on the yeast where the glutathione (the plasma material within the yeast cell) is flushed out before the yeast cells can expand to stop the flushing action (the warm water is what causes the yeast cells to swell) as a result the yeast cells are significantly damaged and fermentation is affected plus the glutathione exerts a reducing action, much like that of L-cysteine, on the dough which results in a softer, weaker, more extensible dough. As for oiling the dough balls this is important for two reasons, one is that it prevents the dough balls from drying out and developing a dry skin and the second is to allow for easier separation of the dough balls, even if they touch, they will be easier to separate in lightly oiled. Oiling of the dough balls is important if the dough is either cold fermented or fermented at room temperature in the box. Believe it or not, a skin will form on the dough faster during room temperature fermentation than when the dough is being fermented in the cooler.

Tom Lehmann/The Dough Doctor  
2611

### **Dough Clinic / Re: Incorporate high oil content into dough**

The spiral is the agitator and while mixing speed is highly subjective my recommendation is to mix the dough at low speed JUST until you don't see any dry (white) flour in the bowl, then begin pouring in the oil, after all of the oil has been added continue mixing at low speed for about one additional minute, then switch to the next higher speed and continue mixing until the dough begins to take on a smooth appearance. Every mixer is different and there are many variations of the spiral mixer but on average, I have found that for best oil incorporation (over 5% oil) you need to have enough dough in the bowl to allow the agitator (spiral) to remain in CONSTANT contact with the dough as the bowl rotates. If this doesn't happen the dough tends to just get all wadded up and tossed around by the spinning spiral without good mixing action. With most spiral mixers you will need to approach about 75% of the bowl capacity to achieve this effect.

Are you confusing the ability of a spiral mixer to effectively mix doughs as small as 25% of bowl capacity with the topic here of trying to effectively incorporate high levels of oil into the dough? If you try to incorporate high levels of oil into a dough

using a spiral mixer with a too small dough size when you add the oil the dough will just begin flopping around in the bowl like a dying carp. With a planetary mixer the dough just balls up and gets pushed around, and around, and around, and around, etc., by the agitator and never gets any mixing action, at least not until you've had a chance to read at least half way through the novel War and Peace, it'll take a while.

Tom Lehmann/The Dough Doctor  
2610

### [\*\*Dough Clinic / Re: Incorporate high oil content into dough\*\*](#)

Steve;

When we mix doughs with 20% or more shortening/butter/margarine we always mix the dough to essentially the full level of gluten development that we want for the product, the fat is then added and the dough mixed just enough to thoroughly incorporate the fat. This is necessary as the high levels of fat make gluten development almost impossible.

Tom Lehmann/The Dough Doctor  
2609

### [\*\*Sauce Ingredients / Re: Got some 7-11 now what??\*\*](#)

I'd use it right from the can, that's how it was intended to be used. For me though, since I have a special affinity for garlic and fresh basil, I'd sauce the skin (right out of the can), add some sliced fresh garlic and then add a few leaves of fresh basil, add some fresh mozzarella and a little shredded or shaved Parmesan cheese and into the oven and get ready to enjoy a great pizza. :)

Tom Lehmann/The Dough Doctor  
2608

### [\*\*General Pizza Making / Re: mixing 2 doughballs with different CF times\*\*](#)

My advice is to forget the kneading as you'll never achieve a homogeneous dough mass unless you put them into a mixer and remix back to a smooth dough consistency.

Why not just use the old dough to make some bread sticks?

Or, you could pin the dough out thin, cut into circles with a biscuit/cookie cutter and bake as mini-rounds, spread with some Ricotta cheese, add a basil leaf and a thin slice of ripe tomato and serve as an appetizer. Note: Be sure to dock them well and if they still pocket during baking just deflate immediately upon removal from the oven.

That way if they turn out decent you can surprise your friends but if they don't they'll never be any the wiser.

Tom Lehmann/The Dough Doctor  
2607

### [\*\*Dough Clinic / Re: sour dough starter\*\*](#)

That's an impossible question to answer as all sourdough starters are different. Once you have made the starter and allowed it to settle down for a week or so of feeding you can begin using it. Start at 5% and work up in 5% increments from there. Remember, your starter will be 50% water so whatever amount of starter you use reduce the dough absorption by half of the amount.

Tom Lehmann/The Dough Doctor  
2606

### [\*\*Dough Clinic / Re: Incorporate high oil content into dough\*\*](#)

Because a Roux is used to PREVENT gluten formation and we want to have gluten formation.

Tom Lehmann/The Dough Doctor  
2605

**Starters/Sponges / Re: Dough stiffness when using starter v. commercial yeast**

More than likely it is due to the strength of your starter, it is not as active as the commercial yeast so the doughs are receiving less fermentation with your starter than they would receive using commercial yeast in the same period of time.

Tom Lehmann/The Dough Doctor  
2604

**Dough Clinic / Re: Incorporate high oil content into dough**

You bet it will. Depending upon a number of factors including the strength of the flour and amount of oil in question can result in a softer, more sticky or tacky dough than normal. A number of years ago we set about to find out what was at the root of people declaring that the weather was impacting the absorption properties of their flour. We made 10 doughs all at the same time using the process which was in common use at the time, put water and oil in the mixing bowl followed by the salt, sugar and yeast, agitate (this serves no purpose) and then add the flour and mix. What we got were about four different variations of the same dough out of the ten replicates. We found that the oil always floated to the top of the water where it was in direct contact with the flour, the oil would then begin to soak into the flour, since water cannot displace oil in the flour and gluten is only formed when the wheat proteins glutenin and gliadin are agitated in the presence of water, there was an unknown portion of the flour which was not capable of forming gluten, hence the unexplained variability in the dough which lead to Mother Nature being blamed for the variability. To make matters even worse bakers got into the habit of reducing the dough absorption when it was raining so now if a good portion of the flour did not form gluten the dough felt pretty normal but if only a small percentage of the flour became oil soaked more gluten was formed and the dough felt tighter/stiffer in the bowl so more water was added. In both of the above scenarios a less than stellar finished product was the end result. This all lead us to look at developing a mixing method where the oil was omitted from the dough until the flour had a chance to fully, or nearly fully absorb the water, this is what we now call the delayed oil addition mixing method. It works so well that it is in common use in most pizzerias and essentially all, if not all, commissary operations where dough is made for a number of stores in a region. Mind you, this was all done using only 2% oil, as the oil percentage rises the situation gets a lot worse resulting in excessive dough variability.

Tom Lehmann/The Dough Doctor  
2603

**Dough Clinic / Re: Incorporate high oil content into dough**

HBolte;

The conclusion that we came to confirmed what the baking industry has known for decades, humidity has no impact upon the immediate dough absorption when normal (relatively short) mixing times of 6 to 10-minutes are employed however, when long mixing times are employed, like when using a planetary mixer and mixing a dough for 20+ minutes at low speed, and in a low humidity environment (think El Centro, CA) the dough can dry out during the mixing process which usually requires that the dough absorption be increased by 2% to compensate for

this but when we did a similar experiment in the Philippines (hot and very humid)we found that we did not need to reduce dough absorption for the same flour from that which we used at AIB (72F/50% R.H.). While I have not conducted these tests using a spiral mixer I would assume the results would be similar to that which we got using a planetary mixer. Where you do see a change though is when using a closed bowl mixer such as a commercial high capacity (800 to 2,000-pounds) dough mixer, in this case there is essentially no impact upon the dough due to exterior climatic conditions. This fact is well recognized in the commercial baking industry, the reason for this is due to controlled environment created within the closed mixing bowl. It should be noted though that the temperature and relative humidity (R.H.) can/will impact the moisture content of the flour over time which as expected will, in turn, affect the dough absorption when that flour is used.

Tom Lehmann/The Dough Doctor  
2602

### **Prep Equipment / Re: Magic Mill DLX 2000 or wait for spiral?**

Since you already have a working mixer, if it were me, I'd be holding out for a new spiral mixer.

Tom Lehmann/The Dough Doctor  
2601

### **Dough Clinic / Re: Something Different Sourdough**

Neil;

In looking at the dough formulation I wish to comment on the following; The dough absorption does not change (it is unaffected by the weather or humidity).

Cultured/commercial yeast and active sourdough starter do not play well together, especially in a CF dough. The yeast completely takes over as the dominant microflora so the only thing you are getting from the addition of the sourdough starter is the acid content of the starter which you can get a lot more easily by just purchasing a dry, white sour. There are available from any bakery ingredient supplier such as Puratos Corp. or Watson Foods. I think Red Star/Lesaffre Yeast also now has one too. These are added to the dough as an ingredient at about 2% of the total flour weight and provide just what you have described flavor wise.

The acidity of the dough is what is inhibiting the bottom crust color development. If you want to get some color development you might experiment with adding some sweet dairy whey the dough formulation, I would suggest a starting level of 3% and work up from there. The whey contains roughly 71% lactose (milk sugar) which is the least sweet of all the sugars, only about 10% as sweet as sucrose, so it will not affect the crust flavor. No additional water will need to be added to the dough formulation when the dry whey is used.

Tom Lehmann/The Dough Doctor  
Providing Consulting and Education Services to the Pizza Industry since 1967.  
2600

### **Dough Clinic / Re: Something Different Sourdough**

The answer to #1 is....they don't. This is why sourdough breads and rolls are always so light in color unless they're baked at over 750F, and even that it's a struggle to get much color.

When you say "strengthen" please describe. Do you mean feed?

The type of yeast used can have an impact upon the finished crust flavor but flavor is a VERY COMPLEX thing and I have no idea of how volatile those aromas are. Your best bet would be to try it and see what happens, remember all yeasts,

especially brewers yeasts do not ferment the same as bakers yeasts do so depending upon the strain you use it might not even perform in a dough system.  
Tom Lehmann/The Dough Doctor  
2599

### **Dough Clinic / Re: Something Different Sourdough**

That's the point I was making, even at temperatures of 750F we struggle to get much color from a true sourdough leavened product, specifically one that imparts a tart flavor to the finished product. I did not mean to infer that breads are baked at anything even remotely close to 750F.

Tom Lehmann/The Dough Doctor  
2598

### **Dough Clinic / Re: Something Different Sourdough**

Longer baking times can be employed with breads and rolls than can be used when making pizzas, additionally the type of sourdough starter and its strength (acidity) play a big part in the development of crust color.

Tom Lehmann/The Dough Doctor  
2597

### **Dough Clinic / Re: Dough troubleshooting**

The most important temperature is that which is taken as soon as the dough is finished mixing (off the hook) as it sets the stage for all fermentation to follow (temperature is a major driver of fermentation as it has a significant impact upon the rate of fermentation). The rule that we follow in a pizzeria, and that which we used to teach our students, is to get the dough completely processed (scaled, balled, boxed and into the cooler/cross-stacked) within a 20-minute window of time. This is assuming you have not over shot your targeted finished dough temperature. The reason for allowing this 20-minute window for processing the dough is that when we have a finished dough temperature within the 75 to 85F range and a total dough mixing time of 10-minutes or less, the yeast will typically exhibit a lag time of approximately 20-minutes, this is due to the yeast still acclimating to the environment of the dough as well as beginning to produce sugars to feed upon. The rate of fermentation is still very slow during this time so there is a minimal change in dough density during this 20-minute period which in turn is also important as dough density will have a significant influence upon the rate at which the dough is cooled. With all of that said, when we use a pre-ferment without any additional yeast being added to the dough the yeast is already actively feeding (fermenting) so that 20-minute window is cut in half to only 10-minutes.

Tom Lehmann/The Dough Doctor  
2596

### **Dough Clinic / Re: Is Tom ok??**

Thanks for the concern guys! :)  
I was in Minnesota at the cabin taking an extended vacation during which time I make it a habit to only occasionally monitor my e-mail and never go onto any of the boards in which I participate. Back for now but busy writing and consulting.

Tom Lehmann/The Dough Doctor  
2595

### **Dough Clinic / Re: Looking for a thin crust recipe**

If you go to the PMQ web site <[www.pmq.com](http://www.pmq.com)> and go into the RECIPE BANK, use "dough" for your search word look for my home made pizza dough "recipe". I

have used it for well over 30-years in all kinds of home pizza making applications and it works quite well. It'll get you started, then you can further refine it by getting a scale to weigh the ingredients which will allow you to modify the dough "formulation" to give you exactly what you are looking for and as you develop your expertise you will be able to modify the dough management procedure giving you even more control over the characteristics of the finished pizza.

Tom Lehmann/The Dough Doctor  
2594

### **Dough Clinic / Re: Freshness of flour**

Actually, there was once a time in this country when flour was milled and shipped directly to the baker for immediate use but it was soon discovered that freshly milled flour wasn't the best for use in baking as it gave softer, stickier doughs requiring a lower dough absorption to handle decently. This was found to be due to a lack of oxidation in freshly milled flour so bakers began addressing this by storing flour near their ovens (a warm place/ heat = oxidation) for up to 30-days prior to use. Eventually flour millers began adding oxidation to the flour so it could be used within hours of milling without any problems associated with fresh aka green flour.

As for the difference in nutrient content of white v/s whole grain flour, enriched white flour is enriched to the same nutrient content as its whole-grain counterpart, the only difference being that the fiber (bran) portion is missing.

While white wheat varieties are all the rage today (they can be milled to a higher extraction rate than hard red wheat varieties while retaining a whiter color in the flour which means a greater flour yield per CWT (100#) of grain milled, hard red wheat varieties have historically been the most common wheat varieties milled for making breads, soft red and white wheat varieties are typically reserved for making low protein cake and pastry flours. The main type of wheat grown in Australia is hard white wheat while the main type of wheat grown in the U.S. and Canada is hard red wheat, with Canada growing mostly hard red spring wheat aka DNS (dark northern spring) while the U.S. grows HRW (hard red winter) wheat as well as DNS, HWW (hard white wheat) and soft white wheat varieties which are used for making lower protein flours as well as breakfast cereals.

Tom Lehmann/The Dough Doctor  
2593

### **Dough Clinic / Re: Dough troubleshooting**

I am a refugee from The American Institute of Baking (AIB) where I was employed for 50-years until my retirement 5-years ago. I ran the Experimental Baking Group for a good deal of that time and provided consulting services to the food industry world wide for over 20-years.

I developed the entire pizza program for AIB and authored a number of AIB Technical Bulletins on pizza related topics over the years. As a means of disseminating the knowledge we were learning about pizza from our research I developed the AIB Practical Pizza Seminar which I wrote the presentations for and lead the instruction for over 35-years (right up until my retirement 5-years ago). Yes, I'm implying that there "were" classes that you could sign up for. I don't know anything about the program anymore as I am no longer affiliated with AIB or its programs, but you might go to their web site at <[www.aibonline.org](http://www.aibonline.org)> (unless they've changed it) and look at their education seminar offerings. The class was usually scheduled in October. I have no idea if they still offer it or not and I have no idea of the quality of instruction or course content. When Jeff Zeak and I did the seminar it was second to none...a seminar is not successful that long by not being

good, we even took it on the road and did regional seminars around the U.S. for a number of years.

Tom Lehmann/The Dough Doctor  
2592

### **Dough Clinic / Re: mixing flavor into dough**

Here's a little trick I used many years ago to increase the amount of garlic in the dough (as opposed to added to the finished/baked product), you will need to use dried minced garlic, blend it into some oil, the idea is for the garlic to absorb oil which will not be displaced by the water, this reduces the leaching of the garlic into the dough so you don't get as much dough softening from the garlic as you otherwise would, and the oil will help to retain more of the volatile compounds from the garlic thus creating a slightly more intense flavor in the baked crust.

Tom Lehmann/The Dough Doctor  
2591

### **Dough Clinic / Re: The difference of a rolling pin and hand shaping**

Explanation:

When using a rolling pin you forcibly move air bubbles already existing in the dough around causing them to collapse (much like rolling out a piece of bubble wrap) which in turn causes many of the cells/bubbles to coalesce forming larger bubbles (they may not always be seen but they're there) and when heated in the oven those larger bubbles expand with much greater force than many small cells/bubbles would, causing them to coalesce even more which results in what you are most likely seeing. The use of a commercial dough sheeter/roller doesn't exhibit this characteristic as the dough is sheeted completely with each pass through the sheeting rolls resulting in pretty efficient de-gassing of the dough. One thing you might experiment with is using your rolling pin to open the dough to within about 2-inches (50-mm) of the desired finished diameter and then finishing the opening process by hand. When using the rolling pin in this manner the dough is still relatively thick so the coalescing of cells is not an issue and, as an asset benefit, you end up getting a much more uniform thickness across the entire diameter of the skin and finished crust. In short, it helps to address the problem of getting an overly thin center in the dough skin, a common problem experienced by most novices and some "old salts" too.

Tom Lehmann/The Dough Doctor  
2590

### **Dough Clinic / Re: bread question for Tom**

Sounds like a tasty bread. The things I would do are as follows:

- 1) Make sure the yeast level is at about 8% or a bit more (assuming compressed yeast).
  - 2) Add only 1/2 of the molasses (unsulfured) and 1/2 of the fat (personally, I'd be using butter (unsalted)).
  - 3) Mix the dough to about the same point as you would a pizza dough (just until it comes smooth).
  - 4) Add the remainder of the molasses and fat and mix (medium speed) to full gluten development.
  - 5) Look for a finished dough temperature of 80 to not more than 85F. Process as directed from there.
- If you don't have a process try this:
- 1) Scale and ball.
  - 2) Oil the dough balls and place into individual mixing bowls that have been lightly

oiled as well.

3) Drape with a sheet of light weight plastic to prevent drying and allow to ferment at room temperature for 2.5-hours.

4) Turn the dough out of the bowl onto a lightly floured surface and using a rolling pin form into a rectangle as long as your loaf pan is long (you want the dough to be about 1/4 to 1/3-inch thick).

5) Roll the dough into a log and crimp the seam to prevent unwinding, place into a greased pan and proof in a warm (95 to 100F) area until the dough rises about 1/2-inch above the top edge of the pan (a 1# loaf pan will require 18-ounces of dough). You can also proof the dough at room temperature, it will just take longer).

6) Bake at 425F for about 22-minutes. The loaf will have a very dark color. NOTE: Depan the bread immediately upon removal from the oven.

Alternative Method:

4) Turn the dough out of the bowl onto a floured surface and knead the dough for a few seconds, form back into a ball and place back into the lightly oiled bowl.

5) Allow the dough to proof in the bowl for about 70-minutes.

6) Carefully turn the dough out of the bowl onto a greased baking sheet, allow the dough to ferment for an additional 15-minutes at room temperature uncovered.

7) Carefully dock the dough by cutting a cross-hatch (#) into the top of the dough using a razor blade (you want this to cover the entire top).

8) Give the dough a very light misting of water and bake at 400F until done.

Note: Be sure to use ONLY oil where stated. For pan grease use regular Crisco.

I like to brush the top of the still hot bread with melted butter and drape with a clean towel and allow to cool on a cooling rack.

Tom Lehmann/The Dough Doctor

2589

### **Dough Clinic / Re: middleby marshall ps636**

Have you contacted Middleby-Marshall about the problem yet?

Tom Lehmann/The Dough Doctor

2588

### **Dough Clinic / Re: How Much Protein per 100gr for High Hydration Dough?**

Are you using an autolyse? If not, include it in your dough making process by placing the flour and water into a bowl, stir until the flour is whetted, cover and allow the flour to hydrate for a couple of hours, then add the remainder of ingredients and mix. If this work for you begin experimenting with shorter autolyse times until you find a time that works well with your flour...it could be as short as 30-minutes or as long as 2 to 3-hours. Also, remember that high absorption doughs will always be soft and somewhat sticky. Lightly oiling your hands will make handling much easier and using a little extra dusting flour helps too. A bench scraper will be a big asset in working the dough and lifting it up off the work surface.

There are a few very good videos here showing the working of high absorption doughs.

Tom Lehmann/The Dough Doctor

2587

### **Dough Clinic / Re: BUBBLY CRUST WANTED**

Since you're a novice at opening the dough, try this, we developed the procedure to train novices in opening dough into skins with as little effort as possible in the

shortest time possible. As you become proficient you will gravitate away from the rolling pin and begin opening the dough totally by hand.

Procedure: Your dough should be made with approximately 65% dough absorption with 48-hours cold fermentation under its belt.

Turn the dough ball out onto a floured surface and dust both sides of the dough, using a rolling pin carefully open the dough to within about 2-inches of the final diameter you are targeting, then hand or bench stretch the dough to full diameter...done. If you want to see this done in a video go to my web site <[doughdoctor.com](http://doughdoctor.com)> and watch my dough making video (Part-3) will contain the instructions on opening the dough ball into a skin.

Tom Lehmann/The Dough Doctor  
2586

### **Dough Clinic / Re: Overfermented dough or not?**

The dough balls look like they're ready to open in the last two pics.  
Tom Lehmann/The Dough Doctor  
2585

### **Dough Clinic / Re: How Much Protein per 100gr for High Hydration Dough?**

The wheat varieties from which Caputo flours are produced tend to give soft and extensible doughs while the wheat varieties from which U.S. and Canadian flours are produced are selected to give doughs with a lot of strength. If its strength that you are looking for I don't think high absorption Caputo doughs are the way to go, instead, start out using 100% strong (Manitoba) flour and work your way up to 70% absorption, once you have that mastered begin introducing your Caputo flour (to replace the Manitoba flour) in 25% increments. I would also suggest dropping the absorption back to not more than 65% with each addition of Caputo flour and working back up from there.

Tom Lehmann/The Dough Doctor  
2584

### **General Pizza Making / Re: Dough Formula for Heavy Topped Pizza**

I like to use a middle to upper one third rack position as I'm looking for more heat to the top of the pizza than to the bottom (remember, it's already fully baked). I do not recommend placing the pizza directly on a stone or baking steel as this will generally cause the bottom to get over done, instead I like to use a screen and just place it directly on the oven rack.

Tom Lehmann/The Dough Doctor  
2583

### **Dough Clinic / Re: BUBBLY CRUST WANTED**

JVP123;

I'm afraid that a cold dough will bubble excessively and possibly turn into a pita, but if one were to dock the skin well this might control the bubbling and possibly give something closer to the desired result....just to clarify, we are talking about surface "bubbling" not achieving an open, porous crumb structure.

We also know from work that we did on eliminating bubbling that fermentation plays a big role in bubbling. When a dough is made with less than 2.5-hours total fermentation time bubbling is prevalent and it diminishes as fermentation time is increased so if the dough is freshly made and fermented at room temperature for, let's say 1.5 or 2-hours, (mix, immediately ball, ferment balls for 2-hours at room temperature and open into skins for immediate use) this might also work, again docking might be necessary to control bubbling. Make sure to use a proper dough

docker with flat points on the docking wheel.

Tom Lehmann/The Dough Doctor

2582

### **Dough Clinic / Re: Warming up the dough - Why?**

DustinA;

This is due to the colder dough being slower to set/gelatinize while allowing more time for the yeast to generate leavening gas as well as more time for water vapor to turn into steam all of which contribute to what we refer to as the pita effect, where the bubbles become so large so as to make the crust look like a pita. When the dough is warmer the dough reaches the generalization point/temperature (about 140F) more quickly thus locking up the structure before it can be expanded into those large bubbles.

2581

### **Dough Clinic / Re: BUBBLY CRUST WANTED**

When baking pizzas in a pan bubbles are much fewer and further between than when the pizza is baked right on the deck at those lower temperatures. Next time try baking the pizza directly on the stone or on a piece of parchment paper placed directly on the stone.

Tom Lehmann/The Dough Doctor

2580

### **Dough Clinic / Re: Warming up the dough - Why?**

If you wait too long and allow the dough to warm up too much it can become difficult to open, this is especially true if you have a high absorption dough, also the dough will become more gassy, those gas bubbles will begin to expand almost immediately upon placing the pizza in the oven resulting in more oven spring which we can live with at home but in a pizzeria it will make the pizza look different or if they are being baked in any kind of a conveyor oven it can dramatically impact how the pizza is baked....neither of these are favorable in the eyes of the consumer as it makes the pizza "different" be it good or bad. In a commercial setting we all know that quality is not necessarily attribute #1 (let's see a show of hands from all who agree). Operators like to think that it is but the real #1 is product consistency, if the product isn't consistent it don't make no matter how good the pizza is. We like to refer to this as the McDonalds philosophy, not the best burger in the world, but you ALWAYS know what you're going to get.

Tom Lehmann/The Dough Doctor

2579

### **Dough Clinic / Re: How Much Protein per 100gr for High Hydration Dough?**

Frenchy2000;

I still stand by my last post, begin with 100% Manitoba and begin introducing the Caputo in 25% replacement increments, it'll be a journey of learning and there will be some good pizza to be had along the way. :)

Tom Lehmann/The Dough Doctor

2578

### **Dough Clinic / Re: Fresh Yeast + Starter?**

In most instances the domestic yeast will quickly become the dominant microflora and provide what we know as "normal" yeast fermentation however you can still have some of the residual flavor components of the starter to provide an additional dimension of flavor.

Tom Lehmann/The Dough Doctor  
2577

**Dough Clinic / Re: How Much Protein per 100gr for High Hydration Dough?**

In all probability you don't have a reverse spiral dough arm for your mixer, instead, what it sounds like you might have is just a plain old "J" hook and it is a very common thing for the dough to climb up on the hook and just go for a free ride on the hook as you have described. We have discussed the reverse spiral and "J" hook in detail previously, you might want to take a stroll through the archives to find a few of these discussions, or if you want, just post a picture of your existing hook and we can make an immediate determination as to whether it's a reverse spiral or "J" hook.

Tom Lehmann/The Dough Doctor  
2576

**Newbie Topics / Re: PLEASE HELP: Issue getting dough out of boxes**

First of all, you only want to allow the dough balls to warm to 55 to 60F before using them, secondly, the second picture provided shows the dough balls just "kissing" so they should not be too difficult to remove using the correct tool. If you go to the WRH web site <[www.wrh.net](http://www.wrh.net)> and go into their pizza products and click on their scrapers you will see their scraper Model DS-2 which works very well in tight spaces, I have found that the DS-1 is a little too big for use in removing the dough balls from most boxes but it works well on the bench.

Tom Lehmann/The Dough Doctor  
2575

**Newbie Topics / Re: PLEASE HELP: Issue getting dough out of boxes**

I should also mention that the dough balls appear to have been placed a bit too close together for your dough management procedure, it appears that only four dough balls would provide a better placement in your boxes.

Tom Lehmann/The Dough Doctor  
2574

**Dough Clinic / Re: One dough ball lumpy texture, the other smooth?**

That first dough ball appears to have been rounded twice back to back which is why it has a rough/lumpy appearance. In a case like that where you find the second dough ball weights more than the one already rounded (balled) the correct thing to do is to just cut a piece off of the heavier dough ball and slip it under the lighter weight dough ball, then forget about it. The piece that you added will become as one with the rest of the dough ball.

Tom Lehmann/The Dough Doctor  
2573

**Dough Clinic / Re: Question on cold fermentation and doubled rise**

Doubling of the dough volume is about right for bread but pizza technology is different from bread technology as the dough doesn't need to expand to nearly the volume that it does when making bread, this is why we can ferment the dough for extended periods of time for flavor development. The difference between cold fermenting and fermenting at room temperature is primarily in the type of flavor developed aside from any convenience factors.

Tom Lehmann/The Dough Doctor  
2572

## [\*\*Dough Clinic / Re: Tony's Poolish & Tiga Recipe's not producing the proper weight starter??\*\*](#)

Scaling error is the only thing that comes to mind. I'm not familiar with the specific starter so I can't comment on how using less of it might impact the dough and finished crust and it would make a difference if the flour or water were mis-scaled so it's impossible to say.

Tom Lehmann/The Dough Doctor  
2571

## [\*\*Dough Clinic / Re: Question on cold fermentation and doubled rise\*\*](#)

Not really, I guess if you are talking about just a dough ball then doubling in size might be considered a good target, but in pizza production where we can go through a bulk fermentation period of a day or more and then scale and ball and give RF or CF to achieve final conditioning of the dough for opening into skins. As you can see, in this case there is a lot more fermentation than what we typically think of for bread (artisan breads excluded). The only dough test that applies to both bread and pizza doughs is the finger indentation test where a finger is pushed into the dough to the first joint and removed, if the dough doesn't do anything it is not ready for opening but if it recedes slightly it's ready for opening, if it collapses it's over fermented for bread but in most cases it will still work for making great pizzas. This is why we see so many different dough management procedures being used for making pizza with amount of total fermentation all over the board while with bread (think pan breads) you're limited to following some pretty common and basic guidelines for fermentation.

Tom Lehmann/The Dough Doctor  
2570

## [\*\*Dough Ingredients / Re: Malt + amylase in flour... Why ?\*\*](#)

E-300 appears to be what we call a "cocktail" ingredient comprised of ascorbic acid and amylase enzyme. You will see this here in the U.S. too. Puratos Company is a big supplier of these "cocktail" ingredients.

Tom Lehmann/The Dough Doctor  
2569

## [\*\*Dough Clinic / Re: Fresh Yeast + Starter?\*\*](#)

If you delete the domestic yeast from your starter then you will need to adjust your procedure to accommodate the leavening from your starter.....some might say that you'll be making the dough by a sourdough process.

Tom Lehmann/The Dough Doctor  
2568

## [\*\*Dough Clinic / Re: Fresh Yeast + Starter?\*\*](#)

If the "starter" is made using domestic yeast it is commonly referred to as a liquid ferment or brew. If there is sufficient flour present to give it a dough like consistency it is referred to as a "sponge". Essentially all white pan bread sold in the U.S. through the chain stores (supermarkets) is made from one of these two ferment systems. Typically the ferment provides about 50% of the required amount of yeast to leaven the dough with the rest of the yeast being added to the dough (commonly referred to as a "yeast spike"). The liquid ferment/brew/sponge main purpose is to condition a portion of the flour and to provide flavor for the finished product, the longer the fermentation time the more "fermentation" flavor will result. Without knowledge of your entire process I cannot say if the formula might need to be changed if you leave the yeast spike out but try it to see what you get, if

you want more oven spring you can always add a small amount back as a spike.

Tom Lehmann/The Dough Doctor

2567

### **Dough Clinic / Re: Dough troubleshooting**

The greatest downside to letting the dough/dough balls rest at room temperature before placing them into the fridge is that during those 20-minutes the dough is beginning to ferment causing the dough density to change (become less dense) and become a better insulator as it does so. this in turn magnifies the effect of the finished dough temperature as it impacts the rate of fermentation, this is not a problem if your finished dough temperature is always "spot-on" but if you're like me you have those days when when you can only scratch your head and wonder how you ended up with the finished dough temperature indicated on the thermometer as it's not even close to target, this is when the real fun begins as the entire fermentation cart has been upset and you will now be forced into making a judgement call as to when the dough is ready to use and sometimes you win and well.....sometimes you don't. All of this can be avoided or at least minimized by taking the dough straight to the fridge as soon as possible after mixing and balling.

Tom Lehmann/The Dough Doctor

2566

### **Dough Clinic / Re: Does hydration change during fermentation?**

My personal experience with Caputo flours is that they do not have a lot of tolerance to long fermentation times. I've found that the doughs made with Caputo were generally getting too soft to handle after 36-hours of total fermentation time (in the cooler), and seemed to be at their best after 24-hours.

Specific to your question, both water/dough absorption and fermentation have a significant impact upon the dough viscosity so a dough that is becoming too soft and sticky "might" benefit from the use of a lower dough absorption but if the stickiness is due to breakdown of protein and hydrolyzing of starch into sugars there will be nothing that can be done to alleviate the stickiness.

Tom Lehmann/The Dough Doctor

2565

### **Dough Clinic / Re: Warming up the dough - Why?**

Matt;

That certainly sounds like your dough might be getting too gassy due to allowing it to warm up too much. Been there, done that too with the bubbles in the dough. As the bubbles form they displace dough so when you pop them there is little or no dough under them which results in the thin spots. I normally just treat it like a hole in the dough, pull a piece of surrounding dough over the thin spot or hole and press it down to lock it in place and hope for the best.

Tom Lehmann/The Dough Doctor

2564

### **Dough Clinic / Re: Does hydration change during fermentation?**

It might help a bit with the handling.

Tom Lehmann/The Dough Doctor

2563

### **Dough Clinic / Re: Fresh Yeast + Starter?**

It sounds like you might be making a brew but it's impossible to say without knowing how much water was used, how much yeast was added and how much

flour was incorporated, then I would need to know your actual dough formula including how much of the "brew" you usually add to make a dough.

What type of yeast are you getting from your local bakery? From the description it (directions) it sounds like ADY or IDY. Most bakeries use fresh yeast/compressed yeast/wet yeast but the directions you provided clearly calls for some form of dry yeast.

Tom Lehmann/The Dough Doctor  
2562

### **Dough Clinic / Re: Fresh Yeast + Starter?**

One piece is still missing: How long do you ferment the poolish for and what is the temperature?

Tom Lehmann/The Dough Doctor  
2561

### **Dough Clinic / Re: Fresh Yeast + Starter?**

So what you have there is a brew. It's common to not include the flour in the brew as part of your 100% dough flour as it is pretty well degraded due to all that fermentation.

Since yeast does not multiply during fermentation you will have the same amount after the fermentation period as you added to the brew when you set it, since you are adding only 75% of the brew you are getting only about 75% of the yeast that you added ( $0.36 \times 75$  press the "%" key and read 0.27-gram). So  $0.27 \div 453 \times 100 = 0.0596\%$  yeast being provided by the brew (assuming 100% yeast survival). Considering that a typical pizza dough formulation will call for something on the order of 0.5 to 1% CY, I think you would be safe by just adding 0.5 to 1% CY with or without the addition of the brew, however, if the brew is deleted you will need to add the water contained in the brew to the dough formula and your dough management procedure will need to include sufficient fermentation time to condition the dough and develop flavor for the finished crust.

Tom Lehmann/The Dough Doctor  
2560

### **Dough Clinic / Re: Warming up the dough - Why?**

From a technical standpoint, yes, but from a practical application, no. The time gained wouldn't be all that great and there would be a fear of reducing the yeast to a level where it cannot produce sufficient leavening power to provide the desired oven spring which opens a Pandora's Box of good things to happen such as development of a gum line, tough, chewy crust, lack of crispiness, sometimes even getting the bottom to color up properly can result when the yeast is reduced too much. I see this quite frequently at pizzerias where they don't cross-stack or don't cross-stack long enough and the dough blows so they reduce the yeast to address the blown dough issue and end up with a plethora of new issues to contend with.

Tom Lehmann/The Dough Doctor  
2559

### **Dough Clinic / Re: Fresh Yeast + Starter?**

The actual number of yeast cells does not increase substantially, instead what happens is that daughter cells mature as do budded cells but further budding does not occur unless significant amounts of oxygen and nutrient are introduced into the yeast slurry and held under strict pH and temperature conditions, this is how yeast is cultivated by the major manufacturers. If yeast cells were to multiply during fermentation we would have run away fermentation at the slightest provocation.

I'm sure you can research how bakers yeast is made on the Internet to get more information and if anyone has the Pyler books (Baking Science and Technology/E.J. Pyler) I believe it's covered in there too.

Tom Lehmann/The Dough Doctor  
2558

**Dough Clinic / Re: Fresh Yeast + Starter?**

Your sourdough starter is comprised of both wild yeasts as well as lactic acid forming bacteria. The yeast doesn't multiply, but the bacteria, like other bacteria freely multiply and that is what you are seeing.

Tom Lehmann/The Dough Doctor  
2557

**Dough Clinic / Re: Crunchy crouton like pan pizza(grandma pie)**

Can you provide any pictures? Top, bottom and cut edge would be helpful. Are the pizzas pre-baked and just reheated for serving or are they baked to the order as most pizzas are? TMI can also be a good thing when you're trying to figure out how somebody is doing something.

Tom Lehmann/The Dough Doctor  
2556

**Dough Clinic / Re: Fresh Yeast + Starter?**

Conditions in a dough or liquid ferment are not correct for reproduction as there is a deficiency of oxygen.

Tom Lehmann/The Dough Doctor  
2555

**Dough Clinic / Re: Prepping Pizzas in Advance for Party**

This should work for you;

Open skins in your normal manner, place onto pizza screens and refrigerate thoroughly, apply a LIGHT application of oil to the top of the pizza skin followed by application of the chilled sauce, place back into the fridge until needed (assuming 2 to 3-hours). Note: If you place a piece of parchment paper under each skin as you place it on the screen you can dress the skins and peel them (just as you are presently doing) into the oven in a timely manner without disrupting the dressed skin. As one pizza is baking the next one can be dressed and ready to go into the oven as soon as the baked pizza is removed.....assuming you can maintain temperature of the deck when baking back to back.

You can fully dress the pizzas in this manner too but in that case I'd recommend leaving them out to warm slightly (15-minutes?) as part of the staging of the pizzas prior to baking.

Tom Lehmann/The Dough Doctor  
2554

**Dough Clinic / Re: Gum line issues**

I wrote an entire article on "the dreaded gum line" for PMQ Magazine some time back, maybe you can find it in their archives. There are MANY different things that can cause the gum line both singularly and in combination so it's impossible to immediately put a finger on the cause but maybe we can work through it.

Can you send me a picture of the pan you're baking the pizzas in? Also, what is the crown height (difference between the deck surface and inside top) of your oven?

Tom Lehmann/The Dough Doctor  
2553

## [\*\*Dough Clinic / Re: Adding gluten to low-protein flour?\*\*](#)

Julius;

For each 1% (bakers percent based on flour weight) of vital wheat gluten (VWG) that you add you will increase the protein content of the flour by 0.6%. If your existing flour has 10% protein content and you want to increase it to 14% (like All Trumps flour commonly used in N.Y.) you will need to add 4% additional protein so  $4 \div 0.6 = 6.6\%$  VWG to be added. For each 1% VWG added be sure to increase the dough absorption by 1.8 times the weight of the VWG added.

NOTE: Be sure to dry blend the VWG into the flour before adding any liquids.

Tom Lehmann/The Dough Doctor

2552

## [\*\*Chicago Style / Re: Milk in dough\*\*](#)

Dry milk solids, unless they are specifically labeled as "bakery grade" are low heat treatment meaning that it has not had the whey protein denatured so it will still need to be scalded prior to use or it can have a reducing (softening) effect upon the dough. Bakery grade milk solids have been exposed to "high" heat treatment so the scalding process is not required. Along the same lines, any low heat dry milk solids can also be used for making cheese but high heat cannot. This is why back when the CCC (Commodity Credit Corporation) had all that dry milk powder that was bought through the dairy subsidy program in government storage it was specified that it be low heat treatment which allowed the schools to draw upon the stocks of CCC dry milk and trade it to dairies in exchange for cartons of milk. The traded dry milk solids were then used in cheese production by the dairies. I had a project with the CCC where I was traveling to schools and universities across the U.S. for two years showing them how to utilize maximum amounts of dry milk solids in baked goods. The scalding of the milk is only required in yeast leavened products, any type of milk or milk solids can be used in chemically leavened products without the need to scald.

Tom Lehmann/The Dough Doctor

2551

## [\*\*Dough Clinic / Re: what dough mixer!\*\*](#)

The question begging to be asked is: What is the speed/r.p.m. of the spiral mixing arm?

Tom Lehmann/The Dough Doctor

2550

## [\*\*Dough Ingredients / Re: UPDATED on Frozen Dough Balls\*\*](#)

The best way to slack-out frozen dough balls is to lightly oil them while frozen and then place them into plastic food bags, twist the open end into a pony tail and tuck under the dough ball as you place it into the fridge, allow to thaw at least over night, then remove from fridge and allow to temper to 50 to 60F before opening. My favorite way though is to remove the dough from the fridge allowing it to warm to 60F and then placing it back into the fridge for use later in the day or better yet, on the following day, just remember to allow the dough to temper to 50 to 60F prior to opening.

Tom Lehmann/The Dough Doctor

2549

## [\*\*Newbie Topics / Re: Storing Premade Dough Balls.\*\*](#)

Mike;

You're probably going to be ahead by storing them in the fridge. With a little luck you should be able to hold them up to three days or so, and if they begin looking over fermented just re-ball, lightly oil and place into individual plastic bags (food saver bags, not Zip-Lock), twist the open end to form a pony tail and tuck it under the dough ball as you place it into the fridge and you should be able to get a few more days from it.

Tom Lehmann/The Dough Doctor  
2548

### [\*\*Newbie Topics / Re: Storing Premade Dough Balls.\*\*](#)

I'm not overly fond of wrapping in plastic wrap/stretch wrap as I find that the dough has a greater tendency to stick to it than it does a plastic food bag, just my observation. Additionally, when handled correctly, the food bags can be reused any number of times before discarding them.

Placing the dough balls that have been plastic wrapped into a container only makes sense if you place it into the container and cover it after the dough has been well chilled outside of the container for at least 3 to 4-hours. Otherwise you're more likely than not to be trapping heat in the dough ball(s) which can result in an inconsistent rate of fermentation among your dough balls. Additionally, wrapping the dough balls in plastic wrap makes it difficult, even for me, to ascertain the quality of the dough as it pertains to the amount of fermentation it has received. The only observation I've been able to make regarding fermentation with plastic (stretch wrap) dough balls is that when they might be over proofed the plastic wrap will be stretched tighter than a drum and the dough will look like it is ready to tear through or pop the plastic membrane at any minute.

Tom Lehmann/The Dough Doctor  
2547

### [\*\*Dough Clinic / Re: work flow for long cold ferments\*\*](#)

QJ is way ahead of me :).  
What is the total weight of your "bulk" dough and what is the temperature of the dough?

Tom Lehmann/The Dough Doctor  
2546

### [\*\*Chicago Style / Re: Soy Flour\*\*](#)

While defatted soy flour contains roughly 51% protein it is a non gluten forming protein so it really doesn't benefit flour in any way. Soy flour typically has 100% absorption, meaning that for each 1% soy flour added you need to increase the dough absorption by 1%. The main reason for adding soy flour to a dough is to provide a level of improved nutrition to the baked product. A lot of the flour sent overseas through the AID Program is fortified with up to 30% soy flour. In the commercial baking industry defatted soy flour is commonly used as a milk substitute in various pan breads and rolls/buns. It is also used in yeast raised donut mix formulations to adjust the absorption of the mix.

Tom Lehmann/The Dough Doctor  
2545

### [\*\*Dough Clinic / Re: Is it necessary to rest the dough?\*\*](#)

I'm not quite sure what you are asking but the temperature of the dough will have a major impact upon how much the dough rises/ferments during any relaxation period. The warmer the dough the faster it will rise/ferment and the cooler it is the slower it will rise/ferment. This is why it is so important to control the finished

(mixed) dough temperature to some pre-determined target temperature and then strive to hit or come reasonably close to that temperature with each dough.

Tom Lehmann/The Dough Doctor

2544

### **Chitchat / Re: What's your take on recipes?**

I don't like "recipes" since they're based on volumetric portions. When I see a "recipe" that looks interesting to me the first thing I do is to convert it to a "formula" based on weight measures, that way I can accurately replicate it if I want to or if necessary (more often than not) I can easily manipulate the ingredients to give me something based on my specific likes.

I am not too "hung-up" on using "nothing but the best ingredients" Papa John's has already bought up all of the best ingredients...LOL. Like many of us here I like to "fiddle" with the ingredients and procedures....we're not making rocket fuel or nitroglycerin, just good food, and it always seems to taste a little better after I've played with it a bit. :chef:

Tom Lehmann/The Dough Doctor

2543

### **General Pizza Making / Re: In a commercial setting...**

Victor;

Easy to do, just manage the dough by your preferred procedure, as soon as you open the dough balls into skins place them onto screens or some other suitable platform, immediately place in the retarder (commercial name for the fridge) on a wire tree rack, after 30-minutes in the retarder cover the tree racks with suitable plastic bags to prevent drying. The pre-opened skins will last all day. Depending upon your dough formulation you may be able to use the skins directly from the retarder or you might need to allow them to warm AT room temperature for a couple of minutes before dressing and baking. Before you ask, no, I am not saying to bake the pizzas on the screens, they serve only as a carrier in this case. I usually slip the skins off of the screen onto a wood prep peel, then adjust it a little using my hands and fingers prior to dressing the skin to the order and baking.

In most cases we can hold the pre-opened skins over night for FIFO use on the following day, this will depend upon how the dough performs on the following day (all formulas are different in this regard). In a worse case scenario you can add your scrap dough back to your new dough at a rate of up to 15% of the new dough weight, more than that and it will begin to impact the finished crust quality characteristics...remember, in a commercial setting consistency is the key to success.

Tom Lehmann/The Dough Doctor

2542

### **Dough Clinic / Re: Is it necessary to rest the dough?**

That rest period between mixing and balling aka bulk fermentation is an optional step. I personally never use a rest period as it leads to too much inconsistency in the dough as a result of lack of temperature control if I should miss my target finished dough temperature. My preference is also for the flavor developed during cold fermentation as opposed to room temperature fermentation, but if you have a preference for the flavors developed using room temperature fermentation not a problem, work out a bulk fermentation time that works with your dough formula and finished dough temperature.

Tom Lehmann/The Dough Doctor

2541

## **General Pizza Making / Re: In a commercial setting...**

Most of those that I've worked with ferment the dough in large food safe containers at room temperature...yes, they do strive to achieve their targeted finished dough temperature. After the fermentation process they scale/ball and rest until the dough balls can be opened into skins. Some will hold the dough balls or skins under refrigeration (best results are achieved with the skins held under refrigeration as I've described.

If you have a spiral mixer you should be able to put the additional 15% scrap dough in right with your full size fresh dough but if you have a planetary mixer, unless you're mixing smaller size doughs already, you will need to adjust the total dough size so as not to overload the mixer.

Tom Lehmann/The Dough Doctor  
2540

## **Dough Clinic / Re: Tarragon salmon pizza Question**

Actually, it sounds pretty good just as it is, but since I can never leave well enough alone I'd also add a few fresh onion and tomato slices and top with a light sprinkling of shredded Parmesan cheese. When I make my seafood pizzas I use a basic Alfredo sauce for the base which I make on the stove top by mixing Parmesan cheese and cream and gently heating until moderately thick and creamy (adjust viscosity by adding more cream if necessary) or if too thin add a bit more Parmesan cheese. I then add garlic and white pepper to taste. I use pre-cooked seafood but the fish is used raw. I thin slice it and place on the pizza letting the oven heat cook it for me. In addition to salmon you can use just about any firm flesh fish for a seafood pizza. If you search back in the archives here you will find some discussion on seafood pizzas which you may find of interest for different presentations.

Tom Lehmann/The Dough Doctor  
2539

## **Dough Clinic / Re: Formula for water temp**

Hummm, I've used the ice calculations for many years and it has always worked well for me. Remember, it works in "F" only not in "C". I used to have the calculations in "C" but I have no idea of where they might be now. Also, remember you will be replacing an equal amount (weight) of water with ice.

Maybe if you could show your math I might be able to see what the problem is.  
Tom Lehmann/The Dough Doctor  
2538

## **Starters/Sponges / Re: SD emergency pizza?**

When we used to make emergency sourdough pizzas we used to double up on the amount of starter used and then spiked the dough with 1% compressed yeast or the equivalent of IDY or ADY, adjust the water temperature to give a finished dough temperature in the 85 to 90F range and we had a true "emergency dough" that went from mixer to oven in about 2 to 2.5-hours. This was developed for stores that might be working with a sourdough starter and needed dough in a hurry for whatever reason.

Tom Lehmann/The Dough Doctor  
2537

## **Dough Ingredients / Re: Impending Gluten Crisis--BakingBusiness.com**

50-years ago the baking industry was heavily invested in continuous mixing systems (batter whipped breads as they became known as) which required a very

strong, high protein flour to function well so bakers pressured millers to go back to the plant breeders to develop higher protein wheat varieties with stronger gluten characteristics. Plant breeders responded and to some extent the protein content increased (I worked with experimentally grown HRW that was over 20% protein content and was so strong the gluten couldn't be developed in less than 30-minutes of high speed mixing (industry standard requires that the gluten be developed with 10 to 12-minutes of high speed mixing) needless to say these wheat varieties were never released for planting. The result of the efforts by the plant breeders was only limited increase in protein content BUT something happened to the protein characteristics in that it became much stronger (I don't know if there is any correlation, but this is also in the same time frame that we begin to hear more about wheat protein allergies and gluten intolerance issues).

By the time this was happening the baking industry had gone away from the continuous mixing systems and had reverted back to the sponge and dough bread making processes which did not require the strong flours but due to their previous requests from many years earlier (it took 10 to 15-years to develop the new wheat varieties to produce the flour characteristics that the bakers were asking for) so now they were asking the wheat breeders to reverse the direction of the pendulum and develop less tenacious wheat varieties, but alas.....the genie was out of the bottle and the breeders were unable to eliminate the strong characteristic of the gluten from their new wheat varieties.

Back in the 50's and 60's a 10.5% protein HRW was considered to be an industrial wheat only good for non bakery applications but now they were said to be too strong! To this day I don't think anybody really knows what happened to the protein to result in the change that we saw. AIB developed a special group and studied it for well over 20-years with no success as did every university with a cereal science department.

Now, this is where the fun begins, much of the world population consumes rice but there is a world wide shortage of rice so those rice consuming countries have changed over to using greater amounts of wheat, this has been going on for many years now. This has resulted in a greater world demand for wheat, especially HRW#2, a very popular grade of export wheat from the U.S. so wheat acreage has gone up and wheat was planted where it normally would not grow but irrigation and fertilizer made it possible, now irrigation is more strictly regulated and fertilizer prices are out of sight cost wise as well as fuel prices to apply it, so wheat acreage has diminished over the years (corn has greatly replaced it) but the demand still remains so we are now fertilizing less acreage of wheat and the breeders are concentrating more on yield than baking properties as most of the wheat is exported anyhow, and what you now see is what you get.

Typically, as wheat yield goes up, the protein content goes down and vice versa. When I was heavily involved in wheat testing we used to say that the first priority of the wheat breeders was yield (agronomics) and the second was performance.....I think the same is still true today, as ever more land is lost for farming (how many new subdivisions have you seen where there used to be a farm field?) the emphasis will continue to be on yield over performance. Add to all of that, there might be some improved wheat varieties developed that will never see the light of day because that don't have the necessary resistance to drought, rust/fungal infections, or insect resistance. These are now all vital characteristics in new wheat varieties because we no longer have the chemicals needed to address these issues in the

field so the resistance has to be bred into the variety prior to release for planting. You have heard me say it before but I'll say it again, one of my two heroes is the flour miller. Considering what they have to work with, they perform a near miracle in giving us the level of consistency we see in our flour. My other hero is Betty Crocker....have you ever seen any of her cake mixes fail? :)

Tom Lehmann/The Dough Doctor  
2536

### [\*\*Dough Clinic / Re: Is this a gum line?\*\*](#)

There are two ways to identify the presence of the dreaded gum line.

1) Cut a wedge from the pizza, grasping the wedge at the heel (crust/rim), pull it apart as if tearing it in two, if the crust cleaves cleanly, like a slice of bread being pulled apart you don't have a gum line. If it feathers (stretches and forms a film as it is pulled apart you have a gum line.

2) Turn the pizza slice upside down and using a razor blade or sharp box knife, carefully cut through the crust from heel to point, then fold so both cut surfaces are exposed (greasy sides together), if you have a gum line you will see a distinct gray area just below the sauce. If you see just a paper thin gray line, this is normal and you do not have a gum line. I normally do both tests to determine the presence or absence of a gum line. These tests are best done about 3 to 5-minutes after removing the pizza from the oven.

NOTE: DO NOT cut the pizza from the top to ascertain if a gum line is present or not. The sauce and cheese will be pulled down over the crumb portion and the crumb will be damaged as a result of cutting from the top which will make this an exercise in futility.

Pictures are the only way to make an accurate determination without actually having the pizza in ones hands.

Tom Lehmann/The Dough Doctor  
2535

### [\*\*Dough Clinic / Re: Look at this mess\*\*](#)

Additionally, we need to know how the flour was portioned by the cup, poured in and struck off level, sifter into the cup or scooped as all will have a different weight. Best thing is the person to get an actual weight on the amount (3.5-cups) of flour they are using and go from there. Also, define "plain" flour". Knowing more about the flour would help too.

One other thing that might help would be to blend the ingredients together with a wood spoon and place it into a lightly oiled bowl to ferment for about 2-hours to get some biochemical gluten development before kneading the dough, or just fermenting the dough for several hours or overnight in the fridge to achieve full biochemical gluten development.

Tom Lehmann/The Dough Doctor  
2534

### [\*\*Newbie Topics / Re: Stop them sticking!\*\*](#)

I just came back from a training project where we made pizzas for the entire day. We used my "go to" blend of equal parts of regular flour, fine corn meal and semolina flour and never had a pizza stick all day, and some of the dough balls that we were working with by the end of the day were past their prime and well over fermented with a burning desire to stick to something but none did when we were using that blend for our dusting flour and peel dust. All pizzas were dressed on a wood prep-peel and peeled into the oven off of the prep-peel.

Another thing that you can do is to dress the pizza on a well seasoned screen, place

the pizza into the oven on the screen and after about 2-minutes (maybe a little less) you will be able to slide a metal peel under the pizza and lift it off of the screen and place it onto the deck to finish baking.

Tom Lehmann/The Dough Doctor  
2533

### [\*\*Dough Clinic / Re: How Much Protein per 100gr for High Hydration Dough?\*\*](#)

Temperatures in the 65 to 75F range will support fermentation just fine so room temperature should work for you. 70% absorption seems a bit high for what you are planning to do. I'd suggest reducing the total dough absorption to 60% and then working up from there in 2% or 5% increments.

Tom Lehmann/The Dough Doctor  
2532

### [\*\*Dough Clinic / Re: Planetary vs. Spiral mixers\*\*](#)

Keep your existing planetary mixer for everything else but the dough, once you use a spiral dough mixer there is no going back to a planetary mixer for mixing dough :).

Tom Lehmann/The Dough Doctor  
2531

### [\*\*Newbie Topics / Re: Stop them sticking!\*\*](#)

Did the sausage bake up crispy like bacon? ;D  
Tom Lehmann/The Dough Doctor  
2530

### [\*\*General Pizza Making / Re: Dough expansion when fermenting\*\*](#)

Temperature is the number one driver of fermentation, the colder the dough is the slower it will ferment and the warmer it is the faster it will ferment within any given period of time.

Also, warm dough will expand more freely than cold dough so even with all things equal the colder dough will be firmer and show less expansion than a warmer dough. This is why we suggest allowing the dough balls to warm-up a bit after removing them from the fridge before opening them into skins.

Tom Lehmann/The Dough Doctor  
2529

### [\*\*Newbie Topics / Re: Stop them sticking!\*\*](#)

Much crust color development? As you need to reach temperatures in the 340 to 350F range for caramelization of sugars to take place how do you develop crust color at those low temperatures?

Tom Lehmann/The Dough Doctor  
2528

### [\*\*Dough Clinic / Re: Pie/croissant - like dough - no solution via forum\*\*](#)

The question is was it a pastry crust (at one time Tony's/Schwan's Food Service/Frozen pizza) made pizzas using a laminated pastry type dough, or was it a cracker type crust? The shape of the crumb cells is a tip off as to which it was. The laminated pastry type crust will have elongated (football shaped holes, it's referred to as fish mouthing) while a cracker type crust will have round shaped cell structure. There is a huge difference between the two. Also, at one time some pizzerias were experimenting with sheeting the dough and folding into quarters (fold in half and then in half again) and giving it a final sheeting with 2 to 3 passes

through the sheeter. This was typically done with a relatively low absorption (55 to 57%) dough while using a lower (10.7 to 11.2%) protein flour. Typical 48-hour CF dough was used. No roll-in was ever applied to these doughs.

To be more specific more information is really needed.

Tom Lehmann/The Dough Doctor  
2527

### **New York Style / Re: Sticky, dough too soft. Need help!**

Any idea of the finished dough temperature? That will have a significant impact upon how much fermentation the dough is exposed to during any given period of time. Typically we look for a finished dough temperature in the 70 to 75F range. The dough that you got from the pizzeria most likely used a dough management procedure similar to this: Mix (finished dough temperature (75 to 80F), immediately take to the bench for scaling and balling, place into dough boxes, oil the top of the dough balls, cross-stack in the cooler for at least 2.5-hours (variable with dough ball weight), down-stack and allow to cold ferment for 24 to 48-hours, remove from cooler and allow dough baslls to reach an internal temperature of 50F before opening into skins. The dough balls typically remain good to work with for a period of 2.5 to 3-hours after reaching 50F. (sound familiar?). The yeast level it usually around 0.3 to 0.4% ADY with a dough absorption of 63%.

Tom Lehmann/The Dough Doctor  
2526

### **Dough Clinic / Re: Autolyse Question**

The main purpose of the autolyse (flour + water) is to allow time for better flour hydration (absorption of water into the flour) which can be beneficial when making very high absorption doughs or mixing the dough by hand. Water at 70 to 75F is all that is needed, then adjust the temperature of the remaining water to give you a finished/mixed dough at the temperature you are targeting (usually around 75F but may vary).

Tom Lehmann/The Dough Doctor  
2525

### **New York Style / Re: Sticky, dough too soft. Need help!**

Stickiness is generally an indication of either too much diastatic malt or the use of diastatic malt where a nondiastatic malt is called for. Darn near impossible to get rid of that stickiness too. The excessive softness is most likely due to excessive fermentation. If the stickiness persists try using a nondiastatic malt.

Tom Lehmann/The Dough Doctor  
2524

### **Dough Clinic / Re: Natural leavening Questions**

When it comes to pizza (specific to this response) taste, aroma (flavor = taste and aroma) as well as textural and mastication properties are all purely subjective and based on an individuals perception, for that reason I don't think there can be any "scientific" base line regarding these characteristics. It is well known that in some societies certain characteristics might be preferred over others such as in Japan where things that are tart (sour) and crispy (hard) have not historically been preferred....that is now changing as new "Western" foods are continually being introduced into Japan's culture. In northern Turkey, rancid yak butter is a delicacy, and in Australia, Vegemite is still consumed but, admitted by most Australians that I've spoken to, is an "acquired" taste. Even here in the U.S. flavor and textural preferences are all over the board, so much so that Ragu has regional formulas for

their Ragu sauce. About the best one can ever hope for is to identify specific regional preferences and even then it's far from accurate. The good news about all of this is that it forms the foundation upon which the popularity of pizza is built, there are many,many differences in pizza so there is something for everyone and add to that as a product ages in the market over time we begin looking for something a little different.....show of hands please, how many of us has NOT succumbed that? Pizza is continually changing and evolving for the better or worse, so if you don't like one pizza there will always be another one that you enjoy. Don't get too hung up on flavor and texture, find what you like and concentrate on it, you're making it for YOU, so you can develop the pizza specific to your own likes and if you don't like it you know who to blame. Lastly, experiment, over time as our tastes change....yes, they do change, you may want to try something a little different and experimenting is an excellent way to make ourselves more informed, enlightened, and get some great pizza along the way for our trouble.

Tom Lehmann/The Dough Doctor  
2523

### **Dough Clinic / Re: Autolyse Question**

If your dough absorption is up around 70% or higher an autolyse will certainly help in getting the water incorporated into the flour but if it's lower then that you probably will not see as much benefit when using a mechanical mixer...total hand mixing yes, but as with what you have described, probably not too much benefit unless you have the high absorption. If it's just a "puffier" edge that you're looking for an increase in dough absorption will probably help as might an increase in yeast but I can't say for sure as I don't know what your dough formula or management procedure is. Anything which will improve/increase oven spring should be a move in the right direction for you.

Tom Lehmann/The Dough Doctor  
2522

### **General Pizza Making / Re: dough flavor**

Very few people are looking for a yeast/yeasty flavor, instead what they are looking for is a fermentation flavor, as I correct in assuming this? (yeast has a lot of the flavor characteristics of old, wet newspaper). Your dough formula as well as dough management procedure would be very helpful in answering your question.

Tom Lehmann/The Dough Doctor  
2521

### **Newbie Topics / Re: Dough and Oven Temp**

A good place to start would be to get an electronic scale (quite economical) and begin scaling your ingredients so you know what you have for a dough and this will also allow you to make meaningful changes and follow the changes in the dough to achieve the dough characteristics you're looking for. Additionally, don't allow the dough to warm to room temperature after the CF period, instead, allow it to come to 55 to 60F before you begin opening the dough into pizza skins, this step alone may significantly change the way your dough handles.

Tom Lehmann/The Dough Doctor  
2520

### **General Pizza Making / Re: In a commercial setting...**

When storing pre-opened pizza skins we typically place them individually onto pizza screens and place into the cooler on a wire tree rack for at least 30 to 45-minutes to thoroughly chill, then place a piece of silicone paper on a screen and

place one of the chilled skins on the paper, place another skin on that paper and another skin, build a stack not more than 5 high, place back onto the wire tree rack and cover with a plastic bag.

Tom Lehmann/The Dough Doctor  
2519

**[Dough Clinic / Re: Adding gluten to low-protein flour?](#)**

The only way vital wheat gluten can be added is to dry blend it into the flour. DO NOT allow the VWG to come into direct contact with water as this will cause it to "pill" (form lumps) which are next to impossible to work out. When dispersed into the dry flour the gluten will hydrate normally right along with the flour.

Tom Lehmann/The Dough Doctor  
2518

**[Dough Clinic / Re: Pie/croissant - like dough - no solution via forum](#)**

The only way to get that pastry crust characteristic is to incorporate pieces of hard fat into the dough, much like making a long flake pie crust dough or folding in some way to get laminations.

Try this:

Refrigerate the flour overnight.

Add 10% butter or margarine (must also be refrigerated).

Cut the fat into the flour as one would when making a flaky pie crust dough.

Adjust dough absorption to 50%.

Use cold water right out of the fridge when making the dough.

Put salt, sugar and compressed yeast into the water and stir until the yeast is suspended.

Immediately add water to the flour-fat mixture.

Mix until a shaggy dough is achieved. DO NOT OVER MIX.

Scale to desired weight and form into puck shape.

Place into individual plastic food bags, twist to close and place into fridge to CF for at least 48-hours.

Remove from fridge, allow the temper to 50F and roll out (does not open by hand well at all) using a rolling pin or pastry pin to desired thickness, trim to round shape, dock, dress and bake.

Tom Lehmann/The Dough Doctor  
2517

**[General Pizza Making / Re: 00/bread flour mix: what percent hydration?](#)**

What type of pizza are you wanting to make?

Tom Lehmann/The Dough Doctor  
2516

**[General Pizza Making / Re: 00/bread flour mix: what percent hydration?](#)**

I'd start at 65%, this will get you close enough to make minor adjustments as needed.

Tom Lehmann/The Dough Doctor  
2515

**[Dough Clinic / Re: Kneading vs Tearing Dough in Mixer](#)**

Since pizza doughs are fermented for long periods of time the finished dough temperature is important in achieving a consistent quality dough as well as in preventing over fermented doughs. You mention that your dough appears to be over fermented, what is your finished dough temperature and how are you

managing the dough after mixing?

You can add the CY just as it is, the mixer will disperse it throughout the dough for you, or if you wish, you can make a yeast suspension using a small portion of the dough water. Either way works well.

Tom Lehmann/The Dough Doctor  
2514

### [\*\*Pizza Cheese / Re: Highest butterfat Low Moisture Whole Milk loaf Mozzarella cheese?\*\*](#)

Straight mozzarella is pretty mild in flavor so if it's flavor you're looking for try blending it with another cheese. My personal favorite is to add a combination of Parmesan and Romano to augment the flavor of the mozzarella. If it's butter fat content you're looking for use straight provolone as it's higher in fat content than mozzarella but the flavor will not be all that different unless it's a smoked provolone.

Tom Lehmann/The Dough Doctor  
2513

### [\*\*Dough Clinic / Re: Kneading vs Tearing Dough in Mixer\*\*](#)

The water pooling in the corners of your fermentation containers is an indication of one of two things;

- 1) You are not leaving the containers uncovered long enough after placing them into the fridge.
- 2) You are not leaving the containers uncovered after placing them into the fridge. Physics 101, dough is warmer than the fridge, dough heats air trapped in the container, moisture moves from the dough to the warm air, container walls cool down causing moisture inside the container to condense against the container walls....gravity does the rest.

Pooled water in the container can cause problems such as sticky dough, extreme or excessive bubbling or dough sporadically sticking to the peel.

Tom Lehmann/The Dough Doctor  
2512

### [\*\*Dough Clinic / Re: Problem with dough not staying in a ball shape - do i need to reball?\*\*](#)

Three questions: What was the finished dough temperature? What was the total dough absorption? What was the temperature of the fridge?

Tom Lehmann/The Dough Doctor  
2511

### [\*\*General Pizza Making / Re: Best types of wood for pizza ovens\*\*](#)

When we used wood fired ovens we used to use seasoned split oak exclusively.

Tom Lehmann/The Dough Doctor  
2510

### [\*\*Forum Info / Re: Flour VWG protein calculator\*\*](#)

Actually...hydration rate is the rate that the flour absorbs the water, not the amount of water actually being absorbed. The temperature of the flour can have a significant impact on the hydration rate of the flour with cold flour having a slower hydration rate than warm flour. This is why the Brabender Farinograph laboratory instrument for measuring both flour absorption and hydration rate) has a temperature controlled mixing bowl. Your math is spot-on! :) and your example

explained it quite well.

Tom Lehmann/The Dough Doctor  
2509

**General Pizza Making / Re: Best types of wood for pizza ovens**

One trick to finding good hardwood is in locating a lumber mill and buying their trim scrap pieces. We used to buy it by the pick-up load for just a few dollars at a mill just outside of St. Paul, Arkansas. People down there buy it to feed their wood burning furnaces during the winter months.

Tom Lehmann/The Dough Doctor  
2508

**General Pizza Making / Re: Bulk Fermentation.**

In view of the "J" hook I'm guessing that your dough might be under mixed which by itself results in a sticky dough. Maybe follow up on the machine mixing with some hand kneading before doing the bulk fermentation.

Tom Lehmann/The Dough Doctor  
2507

**Dough Clinic / Re: Problem with dough not staying in a ball shape - do i need to reball?**

Yay;

To calculate the dough absorption just divide the weight of the water added to the dough by the weight of the total flour and multiply by 100. If you provide us with the flour weight as well as the weight of the water you added to the dough we can do the calculation for you.

Tom Lehmann/The Dough Doctor  
2506

**General Pizza Making / Re: Bulk Fermentation.**

In your reference to the yeast you say 0.034 @ 70F. would you please explain what you mean by this?

Tom Lehmann/The Dough Doctor  
2505

**Dough Clinic / Re: Problem with dough not staying in a ball shape - do i need to reball?**

After 18-hours fermentation you should not be including the flour in the poolish in with the dough flour as it is essentially non functional as a structure builder (strengthener) in the dough. So, unless I've missed something, this is what I'm looking at here: warm water + ice = 280-grams + 45 grams in the poolish for a total of 325-grams of water. Total flour (excluding the flour in the poolish) = 353-grams. Total absorption (325 divided by 353 X 100) = 92% dough absorption.

Tom Lehmann/The Dough Doctor  
2504

**Dough Ingredients / Re: Balancer?**

Balancer flour is lower in protein content than All Trumps flour, so all things being equal one could expect that the lower protein flour would provide a less chewy finished crust characteristic.

Tom Lehmann/The Dough Doctor  
2503

## [\*\*Dough Clinic / Re: Problem with dough not staying in a ball shape - do i need to reball?\*\*](#)

With that much fermentation on the poolish it is going to be quite acid which is not good for the gluten forming proteins as they are broken down by both the acids formed during fermentation and the enzymes which are present in both the yeast and the flour, much of the starch will be hydrolyzed into sugars to support fermentation so what's left in the poolish aside from the water? Just my estimation. So now we just take into account the water in the poolish for formulation purposes and maybe the yeast. But if the yeast runs out of nutrient to feed upon it will begin to cannibalize itself which will release glutathione into the system (remember glutathione is just like L-cysteine) making for a very slack, sticky dough characteristic.

I'm not saying it's so, that's just how I see it in my mind's eye not having seen the dough or the entire process. Call it an educated S.W.A.G.

Tom Lehmann/The Dough Doctor  
2502

## [\*\*Dough Clinic / Re: Problem with dough not staying in a ball shape - do i need to reball?\*\*](#)

I forgot to add that the bagged dough in the pictures does not appear to have had the bad pulled down around the dough ball prior to closing the bag. When correctly bagged you won't see the corners of the bag inflating with gas. There is also a possibility that the bag(s) were too large which would also result in this happening. I have found that bread bags, whether new or reused are about the right size for all but the smallest dough balls. I tried bun bags (like hamburger and hot dog buns come in) and I had a similar issue with the corners of the bag as they are a wider bag.

Tom Lehmann/The Dough Doctor  
2501

## [\*\*General Pizza Making / Re: 550 degree home oven vs 600 degree pizza oven\*\*](#)

We always trained our students in assembling the pizza in a manner similar to the appearance of a volcano where there are more toppings applied around the circumference (especially cheese and sauce) than in the center of the skin. This allows for a better bake in the center of the pizza. Don't worry about the distribution of the toppings, as the pizza bakes the sauce and toppings will naturally flow towards the center as the edges of the skin begin to rise during the oven spring period of baking. There is also a strong tendency to get the center of the skin too thin as the dough ball is being opened, this results in excessive heat transfer through the dough (discussed in detail previously) resulting in a finished crust in the center section with less than an ideal bake which results in a soft, limp center to the baked pizza and droopy slices.

Tom Lehmann/The Dough Doctor  
2500

## [\*\*Starters/Sponges / Re: Slow down dough 50-100% into fermentation?\*\*](#)

Once the dough has been fermented it is gassy and porous/less dense so it becomes an excellent insulator, as such it is hard to darn near impossible to change the temperature of the dough within a meaningful period of time, add to that the fact that you also have heat of metabolism to contend with (dough is generating heat at the rate of approximately 1F per hour). So, what to do? I would consider degassing the dough and re-ball it, then as soon as possible flatten the dough ball into something of a "puck" (like a hockey puck) shape as this will reduce the cross

section of the dough piece allowing for more efficient cooling. To promote better heat transfer I would think about placing the dough puck into a plastic bag rather than a box or bowl as the thin plastic will afford better heat transfer properties. I would think you should be able to eek out an additional 24 to 48-hours by doing something along these lines.

Tom Lehmann/The Dough Doctor  
2499

### **General Pizza Making / Re: Bulk Fermentation.**

Is the IDY that you are using fresh, like from a recently opened package or has it been in some type of storage a for a while? I have done a huge amount of research on IDY since the late 1960's when Fermipan, then SAF first came into this country. Included in this research were studies to determine how well it held up to long term storage under various conditions...remember, at that time a 2-year shelf life was unheard of for any kind of yeast. What we found was that unopened packages (vacuum packaged) were good for at least a full year if held refrigerated, frozen or in a cool environment (70F), after two years we began to see spotty results with some samples showing a loss of as much as 25% gassing power. After the packages were opened the yeast showed much less tolerance to storage temperature, so much so that we would see a change in gassing power after as few as 3-weeks storage at ambient temperature storage when refrigerated or frozen another week or two could be added before we saw changes taking place. Here's the "kicker" in home use of IDY. When stored in the fridge or freezer every time you open the storage container you allow air to enter and contact the yeast, this air is warm and contains moisture which now condenses on the cold yeast (moisture is the #1 enemy of IDY) this leads to deterioration of the IDY as it is repeated every time the container is opened. This is why we do not recommend storing opened IDY for more than just a few weeks as the performance of the IDY cannot be predicted after that time. Actually, if you are going to store opened IDY, place it into a small plastic bag where you can reduce/eliminate any head space, close it tightly and store it at room temperature, this eliminates the condensation issue and depending upon local humidity conditions should give you 6-weeks or more usable shelf life for the IDY. When IDY begins to deteriorate you will begin to see the doughs getting slack/soft and not rising as expected for the amount of IDY being used. This is why I have raised the question regarding the age of your IDY.

Additionally, you might just try increasing the amount of IDY, if the doughs seem to get even softer and still don't rise properly you've got a pretty good idea of what might have happened if any of this applies to you.

Tom Lehmann/The Dough Doctor  
2498

### **Sauce Ingredients / Re: In the Stanislaus fields with Steve Rouse**

Several years ago I was invited to spend a few days with Stanislaus during the tomato harvest to see first hand how they're harvested and processed. If anyone ever gets an invitation don't hesitate to accept it. They only harvest the fields but once, then the remainder of the crop is sold to another processor mostly for picante sauce.

Tom Lehmann/The Dough Doctor  
2497

### **Other Types / Re: My first attempt at no-knead bread**

Yael;

When making dough by this process and using IDY, the IDY should first be

suspended in a small amount of water at 95F/35C, and then added into the remainder of the dough water. Failure to do so can result in erratic results. Once biochemical fermentation does its thing you should be able to scrape the dough out of its container and form it into a ball, then allow the ball to rest at room temperature until it can be easily opened into a skin (this usually takes about 3-hours).

Tom Lehmann/The Dough Doctor  
2496

**[Pizza News / Re: I'll pass on that first ingredient](#)**

If you'll remember back a number of years ago when we were seeing all sorts of food tampering (glass in baby food, rat poison in Tylenol, nail polish remover in bread, etc.) Now those days are pretty well gone because of the Federal mandated sentencing guidelines for food tampering...20-years, no give or take. If you're found guilty, by, by for 20-years! This guy could be in for a BIG HURT in they decide to go after him on this, which, in all probability, they will if he doesn't pass a health test with flying colors.

Tom Lehmann/The Dough Doctor  
2495

**[Dough Clinic / Re: Dough bubbling up](#)**

Yep, that's how pita is made. Try this instead, apply 1/2 of the sauce to the skin just before placing it in the oven to par bake, this should help address the problem, you can also dock the dough with a blunt shaped dough docker.

Tom Lehmann/The Dough Doctor  
2494

**[Pizza News / Re: I'll pass on that first ingredient](#)**

If the guy has Hep. or some other communicable disease I think it might be viewed the same as AIDS by the courts. Then too, it appears tyhat the spit was applied prior to baking so it might be argued that any pathogens would be destroyed during the baking process, Dirty Harry had the right response to that "Do ya feel lucky?"

Tom Lehmann/The Dough Doctor  
2493

**[Dough Clinic / Re: Naughty words - dough roller...and hydration rates...](#)**

James;

Some time ago I wrote an article in Pizza Today Magazine on the impact of using different methods to open the dough on characteristics of the finished crust. You might be able to find this article in their archives. Using a dough roller/sheeter will have somewhat of a degassing effect upon the dough as compared to the other methods of opening the dough, especially opening by hand. The end result is typically a thinner, more dense/compact crumb structure. As for the problems you are experiencing running the dough through the sheeter, I offer the following:

- 1) Are you allowing the dough to warm up to at least 55 to 60F before trying the sheet it?
- 2) Are you using multiple passes through the sheeting rolls to open the dough? Typically four or more passes are required with one or two adjustments made to the thickness setting.
- 3) Are you dusting the dough ball with dusting flour before sheeting it?
- 4) Check to make sure the dough is sufficiently relaxed prior to sheeting, you can do this by simply pressing down on the dough ball, if it feels firm and springs right

back sheeting will be less than desirable, but if it can be easily pressed and deflates slightly it should be sufficiently relaxed for decent sheeting properties.

A number of years ago I developed a method for opening the dough using both the sheeter (to pre-open the dough to within 2 to 3-inches of full diameter and then finishing the opening by hand to full diameter. This method results in faster, more consistent opening of the dough with the added benefit that you don't get a thin center section in the opened skin (common to many skins opened entirely by hand, especially if opened by someone without a lot of experience in hand opening dough. I have a video showing this process in actual use in a pizzeria, if you would like to see a copy of the video just email me at <thedoughdoctor@hotmail.com> and I'll be glad to share it with you.

Tom Lehmann/The Dough Doctor  
2492

### **Stones/tiles/steel, Pans & Accessories / Re: Ruined?**

Did you ever look at the deck of a commercial pizza oven? Yep, I agree totally with Craig.

Tom Lehmann/The Dough Doctor  
2491

### **Other Types / Re: My first attempt at no-knead bread**

Yael;

When making pizza we open the dough ball into a "skin" which is ultimately topped with sauce and dressed to the order to make a pizza, but when making bread we usually just bake the dough from a round ball shape, or we can flatten it slightly and roll it into shape as when making Italian bread, French bread or baguettes. When making a typical American or British pan bread the dough is rolled flat, about 1/4-inch thick and then rolled (like a jelly roll) into a loaf shape which will be final proofed and baked to make the customary loaf.

Tom Lehmann/The Dough Doctor  
2490

### **Newbie Topics / Re: Forgot to add idy**

Believe it or not, adding the IDY (in dry form) to the mixed dough is actually the manufacturer's recommended way to add the IDY, so no harm was done.

Tom Lehmann/The Dough Doctor  
2489

### **Dough Clinic / Re: what is the correct process for 72 cold bulk**

The direction provided by Norcosia is spot-on. But as it sounds like you are already into the process, do not delay, remove the dough from the fridge, scale into desired weight pieces and form into balls, then allow the dough balls to sit out at room temperature (cover with a sheet of plastic to prevent drying) until they are sufficiently soft and pliable to be opened into skins for immediate use, or if you are three to five hours out from using the dough just scale, ball, oil the dough balls and place into individual plastic bags (bread bags work well, very well) twist the open end into a pony tail and tuck it under the dough ball as you place it on the counter top, then set aside to ferment at room temperature until ready to use. To remove the dough from the bag just roll the bag down around the dough ball, and invert the bag allowing the dough to strip itself out of the bag falling onto a well dusted surface, open into a skin by your preferred manner.

Tom Lehmann/The Dough Doctor

2488

**[Dough Clinic / Re: what is the correct process for 72 cold bulk](#)**

Can you make bread with the dough? Sure, scale, ball, place on lightly oiled pan (a cake pan works well) and cover with a large bowl (I like to place a wet/damp towel under the cake pan as it will provide humidity to the proofing dough) allow to proof, cut a few docking slits in the top of the ball, spritz with water and bake at 400/425F until golden brown.

Yes, you can freeze the dough but only for a week or so.

Tom Lehmann/The Dough Doctor

2487

**[Dough Clinic / Re: Restaurant Quality Frozen Pizza](#)**

First of all, frozen pizza right out of the freezer isn't all that great :-D but after being reconed/reheated for serving, it can be pretty decent. I think what you are asking is can one make a frozen pizza using a par-baked crust which when reheated for serving is on par with a pizzeria quality pizza? Done properly, and reheated correctly I think you can get quality within the range of that from a pizzeria, remember though that pizzeria quality is literally all over the board and also since quality is highly subjective what one person thinks is great another may find it to be not so great. So let's just say this, yes you can make a decent quality frozen pizza using a par-baked crust but only if it's done correctly and consumed while still hot/warm after being baked for serving.

Tom Lehmann/The Dough Doctor

2486

**[Dough Clinic / Re: what is the correct process for 72 cold bulk](#)**

Well done! Not too shabby!! All things considered. :)

Tom Lehmann/The Dough Doctor

2485

**[Dough Ingredients / Re: Yeast](#)**

Irishboy;

There is little to no perceptible difference in fermentation rate of finished product flavor resulting from the use of ADY, IDY or CY when used at the correct substitution levels and assuming all are of good quality and haven't been time or temperature abused in any way. As for ADY, yes, it REALLY does need to be suspended in warm (100 to not more than 105F/37.7 to 40.5C) water for about 10-minutes prior to addition to the dough. Unlike IDY, ADY is somewhat difficult to hydrate properly which is why it must be suspended in warm water prior to use. IDY is designed to hydrate much easier/faster (which is where the "instant" comes from), as in instant hydrating so it can be added directly to the flour or if desired to the dough mass about 4 to 5-minutes prior to the completion of the mixing cycle.

Tom Lehmann/The Dough Doctor

2484

**[Dough Clinic / Re: Co-packer Commercial Bakery for your Dough Balls?](#)**

I'm in total agreement with Steve, Spiral mixer, dough divider/rounder, plus an additional rounder so you can double round the dough balls. From there you will need to have a walk-in cooler/retarder sized to hold at least 65 to 70-dough boxes minimum (assuming 8-dough balls per box) also make sure you will have sufficient room to cross-stack the dough boxes. Assuming 10 dough boxes in a stack you will be inventorying about 6 to 8 stacks of boxes, allow a little more than double that

space for cross-stacking. You will also need to have a delivery vehicle for transporting the dough balls from your "commissary" to the event. You will need to have refrigeration at the event too for holding dough, sauce, cheese and toppings. Your local health department will spell out everything else you will need to have in place both at the commissary and the event.

Tom Lehmann/The Dough Doctor  
2483

### **Dough Clinic / Re: Vacuum Sealing Frozen Dough Balls**

Since it's not the air, but instead the slow freezing rate and the constant temperature fluctuation in a home freezer (and you paid extra for that 5 Energy Star rating) that impacts the shelf life. Home freezers (especially the more efficient ones) will go through as many as 20 defrost cycles in a 24-hour period which is disastrous for the dough, or should I say the yeast.

Tom Lehmann/The Dough Doctor  
2482

### **Dough Clinic / Re: Vacuum Sealing Frozen Dough Balls**

The big commercial frozen dough manufacturers target a 19 to 21-week shelf life on their frozen dough, to get this they employ little or no fermentation prior to freezing, mechanically blast freeze at -20 to -35F with an airflow of 600 to 800 linear feet per minute over the product, then then place the dough into a holding freezer at -10F for 24-hours prior to shipping. The dough can also be cryogenically frozen using an industrial cryogen (liquid carbon dioxide or liquid nitrogen) at a temperature in the product zone of -55 to -65F, this will shell freeze the dough so it must go through an equillibration period in the holding freezer (90-minutes) for the temperature to equilibrate throughout the dough. They look for an equillibration temperature of +10 to +15F. The dwell time in the cryogenic freezer is adjusted to achieve the targeted equilibrated dough temperature. The dough is held in the holding freezer for 24-hours prior to shipping. Since temperature fluctuations and thawing are the main issues to achieving long frozen dough shelf life great detail is paid to shipping, warehousing and distribution of commercially made frozen dough. Most go so far as to own and operate their own fleet of delivery trucks/"reefers". Using static freezing (walk-in freezer/0 to -10F) with little to no airflow, about the best one can hope for is six weeks before dough performance begins to get spotty, which is not a big deal if you're making pizzas at home, but it is a big deal if you are a restaurant, hotel or pizzeria and you have freezer full of the stuff and it's failing.

Tom Lehmann/The Dough Doctor  
2481

### **Dough Clinic / Re: Vacuum Sealing Frozen Dough Balls**

Just as a FYI, you will be able to say you heard it here first, there is a new type of yeast being trialed right now as I type this that will change the whole complexion of dough storage as we presently know it. I have samples of it and it really works as it is designed to work. This new yeast is used just like any other IDY BUT it STOPS FERMENTING and essentially goes dormant when the internal dough temperature reaches 45F, then, after it is warmed back up to a temperature over 45F it resumes normal feeding/fermentation activity just as if nothing had ever happened...kinda mind blowing, isn't it! I'll be talking more about it as soon as I have approval to "let the cat out of the bag".

Hang in there, help is on the way!  
Tom Lehmann/The Dough Doctor

2480

**[Chitchat / Re: My new toy](#)**

About a year ago I bought one from HF and my son liked it so much I gave it to him and went back and bought another one for myself. Paid \$15.00 each, then right after that Manard's had them on sale for \$11.00 each so, not to pass up a good deal I bought one of those too, so far all three are batting 1000. When I was at AIB I bought my first one for \$225.00!!!

Tom Lehmann/The Dough Doctor  
2479

**[Dough Clinic / Re: Vacuum Sealing Frozen Dough Balls](#)**

Come to think of it, it did kinda look like a large over fermented dough, didn't it?  
:-D

While I'm sure many yeasts are genetically modified in some way (we're essentially all genetically modified, I'm the result of a German mother and an Italian father) but most yeasts are cultured, a strain having a desirable characteristic is cultured/propagated until the characteristic is dominant, it's then set aside for future reference of bottled for sale. I know that's how they came up with a variety of yeast specifically for freezing applications, a strain having a thicker than normal cell wall was identified and cultured and is now being sold (SAF/Green Label) for freezing applications where it demonstrates a slight advantage over conventional strains of bakers yeast.

Tom Lehmann/The Dough Doctor  
2478

**[Dough Clinic / Re: Replicating a bygone local classic, starting with the dough](#)**

From the outward appearance I'd say it looks remotely like a Chicago style thin crust but with all that thick, heave sauce it sure ain't, plus Chicago thins are nowhere near 1 to 1.25-inches thick! That thickness qualifies it as a thick crust pizza in my book. Using a screen to bake in a deck oven significantly slows the baking which accounts for the oven spring creating the thicker crust and considering the amount of sauce and cheese I'd say it probable needs all the bake time it can get and from the color I'd say it's getting it. Aside fro that, I can't really see much of the crust or tell anything about it. My suggestion would be to start with a typical N.Y style dough, adjust the thickness so when baked, after being formed using a pie pin or rolling pin you get something close to the desired thickness. Baking temperature will most likely be about 500F. From this benchmark you can begin to make incremental adjustments to achieve what you feel are the desired crust characteristics.

Get ready to eat some pizza!

Tom Lehmann/The Dough Doctor  
2477

**[Dough Clinic / Re: need more crackle](#)**

If you could provide your dough formula and dough management procedure it would help a lot. Also tell us what you can about your oven and how you bake your pizzas. With the limited information provided 50% absorption is rather low for a neo pizza. Is there a specific reason why you are using such a low absorption?

Tom Lehmasnn/The Dough Doctor  
2476

## [\*\*Dough Clinic / Re: need more crackle\*\*](#)

Peter;

Duhhh! :-D

I must have been too tired when responding either that or I need to clean my glasses more often!

Tom Lehmann/The Dough Doctor

2475

## [\*\*Dough Clinic / Re: Freezer to croutons\*\*](#)

There are several things at work here;

- 1) You should never allow the bread to thoroughly cool prior to freezing, instead, it should be cooled to an internal temperature of 100F and not more than 105F, then wrapped snugly so as to eliminate any head space around the product.
- 2) A home freezer is about the slowest way to freeze anything known to man outside of an oven. What this means is that the bread is being very S L O W L Y frozen which means that it is passing through the critical temperature zone for staling (60 to 20F) at a very slow rate, the wrapping material applied slows it even more. All of this equals stale bread within the first 24-hours and one of the characteristics of stale bread is the firmness of the crumb structure (this is due to a characteristic of the wheat starch as it retrogrades during cooling) and aside from adding a commercial bread softener not too much can be done to prevent it, but reheating it TEMPORARILY reverses the staling for a few minutes. The addition of 5 to 10% mashed potatoes can help a little but it is not a "silver bullet".
- 3) The stretch wrap materials which we have available to us generally do not provide a sufficient moisture transfer barrier to prevent desiccation during the freezing process and the time the product is held in the freezer.
- 4) The average home freezer today has an Energy Star rating, to achieve this rating (improve operating efficiency) the freezer is designed to go through as many as 20 defrost cycles during a 24-hour period which makes freezer burn/desiccation a sure thing, and it certainly doesn't help the freezing rate by any stretch of the imagination.
- 5) It is well recognized that the more a product is baked the more severe the crumb firming due to the staling process will be, in fact, many of the bread softeners/anti staling agents, are essentially ineffective if the bread is baked more than 20-minutes at 425 to 450F.
- 6) Additionally, keep in mind that the larger the product (greater cross section) the more difficult it becomes to effectively freeze the product. This is why we find many times that smaller items such as buns and rolls will tolerate freezing better than larger items like a loaf of bread.
- 7) I should also add that the ideal temperature for slacking-out/thawing frozen bread products, be it bread, rolls or buns is 105 to 110F with a relative humidity of 75 to 78%. This temperature and humidity affords the fastest thaw while still allowing time for moisture to equilibrate throughout the crumb (moisture migrated from the center of the crumb to an area closer to the crust during frozen storage). If the product is thawed too fast a wet, soggy product will be experienced, if it is thawed at a slower rate additional crumb staling will result as the product passes through the critical temperature range for crumb staling as it warms up.

Tom Lehmann/The Dough Doctor

2474

## [\*\*Dough Clinic / Re: need more crackle\*\*](#)

OK...That does it!!! No more late night/VERY early morning posting by me, when I can't even spell my own name right (been practicing that for over 70-years too) you

know it's time for me to hit the sack! :-D :-D :-D  
Tom Lehmann/The Dough Doctor  
2473

### **Dough Clinic / Re: Freezer to croutons**

The more dense something is the better it will conduct heat (have better heat transfer properties) so yes, it is possible that cutting the loaf in half might help a bit as this would allow for a faster trip through that critical temperature zone for accelerated staling. This is the same reason why if we form our dough balls into a puck shape by flattening them slightly they will cool or freeze more efficiently (less cross section).

When we make croutons commercially we use a lean formulation bread (low in fat and sugar), then give it a long, slow bake (25 to 30-minutes at 400F), the bread is depanned and allowed to cool, it is then placed on racks and stored in a cooler (40F) overnight, on the following day the bread is sliced, lightly toasted, passed through a cube slicer, run through a cone shaped tumbler where they are sprayed with oil and a seasoning is added, after tumbling the croutons proceed directly to packaging (M.A.P. is generally used to protect the flavor and prevent development of rancidity).

Tom Lehmann/The Dough Doctor  
2472

### **Dough Clinic / Re: Dough Fermentation Process**

The dough management procedure that I use most when making pizzas at home is as follows:

- 1) Weigh water into bowl, add flour, salt, sugar (if used), and IDY (in a suspension with a small amount of 95F water).
- 2) Using a wooden spoon, stir until well blended.
- 3) Using a plastic scraper, transfer the dough to a well oiled bowl.
- 4) Drape with a piece of plastic and allow to ferment at room temperature for 2-hours.
- 5) Turn dough out of the bowl onto a flour surface and knead for about 2-minutes.
- 6) Scale into desired weight pieces (11-ounces).
- 7) Form each piece into a ball, oil each dough ball and place into individual bags (bread bags).
- 8) Twist the open end of the bag into a pony tail and tuck it under the dough ball as it is placed into the fridge.
- 9) Allow to cold ferment for 18 to 24-hours or as long as 48-hours.
- 10) Remove from fridge and allow to temper AT room temperature for about 2-hours (dough temperature 60F).
- 11) Roll bag down onto the dough ball and invert the bag over a floured surface allowing the dough ball to fall free from the bag.
- 12) Dust the dough ball well and open into a pizza skin for immediate dressing.

Tom Lehmann/The Dough Doctor  
2471

### **Dough Clinic / Re: I've been playing around with The Dough Doctor's dough recipe... Thoughts???**

Actually, the dough balls look perfect for the times indicated. What were you anticipating? If you reduce the IDY the dough may not be fully ready to use in 24-hours but instead most likely closer to 48-hours. Most pizzerias want to be able to use the dough on the day after it's made and still be able to use it at 48 to 72-hours. That's what that specific dough formula and procedure were designed for

but like most things you can modify it to meet your specific needs. If you want to target a dough that will be better to use at 72-hours my recommendation is to just reduce the targeted finished dough temperature (75 to 80F range). If you reduce the yeast level there is always a possibility that you can get into a situation where you begin to reduce the oven spring properties of the dough which then opens a "Pandora's Box" of dough issues, the biggest of which is the development of the "dreaded gum line", followed by reduction of crumb porosity, loss of crispiness or crust turns soft soon after baking, toughness/chewiness, even bottom crust color issues can be experienced, like I said.....Pandora's Box.

Tom Lehmann/The Dough Doctor  
2470

### **Newbie Topics / Re: Oven Rack Heights?**

My "burning" questions are do you bake your raw dough pizzas on a steel or stone, or just on a pan, what is your dough formula, what kind of pizza are you making, and what is the dough ball weight? No such thing as TMI here. :)

Tom Lehmann/The Dough Doctor  
2469

### **Chicago Style / Re: Butter Powder in deep dish dough**

It's used in the baking industry, if you contact a n ingredient supplier, like Watson Foods I'm sure they would have it. There is also a product called Butter Buds that you might be able to get at your local supermarket or I know for sure you can buy it on the Internet, just Google "Butter Buds".

Tom Lehmann/The Dough Doctor  
2468

### **Dough Ingredients / Re: Yeast**

Be cautious when using a ZipLock bag as the pressure developed by the fermenting dough can pop the bag open as this type of bag doesn't allow the bag to burp itself as a bread bag does, additionally, you seldom get full contact around the entire dough ball when using a ZL bag and those areas where the bag is not contacting the dough is a place where you can get condensation forming resulting in a wet spot on the dough which usually leads to a bubble formation during baking as the moisture is vaporized. Bread bags or food saver bags are also dirt cheap, and if you're like me, you will reuse them several times making them "cheaper than dirt". I just roll-up my oily, used bread bags and stuff them into a repurposed soft spread margarine container and store them in the fridge.

Tom Lehmann/The Dough Doctor  
2467

### **Pizza News / Re: Pizzas must shrink or lose their toppings under Government anti-obesity plan**

I think it all started when kids began spending more time at the television, and then their computers and games than playing outside. I think the only part of the body being exercised by kids anymore is the thumbs. Society has also changed, and not for the better, parents are working when kids come home from school, kids eat junk food to hold them over until parents come home, all too often with a prepared meal such as pizza, fried chicken, etc., what ever happened to the vegetables and salads that we used to get at every dinner when I was a kid? Define a "snack", when I was a kid it was defined as an orange, apple, maybe some grapes, or a banana, how does that hold up to the modern definition? The situation isn't much better for breakfast either, pre-sweetened cereal, toaster pops, if you do a calorie

count against what kids eat for breakfast today (if they even eat breakfast...that's another story) an egg, piece of toast, glass of milk and a piece of fruit or small glass of juice doesn't look too bad, but too many parents don't have time for preparing such things anymore. With adults portion control is a little understood concept or the concept they have is grossly distorted, take for example, what constitutes a serving of pasta? What is a serving of steak? What is a bowl of cereal? Add to that: Would you like to supersize that for \$1.00 more? Nuff said!

Tom Lehmann/The Dough Doctor

2466

### **Dough Clinic / Re: Sicilian/Grandma's Pan**

Just a short time back we had a lot of discussion on just such a topic (Detroit style pizza pans, steel ones too) If I remember correctly there was even a reference as to where they might be available, maybe Peter can work his magic and help dig it out.

Tom Lehmann/The Dough Doctor

2465

### **Dough Clinic / Re: chewy pizza**

Pictures of the finished pizza/crust would help in this case (be sure to show a picture of an inverted slice too so we can see what the bottom looks like. Aside from that, you say you are getting a smooth and soft dough after only 2 to 3-minutes of hand kneading.....are you sure about this? Even machine mixing takes more than twice this long to achieve the desired dough characteristics. I see that you are using IDY but you don't indicate that you are suspending it in 95F water prior to addition to the dough. IDY should only be added dry when machine mixing. You indicate that you allow the dough to rise until doubled or more, can you put a time on how long this is taking? The more information we have the better.

Tom Lehmann/The Dough Doctor

2464

### **Dough Clinic / Re: Oiling the pan with garlic oil**

Pizza Hut, for many years, has used very generous amounts of oil in their deep-dish pans (peanut oil) to achieve a unique fried effect as opposed to a baked effect which you get using a plastic fat such as Crisco. Many of us here use a commercial garlic infused oil in their deep-dish pizza pans, or my favorite is a commercial garlic infused butter oil, which from your description sounds like what you might be looking for, or you can make one yourself by adding garlic powder to an oil. When garlic is added TO the dough it has a softening effect upon the dough in much the same manner as L-cysteine/PZ-44 softens/relaxes the dough. This has been covered a number of time here if you want to read more about it.

If you want to have a softer, chewier finished crust with your deep-dish pizza the first thing I might try is just letting the pizza set in the pan for a minute or two after baking, this will drive much of the moisture from the pizza back into the pizza making it softer, chewier and somewhat tougher. Remember, oil/fat IN the dough formula is a tenderizer so if you delete the fat from the dough formula you will be moving the eating/mastication properties of the finished crust towards a more chewy characteristic if that's what you are looking for.

Tom Lehmann/The Dough Doctor

2463

### **Dough Clinic / Re: chewy pizza**

Werty20;

From what I am seeing it looks like a pretty typical hand kneaded dough, the gassy

appearance shown in the last photo is common to an under mixed dough, with that said, the pizza looks pretty good.

Tom Lehmann/The Dough Doctor  
2462

**New Forum Members / Re: Stretching Pizza Dough**

Joe;

If the dough is handling OK and you're just getting thin spots and holes in the center section it's probably just your technique. I developed a method for training new hires how to open pizza skins by hand when they have little or no prior experience. Once you begin using the technique you will soon automatically begin to master the technique of opening your dough balls into skins. Do what you are doing, but when you go to open the dough balls do so using a rolling pin (remember to NEVER allow the barrel to roll off of the skin), open the dough to within about 2-inches of the desired finished diameter, then finish opening the dough by hand to the full diameter. This procedure works like a charm and soon you will be putting the rolling pin away and opening the entire dough ball by hand without those holes and thin spots. I've got a video of the process being used in AJ's New York Pizzeria, here in Manhattan, KS that I'll be glad to share with you, just P.M. me with your request for the AJ's video and give me an email address where I can send it to.

Tom Lehmann/The Dough Doctor  
2461

**New Forum Members / Re: Stretching Pizza Dough**

Joe;

I forgot to add, you say you are allowing the dough balls to warm for several hours before opening it into skins, this might also be part of your problem, they only need to be allowed to warm to 50 to 60F range before opening. In most pizzerias they use 50 to 55F as their target temperature before they begin opening the dough balls. Note: This is internal dough ball temperature, not the surface temperature.

Tom Lehmann/The Dough Doctor  
2460

**Dough Clinic / Re: chewy pizza**

Werty20;

Higher protein flour will typically require a higher dough absorption with all things equal.

Tom Lehmann/The Dough Doctor  
2459

**Starters/Sponges / Re: Poolish smells like Alcohol**

Hopefully not rubbing alcohol! :(

The by products of yeast fermentation are:

Carbon dioxide

Acids (acetic, lactic and propionic are the main acids formed)

Alcohol (that's what you're smelling, just a normal by-product of fermentation which is more evident in a liquid or more liquid environment than in a dough as the alcohol is lost more readily to the air as opposed to being entrapped in the dough matrix).

Tom Lehmann/The Dough Doctor  
2458

### [\*\*Dough Clinic / Re: chewy pizza\*\*](#)

Flour has four main parts, moisture (about 12 to 13%), bran (about 5 to 7%), starch (about 70%) and protein (about 12 to 14%) we're talking about typical flours used for making pizza. Starch raw, intact starch has very little absorption properties (try adding some corn starch to water in an attempt to thicken it and you'll see what I mean), so it is the protein which exhibits almost all of the absorption properties in the flour, as the amount of protein in the flour goes up or down the dough absorption typically follows a similar trend. You can see this first hand by hydrating some vital wheat gluten (purified gluten from a flour based dough), it will have a very high absorption capacity.

Tom Lehmann/The Dough Doctor  
2457

### [\*\*New Forum Members / Re: Stretching Pizza Dough\*\*](#)

I didn't see where you are activating the ADY in a small portion of 100F water, did I miss that?

Tom Lehmann/The Dough Doctor  
2456

### [\*\*Pizza Equipment For Sale / Re: Affordable, HIGH QUALITY Artisan Dough Sheeters starting at 350.00 - see video\*\*](#)

Cool!  
Tom Lehmann/The Dough Doctor  
2455

### [\*\*Dough Clinic / Re: How many 12 in pizzas per pound?\*\*](#)

Assuming a total dough formula percent of 170, one pound of flour will make approximately  $1.7 \times 16 = 27.2$ -ounces of dough. Assuming 10-ounces of dough for a 12-inch pizza  $27.2 \div 10 = 2.72$ , 12-inch pizzas can be made from one pound of flour. Or to put it another way, after accounting for bowl loss, from one pound of flour you will have sufficient dough to make two 12-inch pizzas and one 8-inch pizza.

Tom Lehmann/The Dough Doctor  
2454

### [\*\*New Forum Members / Re: Stretching Pizza Dough\*\*](#)

Very little multiplication of the yeast in a dough system but greater amount of yeast will result in faster fermentation. The amount of yeast used will, to a great extent, be determined upon how the dough is managed. By adding the ADY dry as you are will result in some of the glutathione leaching out of the yeast cells as well as creating a situation where the yeast can begin to cannibalize itself due to not being uniformly distributed throughout the dough (if you can pick through the dough and find small particles of ADY you likely are experiencing this problem). This potential loss of activity could be responsible for what appears to be a lack of oven spring with your dough.

Tom Lehmann/The Dough Doctor  
2453

### [\*\*Dough Clinic / Re: Best countertop warmer?\*\*](#)

Unless you want the pizzas to look like they have melted plastic on them I suggest going with the humidified cabinet warmer. Your maximum holding time should be around 2.5-hours or less.

Tom Lehmann/The Dough Doctor

2452

**Off-Topic Foods / Re: Silicone baking sheets**

Why not use the silicone baking sheets? Be sure to buy the heavier weight ones. We use them for making everything from brownies to focaccia and have never had a problem, all of the commercial focaccia lines use the same material but on a roll as opposed to individual sheets.

Tom Lehmann/The Dough Doctor

2451

**Neapolitan Style / Re: tough dough**

There is a good probability that the dough balls are not sufficiently relaxed after being balled by your process. You might try balling the dough at least 10-hours prior to when you plan on opening them into skins, when you ball the dough after a fermentation period it really takes quite a bit of time for the dough to completely relax again.

Tom Lehmann/The Dough Doctor

2450

**Chitchat / Re: Can You Still Get A Decent Pizza Hut Thin 'N Crispy Pie**

Zing;

I can't speak for your local P.H. but for most box chain stores they are hung up on short baking times. For example, PJ's would have a pretty decent product IF they would just bake it 30-seconds longer....doesn't sound like much but it's a lot in an air impingement oven. If we add to that the fact that in a lot of stores they pull the pizza off of the conveyor before it fully exits the baking chamber and you have the stage set for a less than ideal finished crust under the pizza. Next time you go there go during a slack time 3:00 p.m. in the afternoon, and ask them to give the pizza a little more bake time by pushing the pizza back into the oven then see if it's any better.

Tom Lehmann/The Dough Doctor

2449

**Neapolitan Style / Re: tough dough**

My preferred method is to scale and ball immediately after mixing (finished dough temperature 70 to 75F), then lightly oil the dough balls and place into individual plastic food saver bags (they come on a roll and they're cheap) or use bread bags (they work great). Twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge, allow to cold ferment for 48-hours, remove from fridge and allow to temper AT room temperature for about 2-hours, then begin to open into skins. There is currently a video of Norma opening a dough ball and it shows her using this method to store the dough balls on the board.

Tom Lehmann/The Dough Doctor

2448

**Shop Talk / Re: Local Pizzeria Closed.. Desperately need help to move fast w/my new Startup!**

Small place, small town, only open until 1:00 p.m.....Am I missing something? It seems as if you are locked into a very short lunch trade with an initial maximum of only 30-pizzas at most. What are the local demographics? Small town but a lot of people work there?

Tom Lehmann/The Dough Doctor

2447

**[Shop Talk / Re: Local Pizzeria Closed.. Desperately need help to move fast w/my new Startup!](#)**

Where are you planning to have the small wood fired oven? What are you going to do for a refrigerated prep table? How many employees? Are they already set up for self-serve soft drinks. To me it sounds like at least a 3-person operation which is going to be tough for such a low income area, but if you have enough seating your draw from the surrounding area can have a positive impact if you play your cards right. In all probability you won't have a beer/wine license so that'll hurt average ticket cost. You can offset some of this by looking for a really good dessert, either locally made or frozen and shipped to you (cheese cake?).

If you want to discuss please feel free to contact me at 785-537-1037 (please email me at <thedoughdoctor@hotmail.com> with a date and time to make sure I'll be here to take your call. We're on central time right now.

Tom Lehmann/The Dough Doctor  
2446

**[Dough Clinic / Re: Olive Oil and Dough Balls and Finished Dough Temperature](#)**

What you saw when using colder water was perfectly normal. When making slight adjustments in the dough temperature (assuming "normal" temperature in the 75 to 85F range) we normally figure that a 5F drop in water temperature gives us a 2F drop in dough temperature. The reason for this is because all of those ingredients are really nothing more than a heat sink.

It sounds like you were putting a lot of oil onto the dough balls. The correct amount is JUST enough to see a shine on the dough ball. Since oil is a tenderizer in the world of ingredient function it will contribute to a softer eating finished crust if used in excess. I never use oil on the bottom of the dough ball as it results in the dough balls skating around in the dough box....not a good thing. The only time I ever oil the entire dough ball is when I use a plastic bag to ferment the dough ball(s) in, which anymore is most of the time come to think of it.

Putting flour on the bottom of the tray.....moisture migrates from the dough ball into the flour, thus hydrating it, and turning it into school paste over time which is not conducive to easy removal of the dough ball. Try plastic bag fermentation, once you get the hang of it you may like it, I use it as do others here and it works well. Look Ma! It just falls out of the bag by itself!! :)

Tom Lehmann/The Dough Doctor  
2445

**[American Style / Re: 5 Minute Thin Crust Dough](#)**

Actually, adding sucrose (cane or beet sugar aka table sugar) won't help the crust develop any color. This is because sucrose is not a reducing sugar, it depends upon the enzymes in the yeast to reduce it to sugars capable of providing crust color, so you will either need to include a small amount of yeast or use corn syrup or dextrose solids to improve the crust color....then too you could always figure out how to bake it at temperatures of 800F or more in which case sugar would be a moot issue.

Tom Lehmann/The Dough Doctor  
2444

**[Shop Talk / Re: Local Pizzeria Closed.. Desperately need help to move fast w/my new Startup!](#)**

Are you sure you can tackle this by yourself? Let's see....you will be prepping

pizzas, tending the oven (out back), cutting, boxing or bagging, and running the front counter as well as table service (if you have it)? You're going to go broke at the cost of the gloves you'll be buying. Maybe I'm missing something but I just can't see this as a one man show. Just trying to be realistic not discouraging. Scaling up your dough to a 30-qt. mixer is easy. If you have a Hobart HL-30 mixer the capacity is about 18-Kg of total dough weight at a minimum of 60% absorption or half of that at 50% dough absorption. If your mixer is old/tired it may not work well at full capacity so let's fudge a little and use dough weights of 15 Kg. and 7.5-Kg. At 15-Kg. you have 33-pounds of dough weight. Add up all of the bakers percent for your dough formula, divide this by 100 then divide the new dough weight (33-pounds) by that number. This will give you the flour weight needed to make your new dough weighing a total of 33-pounds. The rest is easy, just bakers% X flour weight (press the "%" key) and read the ingredient weight in the display window.

Tom Lehmann/The Dough Doctor  
2443

### [\*\*American Style / Re: 5 Minute Thin Crust Dough\*\*](#)

Nope, not unless it's inverted. You can put sucrose into a pan and heat it until it melts to a clear liquid and it won't develop any color. This is the reason why angel food cakes are made using only sucrose (sucrose is the sweetest of the common sugars and it doesn't provide any color) The little bit of crust color seen on an angel food cake is due to the Maillard browning reaction with the egg protein. The enzyme invertase inverts the sucrose into reducing sugars (dextrose and fructose) almost instantly which are responsible for the impact on crust color which we see when including sucrose in a yeast leavened dough formula.

Tom Lehmann/The Dough Doctor  
2442

### [\*\*Dough Clinic / Re: Falling number... Amylase activity or damaged starch ?\*\*](#)

The issue with damaged starch and amylase activity, as has been explained previously, is that damaged starch has a very high absorption as compared to non-damaged/intact starch. In effect, the damaged starch is responsible for and mostly carrying the increase in dough absorption...now we add amylase into the equation, the amylase hydrolyzes the damaged starch into dextrins and/or maltose and the water that the starch was carrying is now freed up to act as non-bound water in the dough making it overly soft and sticky. Some flours can have a naturally high amylase activity (especially those which were made from wheat which had been allowed to sprout prior to or after harvest), these wheats are typically considered as having little or no application in the baking industry and end up going into channels destined for the industrial wheat market for use in such things as adhesives, and well drilling paste. This is why it is important to know and control the amylase activity of any given flour....a little is good for fermentation and crust color but too much can/will make a mess of things.

It must also be remembered that flour with a high level of damaged starch (15% and above) will have similar issues even without added amylase as there are enzymes present in the yeast which readily attack and hydrolyze the damaged starch, again creating a wet, sticky dough situation during the fermentation process. This is one reason why in countries where the flour is milled to high levels of starch damage the dough fermentation times are held to not more than an hour. I neglected to take this into account when I was in Guyana and after a 3-hour room temperature fermentation period we had to "pour" the "dough" out of the bowl....Oops!

Tom Lehmann/The Dough Doctor  
2441

**[Dough Clinic / Re: My dough isn't stretchy and elastic Im doing something wrong.](#)**

Stuart;

It looks like all of your water is "warm water". The only portion that should be warm is that which is used to activate the ADY in (100 to 105F) with the remainder being cool water (typically about 70F). The salt level is low at only 1% 10-grams per Kg. flour), for both flavor and controlling the rate of fermentation the salt level should be between 1.75 and 2.5%, or about twice of what you are presently using. Form your description it sounds like the dough is being over fermented and 14-grams of ADY per Kg. flour isn't helping the cause. For your dough management procedure I think you'll be better served using only 2 to 3-grams of ADY.

Tom Lehmann/The Dough Doctor  
2440

**[Shop Talk / Re: Opening a shop with zero experience](#)**

Sorry to say this but this sounds like the prologue to a horror story.

Tom Lehmann/The Dough Doctor  
2439

**[Dough Clinic / Re: Falling number... Amylase activity or damaged starch ?](#)**

The typical U.S. roller milling process results in flour with about 6 to 8% damaged starch which is about all that you can get with a roller mill. To achieve a higher level of damaged starch ball milling or pin milling is required. In Mexico they do as high as 20% damaged starch in some areas (the reason for this is because local bakers think the ability to get more water into the dough makes their products cheaper to make due to the higher yield BUT the truth is you have to bake out all of that extra water. Finished bread will have a maximum moisture content of about 40 to 42%, higher than that and the finished bread is doughy. Hamburger/hot dog buns come in at around 36% moisture and pizza crusts come in at around 26%, crackers come in at about 6 to 8% BUT they can achieve that moisture content ONLY by passing the crackers through what they refer to as a "kilning" process which is a process where the crackers are passed under the baking chamber at a slow speed to drive off additional moisture, they're then packaged HOT as they will pull moisture from the air at that moisture content. I digress.

Back to Mexico, to get the amount of starch damage they're looking for they pass the flour through an Entialtor several times which is nothing more than a pin mill which is designed to break up insect eggs in the flour but when the flour is passed through it several times it becomes a pin mill which results in significant starch damage. When we studied starch damage at AIB we found that pin milling was the most effective and fastest way to damage the starch.

2438

**[Dough Clinic / Re: Falling number... Amylase activity or damaged starch ?](#)**

Stone mills do not damage much starch at all, to do so the stones would essentially need to contact each other and we know this doesn't happen. This is also why stone ground flour is coarser than roller milled flour, in fact the most coarse type of whole wheat flour is known as "stone ground" even though it's milled on a roller mill.

Tom Lehmann/The Dough Doctor  
2437

### **Shop Talk / Re: Opening a shop with zero experience**

As a note to this story, I have been personally involved in the development of two different pizzeria operations (as a consultant), both of which were valued at over \$1,000,000.00 (ground-up construction), both were essentially built for "the kids", once completed and opened it we found that the "kids" enjoyed hanging out at the pizzeria with their friends but work of any kind was simply off of their radar screens and both failed within a year and since "Daddy" had no previous knowledge of the pizza industry attempts to find someone to operate the business also failed. Both operations had totally failed within two years of opening, hence my first post to this thread. My good friend Adam Peyton, owner of AJ's New York Pizzeria here in Manhattan, Kansas bought the ovens from one of those failed businesses for pennies on the dollar.

Tom Lehmann/The Dough Doctor  
2436

### **Dough Clinic / Re: Falling number... Amylase activity or damaged starch ?**

Amylase activity. Falling Number does not measure damaged starch. The fact that the FN is high is the reason why pizzas made using these flours must be baked at very high temperatures, UNLESS amylase or sugar is added to the dough formulation, then it performs more like any other normally malted flour.

Tom Lehmann/The Dough Doctor  
2435

### **Shop Talk / Re: Local Pizzeria Closed.. Desperately need help to move fast w/my new Startup!**

Your option #1 could be very viable if done right. I'd suggest striking up a conversation with Norma as she is just now getting out of operating a successful operation like that and I'm sure she could provide some valuable advice as to how to get started.

Good Luck,  
Tom Lehmann/The Dough Doctor  
2434

### **Commercial Ovens / Re: High Temp Gas Ovens**

You might also place your post in the Think Tank at <[www.pmq.com](http://www.pmq.com)>. That site is visited mostly by owners/operators and they might be able to provide you with some additional first hand input.

Tom Lehmann/The Dough Doctor  
2433

### **Neapolitan Style / Re: Dense/ doughy crust**

It could be that you're using too much salt, try making a dough with 1/2 of the amount you're presently using, that will get you pretty close to a typical level of 2%, if that helps you can always incrementally work up to suit your taste.

Tom Lehmann/The Dough Doctor  
2432

### **Dough Clinic / Re: Falling number... Amylase activity or damaged starch ?**

It's a lot easier to control amylase than damaged starch. The malt by itself will help to create crust color.

Tom Lehmann/The Dough Doctor  
2431

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: best pan/surface for gluten free crust\*\*](#)

When we made them at AIB we used to bake them on the silicone baking sheets (not the mats), right on the deck. The heavier weight ones work better than the flimsy, light weight ones.

Tom Lehmann/The Dough Doctor  
2430

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: best pan/surface for gluten free crust\*\*](#)

I don't know what their temperature rating is but we never had any issues with them charring at our baking temperature of 500F. Crispy yes, but not so that it would break off in the oven or even when removed from the oven but when we tossed them into the trash you could feel that they were definitely crispy. The part that is covered by the pizza won't get up to anything even close to 500F, and I doubt that the part of the paper sticking out around the edge of the pizza gets much above 400F due to the cooling effect of the pizza during baking.

Tom Lehmann/The Dough Doctor  
2429

## [\*\*Dough Clinic / Re: Gas Oven\*\*](#)

When it comes to electric ovens I really like the Sveba Dahlen brand ovens out of Sweden. Lately they've had a booth at Pizza Expo.

Tom Lehmann/The Dough Doctor  
2428

## [\*\*Newbie Topics / Re: Wood vs propane results\*\*](#)

Both wood and gas produce moisture/water as a by-product of combustion. Were the baking conditions the same? How about the way the dough was managed or handled prior to baking? Too many variables here to be definitive.

Tom Lehmann/The Dough Doctor  
2427

## [\*\*Shop Talk / Re: Opening a shop with zero experience\*\*](#)

Doesn't that hurt? Building an oven on your fingers. :-D  
Tom Lehmann/The Dough Doctor  
2426

## [\*\*Newbie Topics / Re: Wood vs propane results\*\*](#)

What was the baking temperature in their wood fired oven as compared to your oven? Aside from temperature, all ovens bake differently for a myriad of reasons, someone one said "Every oven is a law unto itself and only unto itself". I'm guessing you're just going to need to experiment with baking pizzas made using that dough formulation and that dough management procedure to find the baking conditions needed to give you the pizza you're looking for.

Tom Lehmann/The Dough Doctor  
2425

## [\*\*Dough Clinic / Re: steps after a 24 hr cold proof\*\*](#)

You will not want to apply heat to the dough in any way unless it is humidified heat. If you heat the air it won't appreciably speed the warming process but since warm air holds more moisture than cold air it will have a significant drying effect upon

the dough resulting the the development of a crusty skin on the dough ball(s). Leaving it warm AT room temperature normally takes about 90 to 120-minutes. This is a good time to be pre-heating the oven and prepping the toppings.  
Tom Lehmann/The Dough Doctor  
2424

**Shop Talk / Re: Opening a shop with zero experience**

Hey man...I understand fully! When I'm posting late at night I have trouble spelling my own name correctly! ^^^ :-D  
Tom Lehmann/The Dough Doctor  
2423

**Dough Clinic / Re: steps after a 24 hr cold proof**

What kind of temperatures are we talking about?  
Tom Lehmann/The Dough Doctor  
2422

**Dough Clinic / Re: Sugar in dough**

If I remember correctly I think we might have something here on the function of the various ingredients used in making pizza dough, aside from that, sugar is multi-functional in yeast leavened dough, at low levels (typically 3% and less) it provides a nutrient for the yeast to feed upon during long fermentation times and it can also precipitate crust color development or enhance crust color. At higher levels it can have an influence on the flavor of the finished crust by providing a sweet taste or even a unique taste/flavor depending upon the type of sugar being used. For example, non-diastatic malt can add a nutty or even a malted milk type flavor to the finished crust while lactose provides essentially no sweetness but instead has a significant impact upon crust color characteristics, honey, can provide a broad spectrum of flavor to the finished crust depending upon the color of the honey. The lighter shades of honey provide less flavor while the darker shades provide more flavor but the color of the honey doesn't impact the crust color characteristics. Unsulfured molasses will provide yeast nutrient to sustain yeast activity while also contributing to crust color and providing a unique flavor to the finished crust. The type of pizza being made can also dictate the use of sugar in the dough formulation however, in many cases when sugar is not used, an un-malted flour is used which means that you will need to be baking your pizzas at high temperatures (above 750F) if crust color is to be achieved, if your oven is not capable of baking at this temperature you might find yourself needing to add a small amount of "sugar" to precipitate the browning reaction allowing you to get a decent crust color on your pizzas.

Tom Lehmann/The Dough Doctor  
2421

**Dough Clinic / Re: restaurant consulting**

I have been a consultant to both the pizza and baking industries since 1968 and since my retirement from the AIB five years ago I have been charging \$1,000.00 per day for my consulting services (a LOT less than what they were when I was employed by the AIB), if the job is a small one, requiring less than a day on my part I charge \$125.00 per hour.

Tom Lehmann/The Dough Doctor  
2420

**Shop Talk / Re: Pizza Consultant - SE Michigan**

Nick;

I'll be glad to work with you BUT there are a lot of things that you need to do on your part before moving ahead.

Please feel free to contact me directly at <thedoughdoctor@hotmail.com>.

Tom Lehmann/The Dough Doctor  
2419

**Dough Clinic / Re: restaurant consulting**

I'm humbled by your comments. My training Through the AIB has been as both a researcher and an educator where we used education and assistance as a means of disseminating new found knowledge. One of my idioms is "Knowledge gained and not shared is knowledge lost". There is a lot of shared knowledge here as well as at the PMQ Think Tank and I'm pleased to be able to contribute to just a small part of it.

Tom Lehmann/The Dough Doctor  
2418

**Dough Clinic / Re: sourdough - hydration and toppings**

I would suggest experimenting with the total dough absorption as that is almost universally the number one variable in dough formulation. Adjust the absorption in 2% increments up and down until you find the absorption that works best for YOU under YOUR specific conditions and Your dough management procedure. As for the cream cheese, it's probably the high moisture content of the cream cheese (55%) and/or the acidity of the cheese that is preventing the cheese from browning during baking, cream cheese is pretty low in fat content at only about 33%.

Tom Lehmann/The Dough Doctor  
2417

**Dough Clinic / Re: how much malt to add to home ground flours**

The amount of malt added by the flour mill is variable and adjusted to provide a targeted Falling Number (recently discussed in another post) so I wouldn't recommend adding malt at a fixed amount, if you do want to go that route I'd suggest adding 0.25% of a 20-L malt powder. Instead, it might be easier for you to just include some sugar in your dough formulation. You should be able to bench mark the sugar at 1% and work up or down from there. Once you have the amount of sugar dialed in it can probably be considered a constant UNTIL you change your grist (wheat being ground into flour), then if you see a change in crust color you will need to adjust the sugar level accordingly.

Tom Lehmann/The Dough Doctor  
2416

**Stones/tiles/steel, Pans & Accessories / Re: UK: pizza pans and chopping board**

Your pan seasoning looks great. It'll continue to darken with continued use (that's a good thing), but do NOT wash your seasoned pans, just wipe them out with a clean, dry towel and they'll be good to go the next time pizza is on the menu.

Tom Lehmann/The Dough Doctor  
2415

**Dough Clinic / Re: sourdough - hydration and toppings**

Are you asking if the toppings (type /amount) would impact the bottom crust color?

Tom Lehmann/The Dough Doctor  
2414

## **Dough Clinic / Re: sourdough - hydration and toppings**

If the dough is showing sufficient oven spring it shouldn't make a lot of difference as to the kind or amount of toppings used, if too much is used it will weigh down the dough thus limiting oven spring which makes the dough more dense and better capable of conducting heat through it which will reduce the heat to the bottom of the pizza making for a lighter finished crust color. Lots of veggie toppings put off a lot of moisture during baking which shrouds the top of the pizza in cooler moist air resulting in a lighter overall top color, this is why a lot of times we see a meat only topped pizza having a darker top color as there isn't as much cooling moisture covering the top of the pizza during baking. Mind you, this applies to deck ovens only, the high velocity airflow of an air impingement oven pretty well eliminates this issue.

Tom Lehmann/The Dough Doctor  
2413

## **Dough Clinic / Re: Looking for a little more flavor in my dough?**

First off, the mechanics of oil v/s shortening; The shortening does a better job of coating the gas cells within the dough which allows them to better retain leavening gas, expanding air and water vapor which results in improved (greater) oven spring which in turn typically results in a crispier crust, oil, on the other hand, is just absorbed into the dough to act as a lubricant and while this can enhance oven spring the effect generally isn't as effective as the shortening due to its combined gas retention properties.

Now, if you are looking for some impact upon flavor, have you tried using a Pomace grade olive oil? It has a much more robust flavor and is my own personal "go to" oil to use in my pizza doughs. As for other types of fat such as butter, butter flavored margarine, butter flavored Crisco, butter oil, Butter Buds, etc. if that's the flavor profile you're looking for in the finished crust....go for it. Experiment with them at different levels to determine where your preference lies.

While some reduce water when adding oil to the dough formulation, I have never found it necessary to do so unless I'm already pushing the limits with my dough absorption. Just remember to use the delayed oil addition mixing method when using an oil, this is not necessary when using a plastic fat.

Tom Lehmann/The Dough Doctor  
2412

## **Dough Clinic / Re: sourdough - hydration and toppings**

If you're not checking the stone temperature or allowing sufficient time for the stone to recover heat anything is possible.

Tom Lehmann/The Dough Doctor  
2411

## **Dough Clinic / Re: sourdough - hydration and toppings**

In all my years I've never seen a case where the specific topping had any influence on the bottom crust color characteristics unless as previously stated too much was used or a "swamp" pizza was in the making. In cases where a VERY thin skin is dressed the heat from the deck will just pass right on through the crust, as it is not thick enough to create a thermal break, and go into the toppings, but that is not a function of the toppings, instead it is a fault of the skin being made too thin.

Every oven is a law unto itself and only itself.

Tom Lehmann/The Dough Doctor  
2410

## **Newbie Topics / Re: Storing lots of pizza doughs**

I've stacked them in two high, more than that high and you get the sandwiched dough ball effect where you don't get consistent cooling of the center dough balls....otherwise, packem' in. Just remember to oil the dough balls when placing them into the bags and use bread bags if you can or a similar "food" bag like you get on a roll at the supermarket.

Tom Lehmann/The Dough Doctor

2409

## **Dough Clinic / Re: Looking for a little more flavor in my dough?**

From a function standpoint lard is just like any other regular plastic fat, but it does have a flavor. Essentially all lard sold in the U.S. is steam distilled (deodorized) to remove this flavor component but if you can get some pure, non-steam distilled non-deodorized), lard it will contribute a unique flavor to the finished crust.

Tom Lehmann/The Dough Doctor

2408

## **Shop Talk / Re: Scale recommendation?**

AND/A&D Weighing makes some almost bullet proof scales. One year at Pizza Expo they were dropping one off of the table onto a carpeted cement floor without any damage to the scale. We had them for our students to use when I was at AIB too. Best part is that they operate off of inexpensive flashlight batteries, which by the way, seem to last forever. <[www.andweighing.com](http://www.andweighing.com)>

Tom Lehmann/The Dough Doctor

2407

## **Dough Clinic / Re: Looking for a little more flavor in my dough?**

I do an "either or" with oil and shortening but you could blend them if you had a specific purpose in mind. Since shortening is 100% fat oil and shortening are used at the same levels unless you are using something which contributes a flavor and you want to accentuate that flavor in which case you would use more. Ditto for the oil too. Butter and margarine are not shortenings as they contain 20% water so if you were to use either of these at the same level as the oil you are presently using you would be decreasing the amount of oil being added by 1/5th (20%). Here's a simple test to determine if any fat can be added directly to the dough or if it should be added by the delayed fat addition method. Place a small amount of flour on a plate, add some of the fat in question to the flour (just put it right on top of it), if the fat begins soaking into the flour it should be added by the delayed fat addition mixing method but if it just sits there doing nothing more than looking pretty you can safely add it to the dough along with the rest of the ingredients. Note: Lard can be a toss-up as to how it is added depending upon the temperature of the lard at the time of addition. If it's warm you will be better off adding it by the delayed method but if it's cold you can add it just as you would add something like Crisco.

To some extent the same might be said for butter too, there are significant differences in butter when it comes to slip point (melting point). Typical American butters have a very narrow plastic range while imported Danish butters have a much wider plastic range (butter with a wide plastic range can still be relatively soft right out of the fridge and doesn't melt at elevated room temperatures). This is the type of butter from which Danish pastries were originally made. Today, at least in the U.S. we use a specially formulated fat (roll-in shortening) for making Danish pastries which has the desired plasticity range necessary for the rolling/layering process (laminating) used in making this type of pastry.

Tom Lehmann/The Dough Doctor  
2406

**[Stones/tiles/steel, Pans & Accessories / Re: Lloyd Pans vs. Allied pans, and Bar Keepers Friend...](#)**

This seems to be a common experience with the Lloyd pans and Detroit style pizzas. While the Lloyds Pans are great with other types of pizzas there seems to be an issue only with the Detroit style pizzas. This has been discussed here previously and there were recommendations to use the old, original type, blued steel pans which never showed this problem. If I remember correctly, there was a reference to a supplier of these pans in one or more of the posts. Maybe Peter can work his magic for us by locating those conversations.

Tom Lehmann/The Dough Doctor  
2405

**[Dough Clinic / Re: Looking for a little more flavor in my dough?](#)**

Any type of oil, not just olive oil helps with the doughs extensibility, shortening seems to help deep-dish pizzas rise better than oil which we confirmed in bread making tests back in the 1970's when the wholesale bread industry converted from shortening/lard to vegetable oil.

As for adding shortening.....go back and re-read my previous response beginning with "Here's a simple test", and the answer will be right there.

Give your brain a rest, you're over thinking this and maybe trying to absorb too many things at once, lean back, take a deep breath, and get back to making pizzas for fun again! :)

Don't be afraid to experiment, but remember to change just one thing at a time, always weigh your ingredients, and keep notes on what you did. Remember, when it comes to pizza, even our mistakes can taste pretty good. Did you know that the Schlotzsky's bun is the result of a mistake? Ditto for the bagel and pretzel too.

Tom Lehmann/The Dough Doctor  
2404

**[Dough Clinic / Re: Dough floating when done fermenting?](#)**

When I first started in the baking industry, back in the early 60's it was common for the sponge mixer to have a bucket of warm water next to his mixer, he used to take a small piece of each sponge just as it was finished mixing, roughly ball it (about the size of a hen's egg) and drop it into the warm water, it would initially sink as it was denser than water but in a few minutes, as the yeast began fermenting it would float, providing an indication that the yeast was indeed added to the sponge and that the sponge was active. That's all the test is good for, nothing more, nothing less, anybody who tries to read more into this simple test would also float in a bucket of warm water as they're full of hot air! Proving once again that everything you read on the Internet.....

Tom Lehmann/The Dough Doctor  
2403

**[Shop Talk / Re: Opening a shop with zero experience](#)**

Well.....that being the case, I hear they have a number of opening for airline pilots. All you need is a pilot's license and you can go thundering through the skies at 500 m.p.h. with 200 people sitting behind you cheering you on!

I wish you luck in the pizza business.  
Tom Lehmann/The Dough Doctor  
2402

## [\*\*General Pizza Making / Re: Commercial convection oven\*\*](#)

In a convection oven the use of a dark colored sheet pan would also help the bake. While they are available, I think it's easier to just season the OUTSIDE of the aluminum sheet pans which are going to be used for this specific application. I also agree that the use of stones on the bottom of the oven would help as well.

Tom Lehmann/The Dough Doctor  
2401

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Lloyd Pans vs. Allied pans, and Bar Keepers Friend...\*\*](#)

Great information, thanks for sharing! :)

Tom Lehmann/The Dough Doctor  
2400

## [\*\*Dough Clinic / Re: Can I keep my pizza flour in the freezer?\*\*](#)

Absolutely! In addition to actually killing any insects and their eggs freezing the flour will ensure a more consistent performing flour over extended periods of time. Just remember to remove whatever amount of flour from the freezer the day prior to baking to allow it to completely warm-up. One thing that many of us do is to preportion the flour into individual plastic bags prior to freezing, this way all you need to do is to remove a single bag the day/evening before you want to use it and you're good to go on the following day or if your plans get interrupted it can sit out in the closed bag for 2 or 3-weeks.

Tom Lehmann/The Dough Doctor  
2399

## [\*\*Chitchat / Re: "Pizza is not bread": I want to know why!\*\*](#)

It all has to do with the finished volume/height.

Bread is expanded much more than pizza dough immediately prior to baking (proofing).

The oven spring is typically, but not always greater for bread doughs than for pizza doughs.

Due to the much greater expansion (16-ounces of dough can be expanded to nearly 2700 cc in volume (baked loaf volume), the dough needs to be significantly stronger than a pizza dough which will be expanded to a height of about 1-inch for pan style crusts or 0.25-inch or less for thin crust styles.

Some bread doughs receive very long fermentation times just like pizza doughs and some receive less than 5-hours fermentation time, like some pizza doughs so fermentation for both is all over the place, but one common characteristic to most pizza crusts is an open, porous crumb structure while indeed some breads also have this characteristic other bread types (sandwich breads for example) are targeted to have a very dense, tight knit crumb structure which few pizza types are targeted for. One of the ways these characteristics is achieved is through manipulation of the dough mixing time which is typically shorter for pizza dough and longer (more gluten development) for bread dough.

Why is it that bakers don't really know how to make good pizza? The answer is in the fact that most bakeries don't sell pizza and add to that their ovens are not really designed for baking pizzas either. It goes the other way too, I have dealt with many pizzerias wanting to make different types of breads, especially hoagie buns, these items just have not historically been on their radar screens.

I'm sure there are a bunch more but it's approaching "lights-out" time so I'm going to quit while I'm ahead.

Tom Lehmann/The Dough Doctor  
2398

**Prep Equipment / Re: Hobart Tallboy Dough Riding Up**

Try putting all of the water in, then add the salt and sugar(if used) to the water, add the flour and the yeast on top of the flour, use the delayed oil mixing procedure, see if that works any better....it might help a bit but I think your problem might be with your dough hook being a common "J" hook rather than the much improved reverse spiral dough arm which was designed back in the early 1970's to address this very problem. That might be the good news, the bad news could be that there is no reverse spiral dough arm made for your mixer, do an internet search as well as contact the Hobart Corporation in Troy, Ohio (USA) to see if they have any or if there is any compatibility with another size Hobart Planetary mixer (this would be a very long shot).

If you can send us a picture of your dough hook I'm sure we can identify it for you pretty easily.

One last thing, the problem with the dough climbing up on the hook is usually at its worst when mixing smaller dough sizes and very large dough sizes (based on bowl capacity). Mixing intermediate size doughs and using a higher mixing speed can help in many cases.

Tom Lehmann/The Dough Doctor  
2397

**New Forum Members / Re: Stacking deck ovens**

Sure, not a problem if you have the overhead space for the hood and you will also need to have some steps built so the oven tender can reach the top deck. I will add this, having them stacked 3 high makes an even bigger pain out of a painful job.

Tom Lehmann/The Dough Doctor  
2396

**Dough Clinic / Re: New to Pizzeria business questions**

Momba;

I can answer all of your questions but first I need more information.

What type of pizza are you making?

Tell me as much as you can about your flour.

What about your business concept? Dine-in with some DELCO or primarily DELCO? If you will email me at <thedoughdoctor@hotmail.com> I will be glad to send you a copy of my Dough Management Procedure, this may come in handy for you as I'll be referencing it in my response.

Tom Lehmann/The Dough Doctor  
2395

**Other Types / Re: Deep-fried Calzones**

That's how some of the "pocket sandwiches" (don't want to use the trade marked names) are made. They're then frozen and finished in the home oven from the frozen state. The frying process gives it a whole different flavor.

Tom Lehmann/The Dough Doctor  
2394

**Pizza News / Re: Dozens of New England Papa Gino's locations abruptly shut down!**

I'll give you an AMEN to that! :).

I'm now enjoying retirement more than I ever thought I would.

Tom Lehmann/The Dough Doctor  
2393

**[General Pizza Making / Re: What are the main causes \(probably\) when dough keeps shrinking when spreading ?](#)**

If the dough is too elastic from the "get-go" when opening the dough ball into a skin the problem is most likely due to insufficient fermentation for the strength of flour being used. The second reason, especially in pizza making where long fermentation times are typically employed is over fermentation of the dough. In this case the gluten is tight (aka bucky) and just doesn't want to stretch at all and all attempts to open the dough just result in tearing. In the case of an under fermented dough you will be able to open the dough without tearing but it will just keep pulling back to a smaller size/diameter.

Tom Lehmann/The Dough Doctor  
2392

**[Resources / Re: Why Is It So Hard To Get Great Ingredients?](#)**

I'm on the same boat, I use what is available to me locally and as many of you know, I use fresh whenever possible. Fresh basil right out of our garden, vine ripened tomatoes sliced and used instead of a sauce, toppings right out of the garden and occasionally I'll use some locally harvested organic venison. Our garden is finished for the year now so I'm really going to miss it until next spring :( One of the questions I used to ask my students was to define quality in one word. The answer was "perception". It ain't the ingredients that count, it's what you do with them that makes the difference.

Tom Lehmann/The Dough Doctor  
2391

**[Neapolitan Style / Re: VPN recipe - baker's yeast](#)**

There is a sweet spot in fermentation beginning where the dough can first be successfully used until it is over fermented to the extent that it no longer makes an acceptable pizza or handling of the dough becomes too problematic. At that low of a CY level and 3% salt the dough is fermenting very slowly and is still within the parameters of that sweet spot. This doesn't mean that the fermentation is the same, it just means that it hasn't yet progressed to the point where it becomes problematic. We even see this in doughs that are used in a commercial operation, take for example my typical dough formula with 0.375% IDY and 1.75% salt using my CF dough management procedure, with a finished dough temperature in the 70 to 75F range the dough is ready to use after 24-hours with a useful life of up to 72-hours or a little more. This simply means that the dough will make decent pizzas (within some range of quality standard) that the average consumer can't differentiate (consistency is the name of the game) over the life of the dough, yes, there is a difference in fermentation but not so great so as to negatively influence the handling properties of the dough or diminish from the expected quality standards of the finished crust/pizza.

Tom Lehmann/The Dough Doctor  
2390

**[New Forum Members / Re: pizza oven for new york style pizza](#)**

They work quite well, and with a good one you can expect to see a baking time of around 7-minutes. For the money, the Marsal deck oven is a good one.

Tom Lehmann/The Dough Doctor  
2389

## [\*\*Neapolitan Style / Re: VPN recipe - baker's yeast\*\*](#)

That's a really tough question to answer as it boils down to taste and that's such a subjective assessment. From a text book assessment a product made from a dough with less fermentation will have a more bland, less complex flavor while a product made from a dough made with more fermentation will have a stronger, more complex flavor generally accompanied by a slight to moderate tartness on the tongue. From a mastication stand point the product made with less fermentation will typically have a tougher, more chewy eating characteristic than one made with more fermentation. To some extent I also use crust color, or lack of to assess fermentation, as the dough ferments sugars are converted to carbon dioxide, alcohol and acids (which inhibit crust color development) so a product with a lighter crust color MIGHT have been made from a dough with more fermentation. If I am trying to ascertain the amount of fermentation that might have been used to develop a specific product I begin putting all of these markers together (visual, textural/mastication, flavor and overall appearance) to gain some perspective of how much fermentation might have been used to develop a specific product. In bread items I would include aroma which by itself can be a pretty good indicator but in pizza crusts it is all but impossible to make an effective aroma determination.

Tom Lehmann/The Dough Doctor  
2388

## [\*\*Dough Clinic / Re: Faux sourdough?\*\*](#)

I tens to agree with you. Beer is really nothing more than a preferment, much like a starter. One question I have is why did you go to the effort to separate the beer from the other ingredients by adding it late as you did? When I've used beer I just add it right into the water, also we found that a darker/stronger beer provided a better flavor than lighter colored beers.

Tom Lehmann/The Dough Doctor  
2387

## [\*\*Off-Topic Foods / Re: Bread starter scaling up wierdness?\*\*](#)

Total fermentation is typically calculated at 2% which includes loss due to fermentation as well as moisture loss, so  $0.98 \times$  actual dough weight (after mixing) is what is used to calculate the dough weight after fermentation.

Tom Lehmann/The Dough Doctor  
2386

## [\*\*Dough Clinic / Re: New to Pizzeria business questions\*\*](#)

With a flour protein content that low (10.3% +/-) I suggest targeting a finished dough temperature of 70 to 75F (not more than 75F), and then following as closely as possible the Dough Management Procedure which I provided to you. The dough should be ready to use after 24-hours cold fermentation with a maximum life of 48-hours. After the cold fermentation process, remove the desired number of dough boxes from the cooler, leaving them covered, allow the dough to temper AT room temperature until the internal temperature of the dough balls is in the 50 to 55F range, at that point you can begin opening the dough into skins for your pizzas, the dough balls will remain good to use at room temperature (just be sure to keep the boxes covered) for another 2 to 2.5-hours. Cold dough at the time of opening doesn't cause the dough or finished crust to absorb moisture but it can have a dramatic impact upon how well the pizza gets baked and I think this is what you are seeing as when the dough doesn't get properly baked in the center the finished

crust quickly turns soft and soggy which could be mistaken for absorbing moisture. Since so much of your business is DELCO I would advise using a longer, slower bake, something around 6-minutes at about 525 to 550F as this will provide for a drier pizza with a crispier bottom crust which will hold up to the abuse of DELCO better than a fast baked pizza.

Tom Lehmann/The Dough Doctor  
2385

### [\*\*Dough Clinic / Re: Faux sourdough?\*\*](#)

I don't remember the exact percentages anymore but brewers yeast will ferment up to about 13% alcohol content and bakers yeast will ferment up to about 1% less than that, still well under the alcohol content of beer as we know it, and don't forget that it will also be further diluted by the water that you're adding to the dough so there is really nothing to worry about. Beer is also slightly acidic, yeast likes an acidic environment (within reason) so the two play quite well together....don't believe everything you read on the internet. :).

Tom Lehmann/The Dough Doctor  
2384

### [\*\*General Pizza Making / Re: in search of cornicone browning with GF flour\*\*](#)

Try putting 2% sugar in the dough formula. Bake one on the deck as you have been and the other one start out baking on a screen for about 1/2 of the bake time then remove from the screen and finish baking on the deck.

Assuming you're baking in an upper rack position to provide the most top heat?  
Tom Lehmann/The Dough Doctor  
2383

### [\*\*General Pizza Making / Re: in search of cornicone browning with GF flour\*\*](#)

2% sugar will not change the taste at all. If you use a screen it would be used just as you are presently baking. Placing the skin on a screen will allow for a slightly longer baking time (maybe sufficient to get some top color) then when you remove it from the screen and "deck" the pizza you will get the bottom crust color development. You just need to figure out how long to bake the pizza on the screen before decking it. I also suggest trying a higher rack position to get a compromise of top and bottom crust color. The addition of some sugar to the dough formulation will certainly help in achieving a better crust color as you move the bake to a higher rack position.

Tom Lehmann/The Dough Doctor  
2382

### [\*\*General Pizza Making / Re: in search of cornicone browning with GF flour\*\*](#)

That's 2% (bakers percent) i.e. 2% of the flour weight.

Decking a pizza is starting it out on a screen or pan and then removing it from said screen or pan and placing the pizza onto the deck to finish baking. It is also used to re-freshen pizza slices that have been held in a holding cabinet until time of sale.

Tom Lehmann/The Dough Doctor  
2381

### [\*\*Newbie Topics / Re: Baker's Pride oven?\*\*](#)

I've never worked with that specific oven but I see that it is lined for significantly better top heat than what one typically gets in a home oven, and the oven is designed for better/faster heat recovery than most home ovens which are "5-star energy rated", with all of that said, in the words of Big Dave Ostrander, that oven is

a "stocking stuffer" when it comes to commercial pizza ovens. For the occasional home pizza baker your home oven should serve you just fine, when occasional becomes more occasional is when you might be inclined to look for something different, like a wood fired oven or bigger like a great deal on a used commercial pizza oven that you can install out in the garage.

Tom Lehmann/The Dough Doctor  
2380

**[General Pizza Making / Re: in search of cornicone browning with GF flour](#)**  
Spot-on! :)

Tom Lehmann/The Dough Doctor  
2379

**[Dough Clinic / Re: soupy center](#)**

When using Caputo "00" flour I find that I get the best results by far using not more than 24-hours cold fermentation so there is a good possibility that your dough might be over fermented.

For a test, try this, make another dough with a finished dough temperature of 70 to 75F, test bake one dough ball after 24-hours CF and another one in 24-hour intervals to see if there is any improvement with any of the dough balls.

I have a question though "soupy" in my world this also meant wet. Are you talking about the crust being "soupy" or the center of the pizza? Excessive amount of sauce, overly thinned sauce, excessive vegetable toppings, or an excessively topped pizza baked at high temperature can all result in what I refer to as a "swamp" pizza. This is a finished pizza that is wet and "soupy" and as the water migrates into the crust it leaves a crust with little to no integrity. Can you please elaborate?

Can you provide some pictures?

Tom Lehmann/The Dough Doctor  
2378

**[General Pizza Making / Re: Sauce from fresh tomatoes](#)**

Probably the last thing you will want to add is tomato paste....just taste it and you'll know why.

If you are looking for a manufacturer of a product that might be used to thicken your sauce but yet is pure tomato (maybe some citric acid added) take a look at the Stanislaus products on their web site. Saporito Super Heavy Tomato Puree looks like it might be a good option.

Tom Lehmann/The Dough Doctor  
2377

**[Dough Clinic / Re: Faux sourdough?](#)**

If you are tasting salt either the salt level is waaayy too high or you're on a salt free diet. What you are actually seeing is the development of alcohol, carbon dioxide and acids (acetic, lactic and propionic) which provide what we like to call the flavor of fermentation. This flavor increases in intensity increased fermentation. Most people like it but then there are a few who don't. Salt, while not a flavor by itself, is what many refer to as a flavor potentiator, meaning that it improves the flavor that's present while not adding a flavor of its own, much like vanilla in a chocolate cake. Formulators for convenience foods know that there are three "food groups" aka ingredients that will cause people to gravitate to a food item, these ingredients are: salt, fat and sugar. Just look at the ingredient label and nutrition fact panel on any run of the mill convenience food and you will see one or more of these ingredients standing proudly above all the rest, which is probably as good a

reason to avoid these foods whenever possible. Point is, a little more salt will help to improve the flavor of your crust, regardless of how long the dough is fermented. As a product formulator for many years we found that 1.5% salt is about the minimum that can be used without impacting the flavor of the finished product and 2.5% is about the maximum that can be used before the product begins to take on certain "salty" flavor notes. I might add that in some areas where people tend to consume high levels of salt the entire salty flavor profile can be grossly distorted. If you ever sat in a restaurant and watched someone empty a salt shaker on their steak you know what I mean. We used to jokingly say that salt is addictive because when you begin using it you need more and more (actually, your taste buds just become accustomed/desensitized to it).

Tom Lehmann/The Dough Doctor  
2376

**Dough Clinic / Re: looking for soft /tender pizza bottom**

For a softer, more "bread like" crust try using shortening or maybe butter/margarine/lard in the dough formula. The amount I would suggest starting at would be 5% and work up to 8% in 1% increments. As for baking, I see that you are baking your pizzas on a screen, this allows for a longer bake time but in your case you actually want to have a faster bake so I suggest baking the pizza directly on the stone/steel as JerseyPieBoy suggested, then place the baked pizza on a flat surface as soon as it comes out of the oven and I'm betting you will need to use a pie server to remove a slice. If you feel it's too soft just place it on the pizza screen to cool for a minute before slicing.

Tom Lehmann/The Dough Doctor  
2375

**Shop Talk / Re: Scale recommendation?**

Peter;  
That's it. Looks like they changed their web site since I picked up their last card at Pizza Expo.  
Tom Lehmann/The Dough Doctor  
2374

**Newbie Topics / Re: Best thing to use for releasing a pizza from the peel?**

Wheat bran also works well too.  
Tom Lehmann/The Dough Doctor  
2373

**Dough Clinic / Re: Faux sourdough?**

Peter;  
When looking at the impact of salt on sweetness we found that our taste/sensory panel detected salt at lower levels than sugar and they also detected salt before they could detect the sugar/sweetness which confirms your findings. When salt is detected we tend to focus on the salt and don't perceive the presence or magnitude of sugar present, hence we don't taste or perceive the sugar as we would without the salt. We used to use the expression that it has the ability to "wipe-out" the taste buds of our sensory panel. This was important information for us to know as it would influence how we presented products to our sensory panel for evaluation since we didn't want to fall into the old adage of statisticians of "tell me what you want to show and I'll prove it statically" or in our case, tell me what outcome you want to see and I'll develop a sensory test protocol to prove it. Like Sargent Joe Friday used to say "Just the facts, nothing but the facts".

Tom Lehmann/The Dough Doctor  
2372

**Dough Ingredients / Re: Is there a relation between the W and Protein %?**

Joaohess;

There is a relationship but it isn't a very good one for assessing the gluten strength characteristics of a spring or winter wheat flour. The "W" number is an indicator of the extensibility of the gluten rather than the strength of the gluten which is better measured using a Farinograph where you would be looking at such things as peak time, MTI (mixing tolerance index) and point of departure on the graph which will give a pretty good idea of the ability of the protein to make gluten as well as the strength characteristics of the gluten when formed by the mixing process. In my opinion, you are better off looking for a flour with a protein content in the 12 to 13% range.

Yes, a 15% protein content flour can demonstrate weak gluten characteristics, or it may demonstrate extremely strong, elastic/bucky characteristics which can make a pizza dough extremely difficult to deal with. When dealing with an unknown flour I always say to look at your local bakers and see what they are using, most of the time if the flour makes good bread it will also serve you well in making pizza dough.

Tom Lehmann/The Dough Doctor  
2371

**Dough Ingredients / Re: How long to let dough sit at room temperature?**

Until the dough balls reach an INTERNAL temperature in the 50 to 60F range. You will need to experiment a little to determine what temperature works best for YOU (the temperature will vary with amount of cold fermentation the dough has received, your abilities at opening the dough, the dough formulation as well as ambient temperature. In a commercial pizzeria where these variables are pretty well controlled they will typically use 50F for their target temperature as to when to begin opening the dough balls, this will usually give them a period of 2 or more hours to use the dough balls, but at home where you are only making a couple/few dough balls you potentially could go above the recommended 60F upper limit but be advised that a long fermented dough or a high absorption dough might begin to get problematic in handling when opening at that temperature (like I said your ability to open the dough comes into play too, especially if you are trying to open the dough at the warmer temperatures). Yes, the dough is easier to open at the lower temperatures but if you begin opening it at too low of a temperature bubbling of the dough then becomes a problem.

Tom Lehmann/The Dough Doctor  
2370

**Dough Clinic / Re: Roman style pizza**

Just fire out your questions and we'll do the best we can.  
Tom Lehmann/The Dough Doctor  
2369

**Dough Ingredients / Re: Is there a relation between the W and Protein %?**

It all depends upon the type of wheat its made from. If it is made from a soft wheat the outcome probably won't be all that great but if it is milled from a hard wheat variety you might pull it off. The absorption will be lower than what you might be used to seeing or using and fermentation will need to be kept on the short side, I'd guess something in the 18 to 24-hour (CF) range at best, and maybe bump up the

dough weight slightly too. If you're in a bind for flour ask around to see if you can find out if anyone is using one of those low protein flours to make any bread type products. The worst thing that could happen is that the miller is milling the low protein flour to a high level of starch damage, if this is the case the flour will immediately exhibit a very high (unusually high) dough absorption and it will not tolerate more than about 60 to 90-minutes of total fermentation time, after that the dough rapidly turns to soup as the enzymes in the yeast hydrolyze the damaged starch (which is responsible for carrying all that extra water) and when that happens the water is freed up and that's when the dough starts getting wet and sticky (soupy), when that happens you just toss it out and make a not to "self" not to do that again.

Tom Lehmann/The Dough Doctor  
2368

### [\*\*Dough Clinic / Re: A bread question for Tom\*\*](#)

QJ:

There are a couple of forces working against you here.

First, have you ever noticed that raisin bread (+50% raisins based on DOUGH WEIGHT) will not mold for a terribly long time? This is due to the tar-taric acid content of the raisins, in fact, raisin juice concentrate (RJC) is occasionally used as a "natural" mold inhibitor. The raisins are inhibiting the yeast (a member of the mold family), hence SSLOOOWW fermentation.

Secondly, with all that molasses (hopefully un-sulfured) the high sugar content GREATLY inhibits yeast activity, adding insult to injury.

So, what to do, what to do?

Answer:

You must use a yeast spike which means changing your dough making process to that of a remixed straight dough process. After the dough has fermented in the fridge over night place it back into the mixing bowl and add 5% compressed yeast or 1.5% IDY and remix the dough just until it becomes smooth and pliable, form into balls, place on a baking surface and final proof for about 75-minutes (time will be variable), cut docking slits in the balls, spray with water and bake at 400F to 425F for about 25-minutes or until the loaf sounds hollow when tapped. Brush with melted butter immediately upon removal from the oven and drape with a towel until cool.

I also taught bread baking when I was at AIB, and for many years I was a consultant to the baking industry.

Tom Lehmann/The Dough Doctor  
2367

### [\*\*Shop Talk / Re: Need some help, advise about a pizza kitchen\*\*](#)

You mention the need for a small refrigerator, why not get a 3-door prep-table? That should provide all the refrigeration you will need at hand.

Can you be more specific on your product mix as well as the type of pizzas you plan to make? Keep in mind that you will need to have a minimum of 1.5 times the depth of the oven as free space in front of the oven for the oven tender to safely work in. I mention this because I was involved with an operation wanting to do something very similar to what you have proposed this past summer but they didn't take into account the free space issue and that ended up nixing the deal.

Tom Lehmann/The Dough Doctor  
2366

### [\*\*Dough Clinic / Re: A bread question for Tom\*\*](#)

The SAF Gold is indeed designed for high sugar doughs (20%+) BUT, this is a BIG BUT too, it has very little tolerance to sodium (salt). In Europe it is common to make high sugar products with not more than 1% salt, with notmal U.S. salt levels of 1.5% and above the stuff stops, dead in the water.

As for soaking the raisins, excellent idea! The best way to soak your raisins (fool proof method) is to rinse the raisins in water and then drain off all the excess water, place into a container to absorb the remaining water and you're good to go. Raisins are ALWAYS added as late in the mixing process as possible so they JUST get mixed in and not crushed or smeared. Tip: Try flavor infused raisins, add a little orange juice or even vanilla to the raisins after they have been rinsed.

Tom Lehmann/The Dough Doctor  
2365

### **Shop Talk / Re: side pizza business**

Hey Norma! Got your ears on? Canadianpie might want to start a discussion with you, can't think of a better person. :)

Tom Lehmann/The Dough Doctor  
2364

### **Prep Equipment / Re: Should you use a metal peel or can you use wood to launch pizzas in woodfired ov**

Wood peels without question aka prep peels (short handle wood peels) and use the metal peel for peeling the pizzas out of the oven. There is also a wood peel with a circle or circles laser etched into the peel to reference the size/diameter of the skin. These are available from <[www.portionpeels.com](http://www.portionpeels.com)>.

Tom Lehmann/The Dough Doctor  
2363

### **Dough Clinic / Re: A bread question for Tom**

Nope, has nothing to do with mitigating the tar-taric acid if you don't soak the raisins they will hydrate during and after baking creating a dry area around each raisin and if you soak them too much they will be too fragile and be damaged during incorporation plus they will allow moisture to migrate from the overly plump raisin to the surrounding crumb where it forms a "halo" around each raisin, and worse yet, as the raisin shrinks due to loss of moisture it will fall free from the crumb when slices rather than adhering in the crumb as it should.

Tom Lehmann/The Dough Doctor  
2362

### **Dough Clinic / Re: Spiral mixer question**

QJ:

By far the easiest way to get a dough our of any mixing bowl is to put a small amount of oil (about 1-oz.) in the bowl (pour it between the dough and bowl as the mixer is running on low speed, you only want to mix like this for 10 or 15-seconds....no longer. The dough will then just about slide out on its own, makes removing the dough really easy.

Tom Lehmann/The Dough Doctor  
2361

### **Dough Clinic / Re: Spiral mixer question**

QJ:

I don't have anything specific against single speed mixers, it's just that if I had a choice I'd always opt for the two speed. With exception to only one mixer a number

of years ago I could easily live with a single speed spiral mixer, so what was the issue with the only one I didn't like? It was too fast and ejected ingredients all over the place when loaded to 50% or more of its capacity. Yes, I'd take a single speed spiral over a multi speed planetary any day of the week, unless I had a "thing" for my mixer repair man or woman, that might cause me to re-think my decision, otherwise, it's a spiral mixer for me.

Tom Lehmann/The Dough Doctor  
2360

### **Dough Clinic / Re: Oil in 00 dough**

Oil can be used in just about any pizza crust dough formulation, however, do keep in mind that doughs made with very low protein flours may not tolerate as much oil as those made using a higher protein/stronger flour. Your flour blend does not appear to be excessively weak. Also, when working with high absorption doughs (68% and more) you may want to reduce the absorption by an amount equal to the amount of oil being added, this is because oil is a liquid as water is so the addition of oil to a high absorption dough can produce a softer/slacker dough than what you might want to work with. There is one more thing to consider too, that is how the oil is being added, if you are using the delayed oil addition mixing method the oil will not present a problem but if you are not it can coat some of the flour thus rendering a portion of the flour incapable of producing gluten which can have a weakening effect upon the dough as well as impact the overall dough absorption properties as the oil soaking into the flour will inhibit water absorption.

Tom Lehmann/The Dough Doctor  
2359

### **Dough Clinic / Re: Question on GM method to adjust final dough temp**

The problem with friction factor is that it is so highly variable, for example, as Tim indicated, any change in the room or flour temperature will change the FF, additionally, when mixing by machine, every mixer will have a specific FF due to differences in the way the agitator interacts with the dough, textural properties of the bowl, speed of the agitator, type/design of the mixer, as well as the amount of dough actually in the mixer. We can get away using a FF of about 30 in commercial practice since the number of variables in mixers is significantly less than it is with the home pizza maker where there is a plethora of different ways to mix the dough, from hand to machine as well as some hybrid methods too. Then add to that the fact that many home pizza makers don't even know how long they are actually mixing the dough (mixer might be running but the dough isn't being mixed as is the case a lot of times when flour is added to the bowl before the water, and then if one adds flour or water during the mixing of the dough all bets are off when it comes to mixing time. So, what to do , what to do? I think #1 has to be to focus on being CONSISTENT with the way one mixes the dough, then realize that each mixer as well as each mixing process/procedure will have its own FF for a specific dough size and formulation, with that out of the way, how to come up with a meaningful FF? I think the method developed by SAY Yeast Corporation might hold the answer for the home pizza maker, in their procedure they just use the number "145" from which the flour temperature is subtracted to give you the correct water temperature to give a finished dough temperature in the 82 to 88F range.

Personally, I think this temperature might be a bit on the high side for home use (I'd rather see 75 to 80F being targeted) so I think you will want to play with the "145", and even then I can't see one size fitting all. What I teach in my home pizza making sessions is to begin with the number 145, subtract the flour temperature and measure the finished dough temperature, if the dough is too warm use a lower

number or if it is too cold use a higher number. I normally recommend adjusting the base number in increments of 5 or 10. Once you have it just write that number on the formula page for future reference, subtract the flour temperature and you should be in the ball park with regards to hitting your targeted finished dough temperature IF YOU ARE CONSISTENT IN THE WAY YOU MIX THE DOUGH.

The formula for desired water temperature that Tim was alluding to is:

3X desired dough temperature minus the sum of (flour temperature), (room temperature) and (friction factor/FF).

Friction Factor: 3X actual dough temperature minus the sum of (room temperature), (flour temperature) and (water temperature used to make the dough). Remember, in my opening comments about FF, this number will be HIGHLY SPECIFIC, and changes what so ever to the dough formula or mixing procedure can/will skew the FF number. In a commercial operation every single dough formula and dough size has its own FF.

Tom Lehmann/The Dough Doctor  
2358

### **Dough Clinic / Re: Oven Temperatures with Sugar in Dough**

After the baking temperature gets much above 550F the presence of added sugar in the dough formula might begin to become problematic and if baking at 750F or above sugar can be a major issue with getting the pizza properly baked before excessive crust color development is a problem. Since ALL ovens are different my advice is to see if you like what your sugar level provides in terms of a finished pizza, if you feel the pizza needs more baking but you're limited by crust color development you most likely have too much sugar for the baking temperature being used, if the pizzas are getting well baked but you want more crust color try incrementally increasing the sugar to improve the crust color. You won't begin to detect a sweeter taste in the finished crust until you get into the 4 to 5% sugar (sucrose) level. Papa Murphy's pizza has a sweet taste in the crust and we were able to match that sweetness at 5% added sucrose.

Tom Lehmann/The Dough Doctor  
2357

### **Dough Clinic / Re: Oil in 00 dough**

Peter;  
In one word: Yes, if the dough is coming out of a commissary.  
Tom Lehmann/The Dough Doctor  
2356

### **Dough Clinic / Re: Dough ball storage for commercial use**

Most pizzerias will bring out about 2-hours of dough balls and pull additional boxes during the day to maintain a usable inventory of ready to use dough balls, as things wind down a bit after the lunch trade they won't pull as many dough boxes, and if the dough balls begin getting long in the tooth they just pre-open the dough and store it on screens in a wire tree rack in the cooler, cover with a plastic bag to prevent drying then they use the pre-opened skind when they get slammed during the dinner/evening trade. Others will convert the older dough balls into bread sticks, garlic knots or something else for use later in the day.

Tom Lehmann/The Dough Doctor  
2355

### **Dough Clinic / Re: Question on GM method to adjust final dough temp**

Flour and room temperature: I wish I had a dime for each time I've heard that my

dough used to perform great but not that it's winter my dough doesn't perform nearly as well....I'm not doing anything different!

During the cold winter months pizzerias get in cold flour and begin using it within 24-hours thinking it has warmed up, false...we found that it typically takes a pallet of flour several days to equilibrate in temperature and a single bag can take 48 to 72-hours. The actual room temperature can/will have a significant impact on the finished dough temperature too (while not a function of friction, it is included as a part of the friction factor correction value).

Tom Lehmann/The Dough Doctor  
2354

### [\*\*Dough Clinic / Re: Doughnut dough\*\*](#)

Assuming yeast raised donuts?  
Tom Lehmann/The Dough Doctor  
2353

### [\*\*Dough Clinic / Re: Correctly gauging TF\*\*](#)

One of the advantages of using "dough loading factor" that is often overlooked is in costing/pricing of a pizza. For example, a 12-inch pizza has roughly 113-square inches of surface area before baking. Now, ask yourself "why would anyone ever want to buy a 14-inch pizza?" The answer is because they want more pizza. How much more are they getting with a 14-inch format? They're getting about 36% more pizza.  $(153.86 - 113 = 40.86 / 40.86 \text{ divided by } 113 \times 100 = 36.15\%)$ . Since we can use the loading factor for dough, cheese and sauce weights we know that our cost for the same topped 14-inch pizza should be at least 36% more than that of a 12-inch pizza. If we don't use a loading factor for these critical components one may find that they are selling more 14-inch pizzas because it has more toppings or dough than the 12-inch but the pricing structure is based only on the difference in diameter...in essence, charging 36% more but using 40% more of the critical components. Do the math on \$250,000.00 in pizza sales a year and you will appreciate loading factor at the commercial/pizzeria level. At home the only value to loading factor is in determining how much of any one of the critical components we will need to use when going from one size pizza to another without changing the identity of the pizza.

Tom Lehmann/The Dough Doctor  
2352

### [\*\*Newbie Topics / Re: Dough Recommendations - Two Scenarios\*\*](#)

Flour: (12.8 to 14% protein content) 100%  
Salt: 2%  
IDY: 0.25%  
Water: 64%  
Oil: (optional) 2%

Cold ferment for at least 48-hours before use.  
Tom Lehmann/The Dough Doctor  
2351

### [\*\*Events Calendar / Re: Pizza Expo 2019 Registration\*\*](#)

I'm on the program again this year. Looks like I'm doing two sessions with one of them a 4-hour session.  
Tom Lehmann/The Dough Doctor  
2350

## **Dough Clinic / Re: Frozen Pizza dough**

What you are looking to produce is a pizza similar to the bake to rise concept offered by Schwan's Foods/Tony's Pizza Service, their Freschetta Pizza is what you have basically described. I'm guessing that your concept might be a bit thinner than the Freschetta pizza. The challenges still remain the same though as the freezing process destroys the cell structure in a pre-proofed, frozen skin UNLESS the pre-proofed skin is blast frozen or better yet, cryogenically frozen. Blast freezing entails freezing at -20 to -35F in conjunction with 600 to 800 linear feet of airflow while cryogenic freezing entails freezing using a liquid cryogen (liquid nitrogen or carbon dioxide) employing a temperature of -45 to -55F in the product zone. In addition to giving you a viable skin this type of freezing is also needed to preserve the integrity of the vegetable toppings. Similar products which you have seen on the supermarket shelves have taken this one step further by using moisture controlled vegetable toppings (this is why you seldom ever see a frozen pizza weeping water from the vegetable toppings thus turning it into a "swamp" pizza).

This is how it's done if you expect to get any realistic (21+ days) shelf life from the frozen pizza. Since I don't know what your shelf life expectations are, the best I can offer is to say "try it" but be aware that the vegetable toppings are going to suffer BADLY. This is why we harvest our gardens before they get hit by the first frost of the season, failure to do so results in everything turning into mush.

Tom Lehmann/The Dough Doctor  
2349

## **Dough Clinic / Re: Bread flavor**

Actually, none of them. The "bread like" aroma that you're referencing is a result of the type of fermentation the dough is given. If you want to have a bread like fermentation aroma try using 3-hours at room temperature with a finished dough temperature of 80F.

Tom Lehmann/The Dough Doctor  
2348

## **Events Calendar / Re: Pizza Expo 2019 Registration**

Just a reminder too that there is the Ohio Pizza Show put on by the Ohio Restaurant Assn. It's coming up in early January if I remember correctly. It is not nearly as big as Pizza Expo but it's still a good show to attend with a lot of low cost seminars too, and if you're on the east coast it's closer and much cheaper. Contact the Ohio Restaurant Assn for details.

Tom Lehmann/The Dough Doctor  
2347

## **Dough Clinic / Re: Slap/stretch dough?**

Chris;

A couple of things come to mind when reading your post, I see that you are using "00" flour and more than 24-hours of total fermentation time. My personal experience has been that "00" flours typically do not have great tolerance to fermentation and anything in excess of 24-hours results in an unusually weak dough condition (Note: You have accurately described a weak dough in your post), so that might be something to look at. Second, your dough absorption might be a bit high so you might also want to incrementally reduce dough absorption in 2% increments to see if that helps. The acidity of your starter can have a significant impact upon dough rheology, making softer and more extensible and a reduction in

dough absorption might help in that case. Lastly there is that little thing that we refer to as "technique". I open my doughs in a similar manner to what you have described, I can toss it but nothing to write home about, if you know what I mean, point is, when it comes to slapping and spinning the dough to open it I leave a lot of room for improvement so even the best dough might not work well for me if I was to open it by any other manner than what I am used to doing.

Tom Lehmann/The Dough Doctor  
2346

### **Dough Clinic / Re: Bread flavor**

I can't say too much for the flavor of the dough as I seldom ever eat it, but it can sure be full of aroma. I assumed (we know how that works out) that he was referring to the finished crust when he referenced flavor (identified subjectively by taste). Is there a possibility that we are side tracked and the original question was simply "how to get more flavor in my finished crust?" and the term "bread flavor" is simply being used to describe the flavor resulting from fermentation?

Pizzaone, what say you?

Tom Lehmann/The Dough Doctor  
2345

### **Dough Clinic / Re: 1984 Godfathers discontinued crust**

Bob;

You say you have searched for a "recipe" but can't find anything even close. Can you share with use what information you have on the formula you're searching for? Pizza doughs are pretty well all formulated within a close range of ingredients so filling in the blank spaces shouldn't be too difficult.

Tom Lehmann/The Dough Doctor  
2344

### **Shop Talk / Re: Dough Cutting and Balling and Wrapping**

We have two people cutting, balling, boxing 85-pounds of dough (50# flour weight) in approximately 17-minutes with a 12-ounce scaling weight. The accepted rule is to get the entire dough cut, balled, and into the cooler within 20-minutes after mixing. After that your dough is beginning to proof and inconsistent cooling of the dough will be the end result.

Tom Lehmann/The Dough Doctor  
2343

### **Dough Clinic / Re: Bread flavor**

Pizzaone;

It is BUT for the most part it is fermented much differently. Whereas bread doughs are given shorter total fermentation times pizza doughs are more commonly given much longer fermentation times, almost universally the fermentation time for a pizza dough is expressed in days as opposed to hours. It is this long, controlled fermentation that accounts for the flavor and much of the textural properties of the baked pizza crust. While some like the flavor imparted by room temperature (RT) fermentation others (myself included) like the flavor imparted by cold fermentation (CF). There are good guidelines for each method that have been discussed here many times so what you might need to do is to make dough using each method and see where your specific tastes take you. NOTE: As many pizzerias work with dough made by CF this might be where you want to begin your search.

Tom Lehmann/The Dough Doctor  
2342

## **Dough Clinic / Re: 1984 Godfathers discontinued crust**

I second the words of "Jackitup". Around here the trip can be as much or more fun than the destination! :-D  
Tom Lehmann/The Dough Doctor  
2341

## **Dough Clinic / Re: Cold Fermentation**

Please provide as much information on your dry sourdough starter as possible since some of the dry products are not active, but instead are used only to provide a sourdough flavor to the finished crust.

Tom Lehmann/The Dough Doctor  
2340

## **Dough Clinic / Re: Dough ball size?**

I typically use 11-ounces (312-grams) for a 12" skin which gives me a dough loading of 2.76-grams of dough per square inch since a 10-inch circle has 78.5-square inches multiply 78.5 X 2.76 to get the dough weight for the 10" skin (216.66-grams).

This would be a good place to start at and then begin coming down in weight as you master the technique of opening the dough until you get the crust you're looking for.

Be aware though that fast baked pizzas are always going to have a somewhat softer, more limp crust than slower baked pizzas. They may be crispy when they first come out of the oven but just wait a minute.

Tom Lehmann/The Dough Doctor  
2339

## **Dough Clinic / Re: Intro & a question**

What you are looking for is a pizza dough mix.

We can do that for you.

Do you have access to a scale or do you just work in volumetric portions (cups, teaspoons, tablespoons, coffee cans, etc.)?

I can set one up for you that will require that you portion out 3-cups of the mix and to that you will add just over 1/2-cup of cool water. I used to make this when we were deer hunting and there were four of us in deer camp, pizza was a real treat for the guys.

Here's the formula in weight measures;

Pillsbury Bread/Bread Machine Flour: 5-pound bag.

Salt: 45-grams/1.6-ounces

Sugar: 45-grams/1.6-ounces

Instant Dry Yeast (IDY): 12-grams/0.45-ounce

Place in a large bowl or bag and mix together very well. Store in a covered container in the fridge or in the freezer.

To use:

Remove 3-cups of mix and place into a bowl with a little over 1/2-cup of cool water (75F).

Using a wooden spoon, stir well to make a thick paste. Remove spoon, cover with a piece of plastic and allow to ferment for 1-hour. Oil your hands and using a plastic bowl scraper scrape the dough mass out of the bowl onto a floured surface, then knead for a few minutes, lightly oil the bowl that the dough was fermenting in,

form the dough into a ball and place it into the oiled bowl, wipe the top of the dough ball with oil, cover with a piece of plastic (drape no not seal tightly). Allow the dough to ferment at room temperature for at least 4-hours, the time can be greater if desired.

Turn the dough out of the bowl onto a floured surface and begin opening the ball into a pizza skin (12 to 14-inch diameter).

Add sauce, sprinkle with herbs (garlic powder, onion powder, basil (fresh or dried) are the basics, then add the cheese and toppings, and bake on a dark colored pan in a 450 to 500F oven. Start baking on a lower rack and after about 8-minutes move it to a higher rack position to finish baking. As all ovens are different you will need to experiment with baking.

As you get better you can experiment with placing the dough into the fridge to cold ferment for 24 to 48-hours and then see if you can find a baking steel or stone to bake on (unglazed floor tile works in a pinch) to get a crispier bake. Get ready to enjoy some great pizza and have some fun along the way.

Tom Lehmann/The Dough Doctor

2338

### **Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

Whole white wheat flour (Ultragrain) is definitely the way to go. It is also available in different "grinds" so you can have a coarseness that you typically see in whole-wheat flour while still getting the flavor advantages of the white wheat. The greatest challenge to making good whole-wheat products is in getting the dough absorption correct. I've discussed this topic and procedure a number of time in the past here if you want to research it. I've also included the topic in one of my published articles. The problem is that the bran is very slow to absorb water so if you add enough water to make a good dough by the time it's ready to use the dough is too stiff as the bran has now hydrated, to a great extent, this is where whole-wheat products have gotten a bad rap. Someone here once said whole-wheat products taste like they were made with leaves and twigs, probably a pretty apt description of products made from an under absorbed whole-wheat dough.

Ultragrain isn't as bad in this respect due to the much smaller particle size for the bran so it hydrates faster and more consistently. For the most part you will be looking at dough absorption percentages around 75% when using 100% whole-wheat flour. Products made with any amount of white flour in combination with whole-wheat flour are correctly termed as being "wheat (bread, pizza crust, etc.)" as opposed to "whole-wheat" which does not contain any white flour at all.

We used to get all of our whole white wheat flour from Farmer Direct Foods, Atchison, Kansas/800-372-4422.

Tom Lehmann/The Dough Doctor  
2337

### **General Pizza Making / Re: Based on this madness.....Should I just go out for pizza?**

Since you're talking RT fermentation the finished dough temperature is also critical when assessing how much fermentation the dough might be receiving. Assuming a 12" skin, the one that will be opened 1-hour prior to dressing and baking should be quite a bit thicker, some might say more "bread like" than the one opened immediately prior to dressing and baking. Be sure to watch the bottom bake as with that much honey you may get excessive bottom color before the pizza is fully baked at 550F on a stone.

Tom Lehmann/The Dough Doctor  
2336

## [\*\*General Pizza Making / Re: could you help me reverse engineer the dough recipe from nutritional contents?\*\*](#)

It's really pretty easy to determine if a dough has been fermented prior to freezing, just cut the frozen dough piece in half and look at the cell structure, if the dough has a very small and uniform cell structure it has not been fermented prior to freezing. If it had a much more open, coarse/porous cell structure with a number of large holes this is good indication of at least some fermentation prior to freezing. Also, keep in mind that the order of predominance in the ingredient declaration is true only to the 2% mark, at and under 2% the ingredients no longer need to be shown in their order of predominance....so, salt, sugar and yeast could easily all fall under this rule. Many frozen dough formulas maximize the use of both salt and sugar as these are the solubles in the dough which help to control ice crystal size which contributes to the frozen shelf life of the dough.

Tom Lehmann/The Dough Doctor  
2335

## [\*\*Specialty-Grain Pizzas / Re: Whole Wheat Flour crust\*\*](#)

But do remember, after the flour has had a chance to hydrate fully, you must check the viscosity and add more water if deemed necessary, then, once you don't see any appreciable change over time from the last water addition, subtract 5% from the total bakers percent of water you added and this will get you very close to where you want to be absorption wise, you may still want to make some adjustments depending upon how you're managing your dough. Also, remember that any kind of whole-wheat flour doesn't tolerate long fermentation times nearly as well as a white flour will, this is due to the cutting effect of the bran particles on the gluten structure.

Tom Lehmann/The Dough Doctor  
2334

## [\*\*General Pizza Making / Re: could you help me reverse engineer the dough recipe from nutritional contents?\*\*](#)

Due to its adverse affect upon frozen shelf life I don't know of any commercial frozen dough manufacturers that makes dough with more than 30-minutes maximum time between the mixer and the freezer. PJ's doesn't freeze their dough out of their commissaries, it's just refrigerated. There are some companies making what is referred to as pre-proofed frozen, in this case they are making pre-made skins which are just slacked out and ready to use. This seems to work pretty well as opposed to freezing a dough ball since the pre-made skin is so much easier and faster to freeze than a dough ball which limits the damage of the freezing process on the dough.

Tom Lehmann/The Dough Doctor  
2333

## [\*\*General Pizza Making / Re: could you help me reverse engineer the dough recipe from nutritional contents?\*\*](#)

What you are seeing is about par for the course. Remember, most frozen doughs are formulated with a pretty hefty dose of yeast which is why you see all the rise over the time the dough is in the fridge. Fact is, you are seeing more rise in the dough than the store does over the same period of time owing to the fact that the dough is allowed to warm more during the time it takes for you to get the dough home while the dough at the store most likely went straight from freezer to refrigerated case where it's sold from so it was never exposed to a warming period.

Tom Lehmann/The Dough Doctor  
2332

**Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

The sifting by itself doesn't help but anything you can do to mill the bran particles into smaller pieces will help significantly. With smaller bran particles you reduce the deleterious effect upon the gluten film as well as improving the absorption rater of the bran (smaller particles = greater surface area = faster hydration).

Tom Lehmann/The Dough Doctor  
2331

**Dough Clinic / Re: Intro & a question**

If you are going to be vacuum sealing the bags that'll be fine for the yeast (should be refrigerated though if not vacuum sealing). It does make a huge difference in the type of yeast used in this mix application....use ONLY instant dry yeast (IDY). As there are no other ingredients which might need refrigeration in the mix it should last at least 6-months or more when vacuum sealed but ONLY if the flour is totally free of any insect infestation. Even fresh flour can be infested but there is a way that you can ensure you won't have any insect issues for at least a year of storage at room temperature (assuming 50 to 75F) and that is to put the flour into 5# bags and freeze it for at least 30-days, this will kill both insects as well as any larvae and their eggs, once this is done the flour will remain free of insect infestation for a very long time, without doing this is's a "roll of the dice" as to whether the mix will remain free of insects over an extended storage period. While the flour millers will tell you that their flour is free of insect infestation and has a 1-year shelf life the infestation normally comes post milling during distribution or warehouse storage, we have most frequently found the source of infestation to be at the point of sale, so again, to quote Harry Calahan "Do ya feel lucky?" :)

Tom Lehmann/The Dough Doctor  
2330

**Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

When whole-wheat flour is made the bran is separated out just as it is when making white flour, it is then reintroduced back into the flour so it constitutes 20% of the total flour weight. When you separate out the bran from whole-wheat flour you have what is affectionately known as .....white flour. Whole-wheat flour made from varieties of hard white wheat, aka whole-white wheat flour, don't have the pronounced bitterness in the bran portion due to the lack of tannins in the white wheat bran, this is also why whole white wheat flour is said to be "sweeter" than conventional whole-wheat flour made from hard red wheat varieties.

Tom Lehmann/The Dough Doctor  
2329

**Shop Talk / Re: Dough Cutting and Balling and Wrapping**

The method that I mentioned is designed specifically to give the most consistent dough possible for use in a pizzeria where the dough will be held in the cooler for three days or more. When the dough is allowed to rest at room temperature prior to scaling and balling it has had a chance to begin fermenting, to that 30-minutes add the time required to process the dough and you have the better part of an hour for the dough to ferment before it goes into the cooler. The more fermentation the dough has the less dense it becomes, things that are less dense are better insulators so it becomes more difficult to achieve consistent cooling of the dough which is a critical aspect of holding the dough for up to several days and getting

consistent dough performance/pizza quality. The method used by Tony is fine for dough that will only be held for 25-hours or so, but it doesn't work well when we're looking to have consistent dough performance 3 to 4-days out. This is why all of the big box chains employ a dough management procedure very similar to that which I described.

Tom Lehmann/The Dough Doctor  
2328

### **Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

In commercially milled flour you are correct in that the germ is removed but only because the oil is so unstable, it will turn rancid very fast, this is one of the reasons why white flour has a long shelf life while whole-wheat flour has a relatively short (2 to 3-weeks) shelf life. In home milling/grinding of wheat into flour sifting only removes the larger bran particles so there is still some bran remaining in the "white" flour and as you correctly state, most of the germ is still in the flour too. So there is a difference, I stand corrected. ^^^

Tom Lehmann/The Dough Doctor  
2327

### **Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

I can't think of any stone grinding mills producing commercial flour although there might be a few local ones doing specialty flours. When you see "stone ground" on a bag it is only in reference to particle size being like that of stone ground flour. To the best of my knowledge most of the flour produced in the U.S. is made using roller mills. There are also hammer and pin mills used to make flour but these are pretty well limited to small and home type operations. I don't recall ever seeing any scientific data on how flours of different average particle size react in the human gut, that's not to say it's not out there, I just haven't seen it, and remember too that I've been retired for five years now and this is a pastime for me, no longer my occupation so I don't spend an average of three hours a day keeping up with scientific journals and attending scientific meetings.

Tom Lehmann/The Dough Doctor  
2326

### **Dough Clinic / Re: Intro & a question**

Oops, yep, shoulda been 1-1/2-cups not 1/2-cup.

At high elevations we typically bake hotter than normal which means if you're using your home oven, pedal to the metal, give her all you can Scotty! Yeast is not normally reduced BUT you will see the dough getting larger than normal during fermentation due to the reduced atmospheric pressure.

Tom Lehmann/The Dough Doctor  
2325

### **Specialty-Grain Pizzas / Re: Whole Wheat Flour crust**

That's a good point about Bob's Red Mill, I think they do stone grind all of their flours. I agree about those meetings, but they did keep us informed and on top of things but after 50-years, it is time for me to do MY thing and attending endless meetings is not one of them, neither is International travel, nor getting up at 6:00 a.m. and coming home at 6:00 p.m. (when I was able to come home).

Tom Lehmann/The Dough Doctor  
2324

### **Dough Clinic / Re: Intro & a question**

One thing you might try is to use your favorite pizza pan (a dark colored one preferably) and use shortening, as in Crisco to lightly grease the pan, this will help you greatly to open the dough ball into a skin as the dough will act as if its glued to the pan when using shortening, just the opposite is true if you use oil, but don't worry about getting the dough to release from the pan, it'll come off just fine. I have a friend whose mother has extremely arthritic hands and this method works quite well for her.

Tom Lehmann/The Dough Doctor  
2323

### **Dough Clinic / Re: Intro & a question**

It's a natural for that. She uses a coupe style pan that she got at WM (black on the inside and silver on the outside...go figure!) but after being seasoned and all the pizzas that she has baked in that pan it now looks more like a good cast iron skillet). She opens the dough ball as much as she can on the bench then places the dough into the greased pan and continues to work it out until it fits the pan, she lets it rest about 10-minutes and then touches it up before dressing it. She needs to use more dough than others might use so the pizzas come out about 1/4 to 3/8-inch thick but her family loves them and she is mighty proud to be able to make them.....in the end that's all that counts.

Tom Lehmann/The Dough Doctor  
2322

### **Stones/tiles/steel, Pans & Accessories / Re: Cheap dough docker**

I've used that comb on the opposite end of a hair pick with good success but never a hair brush, but if it works....why not?

Tom Lehmann/The Dough Doctor  
2321

### **Stones/tiles/steel, Pans & Accessories / Re: Cheap dough docker**

Well, I am cheap as consultants go. :-D

Tom Lehmann/The Dough "DOCTOR"  
2320

### **Dough Ingredients / Re: Mystery ingredient to obtain a yellowish dough**

Believe it or not, egg (whole or yolk) really doesn't give much yellow color to the dough or finished crust. I'm betting on Egg Shade (this is a food coloring/ Google for availability) this is the same coloring used in many Chicago pizzas which gives the crust that rich yellow color.

Tom Lehmann/The Dough Doctor  
2319

### **Dough Ingredients / Re: Mystery ingredient to obtain a yellowish dough**

Absolutely! It's been in common use as far back as the 50's, and in Chicago pizzas at least to the late 1950's if not earlier. It has no effect upon taste or texture of the finished crust. If I remember correctly in Chicago they were using about 6-ounces liquid to a dough based on 50-pounds of flour weight however you will want to adjust the amount to give you the specific color you're targeting.

Tom Lehmann/The Dough Doctor  
2318

### **Dough Ingredients / Re: Mystery ingredient to obtain a yellowish dough**

You should be able to buy Egg shade on line, it's not expensive at all. What's it

equivalent too? I have no idea as I've never done a comparison. All I can say is that it's used in Chicago and extensively used in the baking industry.

Tom Lehmann/The Dough Doctor  
2317

**[Neapolitan Style / Re: Direct Dough - is it supposed to look flat?](#)**

Why are you basing the amount of yeast on the water? Typically it's based on the flour weight? That being the case you're using only a little over half of the amount of yeast as you would if it were based on the flour weight. Just an observation.

Tom Lehmann/The Dough Doctor  
2316

**[General Pizza Making / Re: Dough Temperature - Wood Burning Oven](#)**

Cold dough and pizza ovens of any kind generally do not play well together unless the dough management procedure has been designed specifically to allow for baking a cold dough. Even refrigerated dough, if allowed to temper properly after being removed from the fridge/cooler will be in the 50 to 60F range. Doughs that are formulated for high temperature WFO baking may be too slack for many people to handle if allowed to warm much above 60F. Overall, I think it would be safe to say that there is not any direct relationship between dough temperature and baking temperature as long as the dough is within the parameters shown above.

Tom Lehmann/The Dough Doctor  
2315

**[Prep Equipment / Re: Basic instructions for spiral mixer?](#)**

Add all of the water, then all of the flour with salt, sugar (if used) and yeast all right on top of the flour. Mix at low speed for 2-minutes if multi-speed, add the oil and mix one more minute in low speed followed by 8 to 10-minutes in second speed. If your mixer only has one speed you will be doing all of the mixing in that single speed, so just follow the same procedure, you won't be changing speeds, that's the only difference. Your mixer will mix dough sizes as small as 25% of maximum dough capacity and as large as 125% of maximum dough capacity, though I don't recommend exceeding bowl capacity as a regular practice. As soon as the dough is mixed to a smooth, satiny appearance it's done, which typically takes 8 to 10-minutes after adding the oil with the delayed oil addition mixing procedure. Remember to adjust the water temperature to achieve your targeted finished dough temperature. I have never had to use ice water except when making frozen doughs, more typically the water temperature will be about 70F to give a finished dough temperature in the 75 to 80F range.

Tom Lehmann/The Dough Doctor  
2314

**[Dough Clinic / Re: Bianco Dough Question](#)**

Agreed....where is the long fermentation period?

Tom Lehmann/The Dough Doctor  
2313

**[Dough Clinic / Re: Wood fired pizza blisters](#)**

Cold dough? What was the temperature of the dough ball(s) when opened into skins?

Tom Lehmann/The Dough Doctor  
2312

## [\*\*Dough Clinic / Re: Wood fired pizza blisters\*\*](#)

For many of us 77F is about room temperature and in most cases an hour isn't long enough, more typical is at least 2-hours, some go even longer.

Tom Lehmann/The Dough Doctor  
2311

## [\*\*Dough Clinic / Re: Wood fired oven pizza burning on top\*\*](#)

Your over deck is WWAAYY too cool. It might take some time for the deck to fully reach baking temperature.

Tom Lehmann/The Dough Doctor  
2310

## [\*\*Dough Ingredients / Re: Mystery ingredient to obtain a yellowish dough\*\*](#)

Most non-gluten forming flours are going to max out at 25 to 30%. Be sure to follow the procedure for finding the absorption of any non-gluten flour you might add following the procedure used for finding the absorption of any whole-wheat flour or multi-grain blend. This procedure has been discussed in these pages previously in great detail.

Tom Lehmann/The Dough Doctor  
2309

## [\*\*Dough Clinic / Re: Gummy dough\*\*](#)

It will help us to determine what the problem might be if you can share with us something about the dough prior to freezing, how you froze it and what you did with the dough after freezing.

Tom Lehmann/The Dough Doctor  
2308

## [\*\*Dough Clinic / Re: Wood fired pizza blisters\*\*](#)

Getting your oven temperature up around 850 to 900F (or more) will help in that respect.

Tom Lehmann/The Dough Doctor  
2307

## [\*\*Dough Clinic / Re: dough too crispy\*\*](#)

Even increasing the sugar by an additional 1 or 2% can help by giving more crust color which typically translates to a shorter baking time and a softer finished crust texture.

Tom Lehmann/The Dough Doctor  
2306

## [\*\*Dough Clinic / Re: Merry Christmas Tom!\*\*](#)

Thank you and a Happy New Year to all!

Tom Lehmann/The Dough Doctor  
2305

## [\*\*Dough Clinic / Re: Gemignani dough failure...?\*\*](#)

That calculates out to roughly 65% total dough absorption. Your ice water might be slowing the rate of absorption into the flour. Have you tries letting the dough rest for 20 to 30-minutes before kneading it?

Tom Lehmann/The Dough Doctor  
2304

## [\*\*Neapolitan Style / Re: Recipe for high humidity conditions.....\*\*](#)

Lem865;

At step #5 are you placing the dough balls in a covered container or are you placing the dough balls into the fridge uncovered for at least 2-hours prior to covering/lidding? If you are doing the first, that's most likely where the problem is at, the dough balls are sweating in the containers and it's the condensation that's causing your problems, leaving the containers uncovered for at least 2-hours will allow the dough balls to cool sufficiently to prevent or minimize condensation. I would also suggest lightly wiping the top of the dough balls with a little oil after placing them into the containers as this will help to prevent any skin formation on the dough during the (cross-stacked)/ uncovered period.

Tom Lehmann/The Dough Doctor  
2303

## [\*\*Dough Clinic / Re: Gemignani dough failure...?\*\*](#)

Essen1;

In the dough formulation it shows water at 64% and starter at 20%, there must be more than 1% of the total flour weight as water in that 20% starter?

Tom Lehmann/The Dough Doctor  
2302

## [\*\*General Pizza Making / Re: Stretch and fold versus reballing\*\*](#)

When I hand knead the dough (stretch and folds) I am trying to develop gluten (primarily for bread making) but when I'm making pizza I typically don't do much if any kneading as pizza doughs are typically best when under mixed with the gluten being developed biochemically during the fermentation process, when I round the dough into balls it quickly becomes so tight as to be nearly impossibly to work without ripping the dough apart, so in my humble opinion, if you are trying to develop gluten it is better to do the old stretch and fold process rather than rounding the dough as it allows you to put more work into the dough without it becoming excessively tight and bucky which makes it difficult or impossible to further develop the gluten without waiting a significant time for the dough ball to once again relax so it can again be rounded. We see this happen a lot when we re-round the dough (for whatever reason) just prior to opening it into a skin, if we don't wait long enough for the dough to fully relax it's a lot like trying to open a tennis ball into a pizza skin.

Tom Lehmann/The Dough Doctor  
2301

## [\*\*General Pizza Making / Re: Stretch and fold versus reballing\*\*](#)

While flour can have an impact I think dough absorption might have more to do with it. Doughs that are made with high absorption (above 65 to 68%) or let's just say in the 70%+ range usually perform better with more kneading done over a period of time while doughs made with a more typical absorption, say in the 50 to 65% absorption range seem to fare best when made using minimal mixing/kneading.

Tom Lehmann/The Dough Doctor  
2300

## [\*\*Dough Ingredients / Re: Quaker Harina Preparada Tortilla flour\*\*](#)

Try to use lard that is not steam distilled (deodorized) for best flavor. The silly stuff that we have here in the States is almost all deodorized ranking it, flavor wise, right up there with Crisco. What the label shown indicates is a prepared mix....just

add water and make tortillas. Included in the list of ingredients were the components for chemical leavening, and then there was our old friend L-cysteine to provide extensibility to the dough as well as emulsifiers as an anti-staling agent (did I miss something? Aren't tortillas supposed to be consumed fresh and still warm?) Oh well that the commercial market for you. The suggestion to make a tortilla mix (everything but the water) was a good one, use that to provide the amount of tortilla mix needed for your dough. By the way, most really good tortillas are formulated with about 8% fat and about 3% chemical leavening (Calumet brand would be a good recommendation as the individual components are hard to come by outside of the commercial market) and if you do find then you will need to balance them for complete reaction using their neutralizing power to calculate the amount of soda needed) Calumet brand is a fully balanced single acting chemical leavening system as opposed to some of the others which are double acting leavening systems better suited for use in cakes and cookies.

Tom Lehmann/The Dough Doctor  
2299

#### **Dough Clinic / Re: Gemignani dough failure...?**

You are correct, when it is stated that total dough absorption is (in this case 65%) it means that the sum of all of the water added to the dough (either as water or contained in an ingredient such as milk, eggs, or in this case a starter), when divided by the weight of the flour and multiplied by 100 = 65% (in this case). It's actually a little more complex than just that, but in this case it works just fine.

Tom Lehmann/The Dough Doctor  
2298

#### **Neapolitan Style / Re: Recipe for high humidity conditions....**

In a commercial (pizzeria) setting they mostly use dough boxes, the boxes are cross-stacked for a period of time determined by the length of time needed to cool the dough balls down to 50-55F, they are then down-stacked (top box placed at the bottom of a new stack and the stack rebuilt in reverse order with the boxes nesting for about 1/4-inch inside of each other so the box on top becomes the lid for the box beneath it, top box is then lidded. This is a very common practice. Another popular method is to use aluminum sheet pans, the dough balls are placed onto the sheet pans and the entire pan of dough balls is covered with a single plastic bag, this is placed into a rolling rack, when the rack is filled with covered pans of dough it is wheeled into the cooler for storage. This method doesn't require any kind of cross-stacking as the plastic bag offers little insulating value allowing the dough balls to cool pretty quickly and consistently. When this method is used it is common to lower the finished dough temperature into the 70 to 75F range (favoring the 70F side) while when using the stackable dough boxes 75 to 80F finished dough temperature is commonly used. If you go to my web site at

<[www.doughdoctor.com](http://www.doughdoctor.com)> you can see the dough boxes in use in Part-2 of my video series on making dough.

Another way that I like to use when making pizza at home is to place the dough balls into individual plastic bags (bread bags). After forming the dough ball, oil it and drop into a plastic bag (not a ZIPLOCK bag), twist the open end into a pony tail, and tuck it under the dough ball as you place it in the fridge. This is about as easy as it gets since you don't need to do anything more to the dough ball until you're ready to remove it from the fridge for use.

Tom Lehmann/The Dough Doctor  
2297

## [\*\*General Pizza Making / Re: Stretch and fold versus reballing\*\*](#)

Machine mixing is WWAAYY different from hand kneading. Hand kneading is a very gentle way of developing dome of the gluten while machine mixing is a very efficient way of developing all of the gluten but the difference is with machine mixing that with machine mixing the dough tends to be tighter than with hand kneading and with machine mixing you have the capability of over mixing the dough while with hand kneading this is a virtual impossibility. This is why I always say when machine mixing always mix the dough JUST until it begins to smooth out as this comes close to replicating the best gluten development possible with hand kneading and it also promotes a larger cell structure in the finished/baked crust. Mixing to a greater level of gluten development will promote a smaller, finer cell structure which is more bread like, this is one of the reasons why we mix bread doughs longer than pizza doughs (assuming loaf/sandwich type bread). Biochemical gluten development will provide the added gluten development necessary for gas retention during baking without adversely impacting dough handling properties or cell structure characteristics.

Tom Lehmann/The Dough Doctor  
2296

## [\*\*Pizzeria & Restaurant Reviews / Re: Grotto Pizza - Newark Delaware\*\*](#)

Grotto Pizza from the Boardwalk is my daughter in law's favorite pizza. They live in Christiana but have a beach house just a short walk from Grotto Pizza. Good bad or indifferent, I liken it to a Domino's pizza quality wise, but then I wasn't raised on it either so my assessment of quality is HIGHLY subjective.

Tom Lehmann/The Dough Doctor  
2295

## [\*\*General Pizza Making / Re: Stretch and fold versus reballing\*\*](#)

Actually....that "marshmallowy" dough is about as far from what I'd describe any dough off of a commercial mixer as being. If it is full of "air" something is very wrong with the dough or mixer. Machine mixed doughs are smooth, but dense and moderately extensible. If you are mixing your dough to a point where it begins to take on a different appearance in the bowl (looks lighter in color) and has a smooth skin on the surface, rest easy, it has been sufficiently mixed. As for dough absorption, one of the reasons why it seems like it's all over the board is because in a way it is. Flour is quite variable, no two lots of the same flour are made from the same grist (blend of wheats used to make the flour), added to that it can absorb water or give up water from the time it's milled and if that's not enough, as flour ages it oxidizes which strengthens the gluten matrix much like the addition of potassium bromate would. Our tests have shown that flour, when stored at room temperature (70 to 80F) for a period of 1-year had oxidized to the equivalent of approximately 10-ppm (parts per million) added potassium bromate. For a bromated flour that means that the flour would perform as if it had twice the amount of bromate added by the flour miller. Like I said, flour is really pretty inconsistent.

Tom Lehmann/The Dough Doctor  
2294

## [\*\*Pizzeria & Restaurant Reviews / Re: Grotto Pizza - Newark Delaware\*\*](#)

While I've not had her's it looks like a great pizza! My reference to Domino's was in reference to the crust...did that ease the ouch any? :D

Tom Lehmann/The Dough Doctor  
2293

## **General Pizza Making / Re: Stretch and fold versus reballing**

If you're making a thin cracker crust with 45 to not more than 50% absorption that's the way to do it (modeled after the way we make a flaky pie crust or a flaky biscuit dough), for many though a better handling dough is wanted so it's mixed JUST until it comes smooth. I'm on record as saying, "Unless you've got something going with your mixer repair man there is no good reason to mix your pizza dough beyond the JUST smooth point of development. When mixing the dough by hand any kneading beyond the point where there are no longer any lumps in the dough is purely for ones own amusement if the dough is going to receive 24-hours or more fermentation.

Tom Lehmann/The Dough Doctor  
2292

## **General Pizza Making / Re: Stretch and fold versus reballing**

Thank you. I heard that they're doubling my salary for the new year! :-D  
Tom Lehmann/The Dough Doctor  
2291

## **General Pizza Making / Re: Stretch and fold versus reballing**

Josh;  
When balling the dough the tightness of the ball will, to some extent, control how much the dough ball will spread out during the fermentation period. To some, who like to have a very round dough ball for opening, a tighter ball is better while if you're proficient at opening the dough you don't need to round the dough as tightly. The mantra when rounding the dough should be CONSISTENCY, CONSISTENCY, CONSISTENCY. By placing the dough ball with the seam side down helps to ensure that the dough seam holds and remains intact. This is the same reason why we place moulded bread dough in the pan with the seam side down. When rounding the dough all you need to have is a smooth skin formed on the dough ball. Pizzerias tend to round their dough balls very tight to help control their spread while being fermented in the dough boxes but home pizza makers tend to use individual containers for this so rounding the dough balls tight or lose in my opinion is a moot issue for the home pizza maker.

Note: I personally use a plastic bag to hold my dough balls so when I round the dough into balls if the dough meets three out of five descriptors of a "ball" it goes into the bag. Rounding is not critical when bagging the dough balls.

Tom Lehmann/The Dough Doctor  
2290

## **Neapolitan Style / Re: Help with Dough Issues**

Just my opinion, but that seems like a lot of fermentation for Caputo.  
Try cutting it back to 18-hours to see if the dough performs any better.  
Tom Lehmann/The Dough Doctor  
2289

## **Dough Clinic / Re: Pita bread**

Here is a very traditional pita formula:  
Flour: 100% (any bread flour will work fine)  
Salt: 1%  
Oil: 1%  
Yeast: (CY: 1%) or (ADY: 0.5%) or (IDY: 0.375%)  
Water: 50%

Mix to a smooth dough (80F)  
Bulk ferment 1-hour.  
Scale and ball.  
Allow dough balls to rest for 20-minutes.  
Sheet to size.  
Bake.

Remember; A good pita is baked at 800F+ with a baking time of not more than 28-seconds.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
2288

**Prep Equipment / Re: Cheapest way to obtain a stainless steel stretching surface?**

How big of a piece are you thinking about?  
Tom Lehmann/The Dough Doctor  
2287

**Neapolitan Style / Re: Gradual addition of flour?**

When machine mixing I just add the water and then the flour on top of that followed by the dry ingredients and begin mixing. I always add the oil late (delayed oil addition mixing method). One variation to this when hand mixing is to put the salt and sugar (if used) into the water, then add the yeast in suspension immediately followed by the flour, the oil is added after a couple minutes of mixing.  
Tom Lehmann/The Dough Doctor  
2286

**Chitchat / Re: 1.4 BILLION Pound Cheese Surplus!!!!**

A good number of years ago I had a contract with the CCC/USDA (Commodity Credit Assn.) which required me to travel across the U.S. for several months showing schools and prisons how to utilize more cheese in the products which they were making. Most of the cheese going into Government storage is a cheddar cheese but there is also a fair amount of dry milk going into storage too. This is all in the form of whole milk solids which has not been heat treated aka high heat dry milk solids, the milk is not high heat treated so it can be further processed into cheese at a later date. If the milk is high heat treated it cannot be processed into cheese. The sticker though is that the manufacturers do not always mark the bags to identify them as being high heat treated (bakery grade) or not.....go figure! For this reason most of the dry milk solids in storage end up going into drinks and cake production but not yeast raised products as the non high heat treated milk solids will have a softening/weakening effect upon the dough. I mention this because the Government will probably be trying to reduce its dairy commodity inventory once again and some visitors to this site may find it available to them for use. When I had my contract with the CCC I was also working with pizzerias that made pizzas for schools and I was showing them how to include cheddar cheese into the school pizzas. In this case the schools would provide the cheddar cheese to the pizzeria in 5# bricks and they would grind/shred the cheese for use on the pizzas they were making for the school to help keep the costs down. More recently I've been working with university dining services helping them do the same thing but in-house.

The politics behind this stuff is mind boggling too.

Tom Lehmann/The Dough Doctor  
2285

**[Dough Clinic / Re: NY style dough help](#)**

To me, those dough balls look like they're ready to be used, like now. I'd say to go ahead and re-ball them. As for your fridge, try using plastic bags (bread bags) the next time, the plastic bag procedure is great for use in a small fridge since there is no cross-stacking required.

Tom Lehmann/The Dough Doctor  
2284

**[Dough Clinic / Re: Adding black pepper to dough - any issues?](#)**

We used to do it all the time with our potato bread, black pepper and potato go together like a hand in a glove. I can't say how much to use since the flavor of black pepper is literally all over the board potency wise. A good starting point would be 0.25%.

Tom Lehmann/The Dough Doctor  
2283

**[Dough Clinic / Re: NY style dough help](#)**

No, they are not. Get some food saver bags from your local supermarket or in a pinch I've actually used the plastic Walmart bags (you didn't hear that from me). Twist the open end into a pony tail to close and tuck the pony tail under the dough ball as you place it in the fridge. This method allows the bag to give a little to accommodate expansion of the dough ball without tearing or popping open. Be sure to check those Walmart bags first for any tears or open seams.

Tom Lehmann/The Dough Doctor  
2282

**[Dough Clinic / Re: Adding black pepper to dough - any issues?](#)**

We once had a director in our Food Safety Group at AIB who stated "If it wasn't for the oven bakers would have poisoned mankind many thousands of years ago". He might have had a point there. For the most part though, aside from the optics, eating confused flour beetles, cigarette beetles or Indian meal moth larvae isn't going to make you sick, and once they've been processed through the oven they're pretty sterile (204 to 208F). Many years ago WHO (World Health Organization) did a study on an African village where the locals were losing a lot of their grain to insect infestation as it was stored in clay (sorta like adobe) grain storage silos....more like a hut. WHO replaced all of the clay silos with new, modern metal grain storage silos (10-feet high, like you regularly see today on farms for on-site grain storage) and within months of getting their new silos the children in that village were beginning to show signs of protein deficiency....Why you ask? Because their diet was already deficient in protein but the insects that they were eating with the grain kept them above the threshold for deficiency and when those insects were deleted from their diet they began to show signs of protein deficiency, so yes, there is a lot to be said about the protein contribution of the insects.

One other thing about the pepper bread, if you don't want the black specks from the pepper just use white pepper...problem solved.

Tom Lehmann/The Dough Doctor  
2281

**[Prep Equipment / Re: Cheapest way to obtain a stainless steel stretching surface?](#)**

If you have a Habitat For Humanity Restore near you be sure to check them out too. We have one by us and I'm regularly there looking for a solution to a challenge. They regularly have stainless steel sinks with stainless drain boards in their collection of sinks, faucet sets, and toilets. If the piece isn't too big for the price of a SS sink (\$15 to \$40.00) you could cut the drain board out with an angle grinder and glue it to a backer board. Just a thought.

Tom Lehmann/The Dough Doctor  
2280

### [\*\*Chitchat / Re: 1.4 BILLION Pound Cheese Surplus!!!!\*\*](#)

Interesting thing, back when I had that CCC contract the Government did cut back on their subsidies of dairy products BUT the new plan was based on the number of cows being milked. Yup, beef prices dropped at the supermarket as the dairy farmers thinned their herds, what happened next was to be expected. Dairy farmers got rid of their poorer milk producers and kept the highest volume producers, and so it went.....now all of their milk cows were producing more milk than the larger herd was previously....back to square one, whoda seen that one coming?

Tom Lehmann/The Dough Doctor  
2279

### [\*\*Dough Clinic / Re: Help with recipe for long cold ferments\*\*](#)

Great advice from all! I'll try to add a little if I can. I'd suggest blooming/activating /hydrating the ADY in water at 100 to 105F rather than 80F which is still a bit too cold. Are you leaving the dough ball containers open or are you closing them right away when you place them in the fridge? As for getting ready to open the dough balls, allow the dough balls to come to at least 50F at room temperature before you try to open them into skins. You will want to experiment a bit in this regard and try 50F, 55F, and 60F to see what works best for you. Mind you, these are all internal dough ball temperatures we're talking about here, not surface temperatures so you'll need to poke them with a stem type thermometer. Also, do an absorption series on your dough where you incrementally increase the dough absorption in 2% increments. 62% dough absorption might be a bit on the low side to achieve the open crumb structure you're looking for. Additionally, you say you want to have a softer crust, the addition of oil as suggested will help as will the higher dough absorption as it will provide for better bake-out of the crust which will make the crust eat more tender, some might equate this to being softer, and lastly, you might even want to look at increasing the dough ball weight as a slightly thicker crust will naturally tend to be softer than a thinner crust with all things equal.

Tom Lehmann/The Dough Doctor  
2278

### [\*\*Dough Clinic / Re: Adding black pepper to dough - any issues?\*\*](#)

You're right about the regs for the maximum number of insect parts (not whole insects) allowable per pound of product. I used to run the entomology lab during my early years at AIB back when we were located in Chicago, Illinois.

Tom Lehmann/The Dough Doctor  
2277

### [\*\*Off-Topic Foods / Re: Low Carb Pita bread, can it be done??\*\*](#)

TMB;  
Make sure you use/specify "whole" white wheat flour as it can also be had as a patent or straight grade flour which means it is then just like any other white flour

but it is milled from varieties of hard white wheat. All of the flour milled in Australia is made from hard white wheat varieties. This is done since when using hard white wheat as opposed to hard red wheat they can get a longer extraction (more pounds of white flour per 100-pounds of wheat). If I remember correctly in Australia their extraction rate is around 83% while here in the U.S. using hard red wheat the extraction rate is about 78 to 80%. That's a HUGE difference when you consider the amount of wheat a typical flour mill processes in a single day. Also, did you ever see that the word "bread" is not always placed after "pita"? The reason for this is because in the CFR (code of Federal Regulations) there is a definition for "bread", if I remember correctly the product must have a weight of 12-ounces or more to be called bread. This is why the correct term is "pita" or a package of "pitas". So why do you still see "bread" tacked on to "pita"? While it's still not correct or even legal it is in such wide spread use I think they just turn a blind eye to the issue or they will until someone begins complaining, that's when enforcement kicks in. Be glad you're not a wholesale food manufacturer where you have to know and abide by each and every one of the local, state and Federal laws regarding how you make something, what you put into it, how you label it, what you call it and where you place the information on the package and the print size too, oh yes, they even tell you how to run your business!

Ain't the food industry great? :)  
Tom Lehmann/The Dough Doctor  
2276

#### **Off-Topic Foods / Re: Low Carb Pita bread, can it be done??**

Malt, at VERY low levels, such as normally malted flour is not a problem with pita due to the short fermentation time employed. Adding sugar or greater amounts of malt will result in the center (silver dollar size brown spot) of the pita getting too dark or burnt, which results in it cracking upon cooling or rolling in use. When correctly baked you can cut the pita in half and see an equal amount of crumb structure on both the top and bottom of the pita. You can make something that pockets like a pita at a much lower temperature (we see this happening with pizza occasionally) but all of the crumb will be located on only one side with the other side being very thin which quickly leads to a brittle or dry pita.

By the way, one trick that I developed a number of years ago for making a better pita is to spray the pitas with water IMMEDIATELY after they come out of the oven (this will collapse the pocket and limit moisture loss making for a softer pita) as soon as the pocket is collapsed flip it over and repeat on the other side, cool on a rack for about 15-minutes, package at 110F. DO NOT REFRIGERATE OR FREEZE. If you absolutely must refrigerate or freeze do not do so until after the pitas have thoroughly cooler in the package (about 3-hours). Neither refrigeration nor freezing does anything good for a pita except to accelerate the staling process. So why are commercial pitas frozen? For marketing/distribution....nothing more.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
2275

#### **Prep Equipment / Re: Cheapest way to obtain a stainless steel stretching surface?**

For me, I find a wood surface is the best for opening skins. I've got a laminated 2-inch thick maple cutting block that I use, it's heavy enough to stay put and I just stand it up at the end of the counter when not in use.

Tom Lehmann/The Dough Doctor  
2274

## [\*\*Dough Clinic / Re: NY style dough help\*\*](#)

Spot-on! :).

Tom Lehmann/The Dough Doctor  
2273

## [\*\*Dough Clinic / Re: When is the dough ready to bake?\*\*](#)

It sounds like your dough isn't getting enough fermentation for your specific taste.  
Try increasing the amount of

SD culture but continue using your regular procedure.

Tom Lehmann/The Dough Doctor  
2272

## [\*\*Dough Clinic / Re: When is the dough ready to bake?\*\*](#)

Define "way over risen". Did the dough rise and then collapse all on its own? That's a pretty good definition of over risen since in that case the dough has become so weak that it can no longer support its own weight (re-ballining may or may not salvage a dough that has over risen aka over fermented). If your dough just kept gradually rising without collapsing (you didn't mention anything about the dough collapsing) fermentation is most likely the issue. If you have a true SD based on a lactic acid forming bacteria it can easily take 18 to 24-hours for the dough to become properly fermented. We used to allow our SD rolls to final proof for 18-hours between forming and baking.

Tom Lehmann/The Dough Doctor  
2271

## [\*\*Dough Clinic / Re: Adding black pepper to dough - any issues?\*\*](#)

There ya go!

What was the concern over black pepper again? :-D

Tom Lehmann/The Dough Doctor  
2270

## [\*\*Sauce Ingredients / Re: Full Red with Basil \(Unprepared\)\*\*](#)

The 7/11 Ground Tomatoes is my "go to" base for most of my sauces, just add a little fresh basil and garlic to the sauce after applying it to the skin, then the cheese and dress to the order. For my upscale pizzas I like to use the 74/40 Tomato Filets (drained for 20-minutes), lightly oil the skin with EVOO, add fresh basil and garlic and apply the tomato filets instead of a spreading sauce. Flavor and texture are great, second only to fresh, vine ripened tomato slices.

Tom Lehmann/The Dough Doctor  
2269

## [\*\*Dough Clinic / Re: Help with recipe for long cold ferments\*\*](#)

I'd say you will want to practice your dough opening technique to get a more round shape to your pizzas. You might try this for starters, use a rolling pin or pastry pin to PARTIALLY open the dough ball (about 50mm) from the desired diameter, then finish opening the dough by hand to full diameter. The color of the crust with 2% sugar actually looks quite good, what does the bottom of the crust look like? When baking pizzas on the deck we bake the pizzas until the bottom of the pizza is done (this is called baking to the bottom crust color) so if you want to get a darker overall color you can either lower the baking temperature to around 274C or bake the pizzas on a seasoned pizza screen, then "deck" the pizzas for the last 30-seconds prior to removing from the oven. Either of these should give a stronger top

color.

Tom Lehmann/The Dough Doctor  
2268

### **Forum Info / Re: IDY, ADY, Cake Yeast Conversion Chart**

As Peter correctly mentioned, there is no hard and fast conversion in the "real" world but if you contact Lesaffre Yeast Corporation<[www.lesaffreyeastcorp.com](http://www.lesaffreyeastcorp.com)> you can get a copy of their "Directions for Use Guide for Instant Yeast" which also covers Active Dry Yeast on the reverse side. The guide references recommended amounts of IDY/ADY against CY.

In work that we did at AIB using instrumentation to measure the gassing power of the different types of yeast (ADY/IDY/CY) we found the following: To replace one part (1%) CY we actually needed to use 0.375% IDY or 0.5% ADY. The water addition mentioned was not necessary in the "real world" until the amount of dry yeast got up to a total weight of 4-ounces or more if you are using IDY or ADY exclusively you will "auto-correct" the dough absorption in the end so it's really not something to be concerned about. It's only a concern the first time you make a change in yeast types and large size doughs are involved.

Also as stated, the dough formulation can play a big role in the yeast conversion too with salt and sugar levels impacting the end conversion rate to some extent. The biggest "fly in the ointment" is the age of the CY as it continues to deteriorate with age and is highly impacted by storage conditions....in other words, it's highly perishable. In commercial bakery applications CY deliveries are received at least twice a week and typically used within 48 to 72-hours of receipt. It is temperature checked at the time of receipt and maintained under refrigeration right up until the time it's added to the mixer. All of this is required because the yeast sets the stage for the final proofing time for baked bread or the shelf-life of frozen dough both of which are CRITICAL in these applications. In pizzeria applications proofing is not the norm and when it is incorporated into the pizza making process (such as when making pan/deep-dish pizza) the time is not critical as automated proofing/baking systems (such as a serpentine proof and bake system) is not used as is common in the baking industry. The same can be said for home pizza making and even home bread making where if the dough feels or performs a little different it's easy to compensate for and if the dough requires a few minutes additional proofing time it's not a big deal....try convincing a commercial bakery or frozen dough manufacturer of that! :-D

Tom Lehmann/The Dough Doctor  
2267

### **Pizza Ovens / Re: ROMAN style dough and the Impinger oven**

Michael;

When you say "Roman" dough are you referring to Neapolitan pizza dough?  
Tom Lehmann/The Dough Doctor  
2266

### **Forum Info / Re: IDY, ADY, Cake Yeast Conversion Chart**

I should also add that in the literature provided by the yeast manufacturers they do indicate a 3 to 1 ratio for CY to IDY but this is just a little on the conservative side, maybe they just rounded things to the nearest point where it would be easy to remember the conversion, or maybe it sweetens the pot a little for making a change to IDY from CY, whatever the reason, the 3 to 1 ratio works OK in home applications and probably most pizzeria applications but not so well in applications where we need to be A-Retentive in proof times and total gassing power and don't

have a lot of flexibility in changing the dough parameters.

When it comes to yeast (regardless of the type), I think it's best to start with a specific recommended amount but then because of differences in dough formulation and dough management procedures, and expectations/personal preference, adjust the yeast level to give you the best product possible.

Tom Lehmann/The Dough Doctor

2265

### **Dough Clinic / Re: Correctly gauging TF**

Peter;

You are absolutely correct about the issues when making a thin cracker type crust where you have to trim scrap dough away from the skin to achieve the desired finished diameter. At the time when we were working with cracker style thin crust pizzas we were looking at pizzeria applications only. The method that we developed was based only on the used of a mechanical dough sheeter/roller. We would use dough balls of increasing weight and open them (using the dough sheeter/roller) to a diameter about 2-inches greater than the desired finished diameter, dock the entire skin and place it onto a pizza screen of the desired finished diameter, using a bench scraper, trim off the excess dough, transfer the skin onto a dusted prep-peel and dress for baking, bake and ascertain the quality characteristics of the finished crust. This was done for each dough ball weight and the most desirable dough ball weight was selected. The roller settings were recorded as was the technique for passing the dough through the sheeter, with this done all the operators had to do was to scale the dough to the specified weight, set-up the sheeter correctly, pass the dough through the sheeting rolls in the prescribed manner, dock the skin, place the skin on a pizza screen of correct diameter and trim off the excess using a metal bench scraper, transfer the trimmed and docked skin to a dusted prep-peel, dress to the order and bake on the deck. In applications where an air impingement oven was used the sheeter and docked skin was placed directly onto the baking platform, trimmed, dressed and baked. The exception to this was when a cutter type pan was used (40-degree sides on the pan), in this case the dough was draped over the pan and fitted into the pan, a rolling pin or pastry pin was then rolled over the top of the pan to crimp-cut the surplus dough from the pan after which it was dressed and baked. As for the scrap dough which was being generated, this method was developed to minimize the amount of scrap generation, the scrap was collected and used for "other" products like bread sticks, garlic knots, and cinnamon crisps (thin rolled dough, cut into 3-inch squares, brushed with water and sprinkled with a cinnamon-sugar mixture and baked until lightly browned, then drizzle with powdered sugar-water icing and serve as a dessert). We would also cut the skins into very thin strips and bake on a pan or screen as Grissini style bread sticks. Any scrap dough that was remaining at the end of the day would be re-incorporated into new dough at a rate not to exceed 15% of the total dough weight (about 12-pounds for a dough based on 50# of flour weight).

One of the later projects that we worked on was that of trying to develop a method where we would open a dough ball of fixed weight to a pre-determined diameter with no scrap generation at all (this was done at popular request by pizzerias as they didn't want to deal with the scrap dough being generated). My partner, Jeff Zeak demonstrated the procedure a couple of times at Pizza Expo (XLT Ovens booth) but for some reason it never really caught on, we attributed this to the growing popularity of the Neapolitan style pizzas. All part of the evolution of PIZZA.

Tom Lehmann/The Dough Doctor

2264

## [\*\*Forum Info / Re: IDY, ADY, Cake Yeast Conversion Chart\*\*](#)

Here's my personal take on this;

There are just so many factors involved and capable of affecting the conversion from one type of yeast to another under real life dough conditions that all you need is to be close to a reasonable conversion, then adjust accordingly as previously mentioned. Remember, even the properties of your water can/will impact yeast performance properties. Be thankful we're making dough, not nitroglycerine. :-D

Tom Lehmann/The Dough Doctor  
2263

## [\*\*Dough Clinic / Re: Freeze cooked vs uncooked\*\*](#)

Folkpicker;

The SOP (standard operating procedure) for making frozen pizzas is to make them on a par-baked crust. Par-bake your skins using about 1/2 of the sauce on the skin to prevent bubbling, then place on a rack or screen to cool thoroughly, then apply the remainder of the sauce along with the cheese and other desired toppings, place on a pizza screen to allow for air circulation around the entire pizza and freeze for at least 3-hours, remove from the freezer, place onto a cardboard pizza circle and IMMEDIATELY wrap in stretch wrap. Wrap in at least two layers of stretch wrap and place back into the freezer. I can't say how long the pizzas will keep in your freezers but I'm guessing you should be able to pull a pizza once a week for at least two months. To bake the pizzas always bake from frozen, place on a pizza pan or cookie sheet for baking at 400 to 425F until the cheese is hot and bubbly. You may need to experiment with the baking time and temperature a little but this should get you in the ball park. Remember to adjust the baking time and temperature to get the top side of the pizza baked properly if you find that the bottom needs more or less color adjust the bottom color by adding more or less sugar to the dough formula (more sugar for greater color and less sugar for a lighter or less color). If you like to have the edges (rim) with more color and everything else is OK just brush the edge of the pizza with olive oil just before you place it into the oven. For something a little different, try sprinkling on a little EVOO as soon as the pizza comes out of the oven (the temperature of the pizza will "pop" the flavor of the EVOO. Another trick is to sprinkle the top of the pizza with grated Parmesan cheese or a blend of Parmesan and Romano as soon as the pizza comes out of the oven. Lastly, brush the edge with EVOO before baking, then apply some shredded Parmesan cheese to rim (it won't hurt if you get it in the center too), in this presentation the cheese will melt and be toasted on the edge imparting a great toasted cheese flavor to the edge crust. This is just like they do when making the Boboli Pizza Crusts that you can buy at the supermarket.

Have fun and experiment. By the way, my personal favorite is to brush the edge of the pizza with water and sprinkle with raw sesame seeds (not too heavy or they'll just fall off after baking), the seeds will be toasted during baking giving a great flavor to the edge crust.

Tom Lehmann/The Dough Doctor  
2262

## [\*\*Dough Clinic / Re: Freeze cooked vs uncooked\*\*](#)

I forgot to add, to par-bake your crusts use a temperature of 400F to 425F. and bake on a seasoned pizza screen, if you will be baking on some type of a deck surface (stone or baking steel) you can par-bake at up to 500F. Remember, the object is to bake the skins JUST long enough to fully set the structure...no longer. The par-baked crusts will have a very light/slight browning, no more than that. If

you see what appear to be oil spots developing on the cooled crusts these are NOT oil spots, they are areas of dough collapse due to insufficient baking. To correct the condition you will need to bake the par-baked crusts a little longer (by little I mean maybe only 15 to 30-seconds). To do this without getting too much color or bubbles you might need to lower the baking temperature by 15 to 25F to allow for a longer bake time. In any case, if you encounter any problems let us know and we can guide you out of it.

Tom Lehmann/The Dough Doctor  
2261

### **[Stones/tiles/steel, Pans & Accessories / Re: Pizza Serving Plates](#)**

The suggestion from Hanglow is the best one, the wood is much easier to cut the pizzas on and it will help to retain the heat in the pizzas. Aluminum is possibly the worst material to use as it conducts heat away from the pizza and it also results in condensation forming between the crust and the aluminum surface. A common solution is to buy a box of corrugated cardboard pizza circles, place the pizza circle on/in a pizza pan (a screen works well too and they're cheap) to provide rigidity to the pizza circle. Used in this manner the circle insulates the bottom of the pizza from the surface upon which it is placed so it stays hot a little better and doesn't contribute to condensation forming on the bottom of the pizza, the cardboard is also a good cutting surface.

Tom Lehmann/The Dough Doctor  
2260

### **[Dough Clinic / Re: Freeze cooked vs uncooked](#)**

It's not for the weight, it's for the evaporative cooling it provides which reduces the temperature at the top of the skin (crust) thus reducing bubbling. Also be sure to dock the crust with a good (blunt) dough docker to further control any bubbling which might occur.

Tom Lehmann/The Dough Doctor  
2259

### **[Dough Ingredients / Re: Natural sugars in flour. Breaking down the Carbohydrates. How healthy is it?](#)**

Well put! Additionally, remember that hunger is triggered by a drop in blood sugar, so you pop a sugar cube, your blood sugar spikes and you're no longer hungry BUT soon that sugar is metabolized and your blood sugar once again drops, the process keeps repeating itself over and over again. This is actually pretty easy to demonstrate to yourself using sugar cubes or candy which is high in sugar (I don't recommend doing this if you are diabetic). I once had a lady tell me that she always got light headed when working out at the gym after work, I suggested that she eat two slices of bread before she left work, the starches/carbs in the bread were slowly converted to sugars which could be metabolized thus maintaining her blood sugar at a reasonable level, end result.....she no longer complained of getting light headed during her work out and she also indicated that she was no longer hungry enough to "eat a horse" when she got home. It's called blood sugar management, something more of us should pay closer attention to.

Tom Lehmann/The Dough Doctor  
2258

### **[Dough Clinic / Re: WHEN TO BALL DURING BULK FERMENT](#)**

Jason;  
Keep in mind that RT bulk fermentation will yield far different results than cold

bulk fermentation within the same time frames. A lot will depend upon at what temperature your starter performs best at which is a function of the micro-flora present.

As for scaling and balling a bulk fermented dough, I like to scale and ball immediately after the bulk fermentation period. I do not recommend allowing a bulk dough to warm-up prior to balling as this will introduce a ball park of variables into the dough. The main one will be due to the outside of the dough warming while the inside remains cool (if you have it FULLY refrigerated with a core temperature of 40F or less). If you do the bulk fermentation at room temperature (not really recommended unless the RT is CONSTANT) you will need to experiment to determine when the dough has been sufficiently fermented to provide the flavor and performance characteristics desired. There is no real way to predict this so it will have to be determined through experimentation or trial and error. Keep good and complete notes as doughs made with SD starters tend to be much more responsive to times and temperatures. Consistency is the name of the game so don't be afraid to "A-Retentive" when doing your experimentation as it will help you stay on track in the long run.

Tom Lehmann/The Dough Doctor

2257

### **Neapolitan Style / Re: Questions for a better understanding of the dough**

The main reason for dissolving the salt in the water is for improved dispersion throughout the dough when the dough is NOT going to be mixed by machine. When using a dough mixer, unless a coarse granulation salt is being used, it is not necessary to dissolve the salt in the water so it can be added directly to the flour. The same is true for the yeast (compressed yeast) as it should be suspended in the dough water to ensure thorough dispersion throughout the dough when hand mixing is employed. When a dough mixer is used the compressed yeast can be crumbled right on top of the flour and the mixing agitator will do the rest for you. As for mixing the salt and yeast together, this is generally not a good idea as it can potentially harm the ability of the yeast to ferment. The salt can exert a greater osmotic pressure than the yeast so the salt can potentially pull the plasma material out of the yeast cells, not necessarily killing the yeast cells but definitely impairing their ability to participate in the fermentation process not to mention the fact that the plasma material will be glutathione, a dough reducing agent which can make doughs softer and more extensible. Dead yeast AKA glutathione is sold commercially as a consumer friendly dough reducing agent (dough softener). While incidental contact between salt and yeast in the water may not be harmful (direct contact between the two is) if you were to get distracted and allow some time between putting the two together in the water and adding the flour and mixing the dough you could get some inconsistencies in your dough that might cause you to add more or less water or thing that your mixing is off when all that happened was that you got distracted at a bad time.

Tom Lehmann/The Dough Doctor

2256

### **Dough Clinic / Re: Help with recipe for long cold ferments**

Those are some mighty fine looking pizzas!!!

Tom Lehmann/The Dough Doctor

2255

### **Prep Equipment / Re: Flour Storage Products**

If you are planning to store your flour for up to a year it will be better to store the

flour, regardless of what it's stored in, in the coolest place possible. Ideally, under refrigerated temperature but if that's not possible for you revert back to "as cool as possible". In my experience, anything over 70F is too warm for long term flour storage.

Tom Lehmann/The Dough Doctor  
2254

### **New Forum Members / Re: PIZZA PANS**

To answer your question #3, just use less dough...problem solved. If you were to proof it less the crumb structure would change as would the eating/mastication properties of the crust. By using a bit less dough and proofing it to the same time as you are proofing the full weight dough you will get a similar crumb structure but with less height/thickness. When we were making the PH type deep-dish pizzas we used a final proofing time of 70-minutes but that will change with your actual dough formulation as well as dough and room temperature.

As for your question #1, look at the thickness of the metal the pans are made from and buy the thicker/heavier pan as it will be more durable and provide for an overall better, more uniform bake. You might need to go to the respective web sites to get this information and remember that many times pans are offered in different thicknesses/weights so make sure you are comparing apples to apples. If the pans are bright metal, anodized or not, you will need to season them well prior to use.

Tom Lehmann/The Dough Doctor  
2253

### **General Pizza Making / Re: This is my basic quick pizza dough**

For a dough that'll be fermented that long you only need to mix the dough until it takes on a smooth appearance, biochemical gluten development will take care of the gluten development for you with a lot less wear and tear on your mixer, and it will shorten your process too while giving you a more open finished crumb structure in the crust. The "window pane" test really has little application in pizza making as pizza doughs are typically under mixed to help achieve the desired finished crust characteristics, where the window pane test is used to good advantage is in bread making (as in sandwich/loaf bread), in this case the dough is mixed to full gluten development and then even a little more to achieve the desired dough extensibility the result is a dough that produces a finished loaf with good volume and a close, tight knit crumb structure.

Tom Lehmann/The Dough Doctor  
2252

### **Prep Equipment / Re: Flour Storage Products**

To use the bags of flour you have in the freezer its best if you can remove what you will need to use the day before and just set it out on the counter to allow it to warm up. Extremely cold flour doesn't absorb water as quickly as warmer (room temperature) flour does. Not a big deal if you forget to take it out of the freezer just remember that the dough might feel a little different at first BUT also remember that the extremely cold (frozen) flour will also impact the finished dough temperature resulting in a colder than anticipated finished dough temperature unless you correct for this by using slightly warmer dough water. Probably easier to just remember to take it out of the freezer the day prior to use. :)

Tom Lehmann/The Dough Doctor  
2251

### **General Pizza Making / Re: This is my basic quick pizza dough**

My first impression was that it was going to be an emergency type dough, we understand though. :)

Tom Lehmann/The Dough Doctor  
2250

**Neapolitan Style / Re: Questions for a better understanding of the dough**

Sure, not a problem in dividing the water into two parts and dissolving the salt in one and suspending the yeast in the other. This is remotely similar to the way you would have to do it if you were using ADY (active dry yeast or IDY (instant dry yeast) and mixing the dough by hand.

Tom Lehmann/The Dough Doctor  
2249

**Dough Clinic / Re: Bread flour / whole wheat flour mix**

I'm not sure if I'm understanding your question correctly, but to the very best of my knowledge most, if not all of the New York style pizzas are made with white flour, with General Mills All Trumps (14+% protein content) being the most popular brand used. Possibly you heard "wheat flour" which would be correct in a general sense as opposed to whole-wheat flour which is an entirely different type of wheat flour as it contains approximately 20% bran.

Tom Lehmann/The Dough Doctor  
2248

**Dough Ingredients / Re: Corn meal**

I'm from Chicago also, probably just a matter of taste.

Tom Lehmann/The Dough Doctor  
2247

**Neapolitan Style / Re: Shrinking Dough**

How much of a difference in diameter are we talking about? Up to about 1/2-inch is normal.

Tom Lehmann/The Dough Doctor  
2246

**New Forum Members / Re: Pizza Crust**

When using the parchment paper you have two options, one is to just slide the pizza into the oven with the parchment paper under the skin and bake the pizza, removing the parchment paper when you remove the pizza from the oven, the other approach is to allow the pizza to bake on the parchment paper until you can slide easily your peel under the skin and remove the parchment paper allowing the pizza to finish baking right on the oven deck. Either way is OK.

Tom Lehmann/The Dough Doctor  
2245

**Dough Clinic / Re: Room Temperature Fermentation Safety?**

As long as you have yeast or some other desirable bacteria strain in the dough to accomplish acidification of the dough it is perfectly safe to ferment the dough at any temperature that will support fermentation

Tom Lehmann/The Dough Doctor  
2244

**General Pizza Making / Re: recipe conversion from % to weight (oz)**

1) Decide what dough weight you want to make.

2) Divide the dough weight by the sum of the bakers percent in your dough formula divided by 100.

3) This will give you the flour weight to make your dough of desired weight.

4) Then flour weight X ingredient percent you want the weight for, then press the "%" key and read the ingredient weight.

Remember that the ingredient weight will ALWAYS be in the same weight units that the flour weight is shown in.

Tom Lehmann/The Dough Doctor  
2243

### **Pizza Toppings / Re: Toppings suggestions needed (vegetarian)**

Squash such as crooked neck or zucchini are great choices as for any watery vegetables you might have a concern about drain well and place in a clean towel to absorb excess moisture....don't over do it with the amount you add, ditto for the green and black olives, onions.

Tom Lehmann/The Dough Doctor  
2242

### **Dough Clinic / Re: Room Temperature Fermentation Safety?**

To the contrary, commercial bakers yeast will acidify a dough quite nicely in just a few hours....not to sourdough levels of 4.0 and less but easily into the 4.5 to 5.0 range from a starting point of 6.8 to 7.0 pH. Mom would have poisoned all of us kids with her home made bread if it were not for this.

Tom Lehmann/The Dough Doctor  
2241

### **Chitchat / Re: Ruger American Rifle Vortex Scope Package**

I have one in 30/06 and I can't slight it in the least. Trigger is great for a production rifle (most are these days) and it's adjustable so you can set the trigger pull to where you like it. I also have a Ruger Ranch rifle in 7.62 X 39 which I'm quite fond of too. The Vortex scope presently sells for between \$150.00 to \$167.00 U.S. and add another \$20.00 for rings. The rifle comes with a rail so bases are not needed. The rifle retails here for about \$475.00 U.S. but we can pick them up for about \$100.00 less. I was just looking at what was essentially a new Ruger American Ranch Rifle in .223/5.56 with a scope, sling, extra magazine for \$450.00. The .270 Winchester is a fine caliber for deer size game and maybe a bit bigger with some of today's premium bullets out to about 400-yards if you can hold up your end of the bargain. I have a friend who uses a .270 for deer here in Kansas (bucks go 100 to 140 kgs. in weight). He used to use 130 grain bullets but at ranges we shoot here in Kansas (100 to 150-yards) they were overly destructive so he now uses only 150-grain bullets and eats more of his harvest.

Tom Lehmann/The Dough Doctor  
2240

### **Chitchat / Re: Ruger American Rifle Vortex Scope Package**

Go with Nosler Partition bullets or commercially loaded rounds using them or any of the monolithic bullets like those made by Barnes or Hornady for the tougher stuff and regular cup and core bullets (150-grain weight) for anything else, if your shots will be out at 200+ yards any of the lower cost 130-grain cup and core bullets will work fine. If you must use the 130-grain loads and your range will be less than 150 to 200-yards just remember to pick out the end you want to eat then shoot the other end. Those 130-grain cup and core bullets are just plain too explosive when

driven at 3,000+ fps and the range is close. By hand loading though you can load them down to 2,600 to 2700 fps and they perform well out to 250-yards on deer size game.

Tom Lehmann/The Dough Doctor  
2239

### **[Pizza Ovens / Re: ROMAN style dough and the Impinger oven](#)**

I just find that it is easier to answer a question if I know specifically what pizza is being discussed. When I was at AIB we did some work baking this style of pizza in the Lincoln air impingement oven with moderate success as compared to a deck oven. I don't remember all of the specific details anymore but I do remember that we had to play quite a bit with both the top and bottom finger profiles since a "regular" pizza profile did not work well, that's about par for the course and it's why they have so many custom fingers for those ovens as it allows one to set-up the oven for very specific baking applications. The down side is that you now have a pretty dedicated oven which may or may not work well with other products which need to be baked in a pizzeria setting. Most typical "pizza" finger configurations are sufficiently versatile so they have a broad application in baking other menu items such as garlic knots, bread sticks, calzones, wings, etc. If you are interested in further exploring this option find an air impingement oven manufacturer close to you or one that you have a preference for and discuss the possibility of doing a few test bakes at their facility to assess the feasibility.

Tom Lehmann/The Dough Doctor  
2238

### **[Shop Talk / Re: Developing Midwest Thin for commercial use](#)**

From a commercial standpoint the dough is going to be really tough to roll out using a rolling or pastry pin. Since this is for a commercial operation my advice is to spring for a dough sheeter/roller, otherwise you will be wasting a lot of time in opening the skins.

Here's a good formula to start with:

Flour: 12.2 to 12.8% protein content 100%  
Salt: 2%  
Oil: 4%  
IDY: 0.7%  
Water: 50 to 54%

Targeted finished dough temperature: 80F

Mix to a "just" smooth consistency (about 8-minutes) at medium speed.

Scale and ball immediately after mixing.

Place in dough boxes, wipe with oil.

Cross-stack in the cooler for 2-hours then down-stack.

Cold Ferment for 18 to 24-hours.

For a trailer or truck:

Allow dough to warm at ambient for 1-hour prior to opening the balls into skins.

Place skins on pizza screens and hold in a wire tree rack for up to 20-minutes.

To use the dough from the tree rack invert the skin onto a peel or pan with a light dusting of corn meal.

Dock the skin.

Sauce and dress to the order and bake.

Tom Lehmann/The Dough Doctor  
2237

### [\*\*Chitchat / Re: Ruger American Rifle Vortex Scope Package\*\*](#)

Aside from a few recent recalls (Mark IV and American Pistol) I can't think of any issues with Ruger products over the past 40-years. My favorite deer rifles are a #1 in 45/70 and a Hawkeye in .338 Federal. I've probably got half a dozen or more Rugers in the safe and they all get a lot of range time and none have ever given me any issues what so ever, I'm sure a few bad ones have gotten out but nothing any worse than from any other manufacturer.

Tom Lehmann/The Dough Doctor  
2236

### [\*\*Dough Clinic / Re: Room Temperature Fermentation Safety?\*\*](#)

With exception to *Bacillus Mesentericus* (Rope) spores, bread is essentially sterile when it comes out of the oven. Rope is not a dangerous organism it just gives the bread a funky nail polish remover or over ripe cantaloupe aroma.

Tom Lehmann/The Dough Doctor  
2235

### [\*\*Shop Talk / Re: Developing Midwest Thin for commercial use\*\*](#)

The KA mixers are just not up to the abuse of constant everyday use in mixing rather tough pizza doughs. I would highly encourage you to look into at least a planetary 20-quart mixer or better yet, one of the 20-quart spiral mixers. Eurodib makes a 20-quart spiral mixer that sells for \$1,100.00 or about half of what a planetary mixer of the same size sells for and it should last you for a very long time. The main thing when mixing the dough is to mix it faster than slow speed just until you achieve a smooth appearing dough.

Tom Lehmann/The Dough Doctor  
2234

### [\*\*Newbie Topics / Re: how fast?\*\*](#)

Sounds about right to me. After you remove the dough from the mixer it is no longer under tension from being worked by the dough agitator (hook/arm) so it quickly relaxes. It even does this to a great extent when still in the mixing bowl after the mixer has stopped. This is perfectly normal.

Tom Lehmann/The Dough Doctor  
2233

### [\*\*Newbie Topics / Re: High protein flour.\*\*](#)

Can you send a picture of the label on the flour bag/package? There are different types of whole-wheat flour so it would help to get a better idea of which one you have. There can be problems with dough absorption when using some types of whole-wheat flour so if you find that after the fermentation period the dough has become very tight/stiff you know that it's due to insufficient absorption for the flour you're using. When referencing the protein content of the flour we are always referring to the gluten forming proteins (whole-wheat flour is about 1% higher in protein content but that additional 1% protein is not a gluten forming protein). If you make a pizza crust from your whole-wheat flour you will be making a whole-wheat crust, not bad, just different. If you blend it with white flour (2/3 white flour and 1/3 whole-wheat flour or dough), you will be making a wheat crust, again, different but not bad. There has been a lot of discussion here on using whole-wheat flours if you want to look back in the archives.

Tom Lehmann/The Dough Doctor  
2232

## [\*\*Newbie Topics / Re: High protein flour.\*\*](#)

I see that it's a whole white wheat flour. If the flour appeared to be fine (almost like a regular white flour) you may not see a whole lot of difference in the crust if you use it at about 25 to 30% of the total flour blend. The typical absorption for that type of flour is usually around 70%. Both dough performance as well as flavor suffer greatly if the absorption is too low.

Tom Lehmann/The Dough Doctor

2231

## [\*\*Shop Talk / Re: Growth Challenges from 1 to 2 shops\*\*](#)

We make the dough and sauce as well as prep the cheese if necessary at the main store which we use as a commissary. The dough is mixed, scaled, balled and boxed or bagged, cross-stacked in the cooler for 3-hours then down stacked. Once down-stacked the dough is held for 18 to 24-hours before being transported to the other store either in the early morning or in the evening/night time hours, it is placed directly into the stores cooler for use as soon as needed. If you do your part the dough is good for 2 to 3-days. A van is the easiest way to transport the dough to the second store. This method gives you MUCH better control over the dough and saves money as you don't need to buy more equipment making the dough or inventory ingredients at the second store, the big bonus is that you always have the same people making the dough so you are reducing the risk of something going wrong....like that never happens :-D

The concept is very simple, this is how most kiosk stores operate as well as every one of the big box chain stores.

Tom Lehmann/The Dough Doctor

2230

## [\*\*Dough Clinic / Re: ADY to prove or not\*\*](#)

In one word....yes.

When not placed into a small amount of warm (95 to 100F) water to hydrate/activate some of the plasma material is leached out of the ADY which poses two problems, one the yeast cells, while still alive do not participate in the fermentation process and two, the material leached out of the yeast cells is glutathione, the exact same material that the reducing agent "dead yeast" is comprised of. This means that the glutathione exerts a softening effect or weakening effect upon the dough much like dead yeast or a similar product based on L-cysteine (PZ-44). In any case there is no way to tell how sever this might be so the end result is an inconsistent dough at best. IDY, on the other hand is designed to hydrate very quickly (hence the word INSTANT in its name) which allows the IDY to quickly absorb water and seal the fissures in the cell walls thus preventing loss of glutathione from the individual yeast cells. This can be an issue for IDY at the same time, if IDY is placed into water that is just 5F too cold (90F) if it is suspended for hand mixing, the cooler water will exert a flushing action (enter into the cells and back out again before the cell walls can seal so you get what we call a flushing action where the water leaving the cells brings the glutathione out with it.

Tom Lehmann/The Dough Doctor

2229

## [\*\*Chitchat / Re: Ruger American Rifle Vortex Scope Package\*\*](#)

As many of you are aware much of the U.S. is in the grip of a Polar Vortex with frigid temperatures and high winds, while here in Manhattan Kansas we don't have the really frigid temps YET (they're still coming) I decided to make a large pot of

venison chili. The house is smelling great! :drool: It'll be ready by dinner time. Nothing beats free range, organic, no hormones added venison, especially when I hunted it, harvested it, field dressed it, brought it out of the field and home, cut it into steaks, roasts, stew meat, fajita meat, hamburger (ground venison) and jerky strips, then enjoy all the fruits of your labor with a great meal while recalling another successful hunt.....it's as good as pizza! :)

Tom Lehmann/The Dough Doctor  
2228

### **Dough Clinic / Re: Testing for absorption**

Yes there is, the instrument is called a Farinograph and for a mere \$40,000.00 you can have one too. :D

Aside from that, I'm afraid the answer is no, I'm not aware of any other real method for measuring the absorption properties of flour out side of an analytical lab using NIR (near infrared). This is what I was doing when I retired from AIB, working with Dr. Rick Dempster using NIR to measure flour absorption.

In truth, the optimum dough absorption is that which provides you with the best compromise in dough handling properties while giving the best (desired) finished product characteristics, and since there are so many different ways of making pizza and so many finished product expectations, even if you knew what the flour absorption was you would still need to develop an absorption factor to convert the flour absorption into a dough absorption that you could use in your dough formulation.

By the way, the big users of flour (bulk, like in tank car loads direct from the flour mill) receive an analytical report on each flour delivery which also includes complete Farinograph data on that specific flour. This data is important as it allows them to make changes to their process or dough absorption to accommodate shifts in flour quality or more commonly flour absorption properties. As I've said so many times before, flour is probably the single most variable ingredient we work with.

Tom Lehmann/The Dough Doctor  
2227

### **Dough Clinic / Re: ADY to prove or not**

How is the spiral mixer a problem? ??? If you replace ADY with IDY be sure to use the correct conversion or you will be using too much IDY.

I'm on the program twice this year at Pizza Expo. One of my sessions should be very informative as it will be a 4-hour session allowing time for a lot of personal attention to problem solving and answering questions.

Tom Lehmann/The Dough Doctor  
2226

### **Dough Clinic / Re: Testing for absorption**

It would be nice if there was some way to do it but in order to even be remotely accurate you would need some way to accurately measure dough viscosity, which reminds me, there is another way...the Mixograph. This instrument incorporates a pin type mixer mounted on a spring loaded platform, during mixing the resistance from the pins on the mixer head forces the dough over the fixed pins in the bowl and this resistance causes the bowl to want to rotate, this force is recorded by means of a pen and chart allowing one to see maximum resistance (force). By this method water is added so maximum force is achieved within a specific period of time, then the absorption calculated, a factor between Mixograph and actual bowl absorption still needs to be developed just like the Farinograph. Haven't priced a Mixograph in many years but considerably cheaper than a Farinograph. Still figure

on several thousand dollars.

OK, I'm really going out on a pretty thin limb here but here's an idea if you're really that bored and need something to do.

Get 5 or more plastic glasses (between 3 and 4-inches across the top), put varying amounts of water in each glass, add an accurately measured 100-grams of flour to each glass and using a stirring stick stir each glass the same (as close as possible), lightly cover each glass with a piece of foil to prevent drying, allow to set for at least an hour (time to be determined) as you want the flour to fully hydrate on its own. Glue a large marble onto a piece of strong thread, carefully lower the marble onto the surface of the dough and measure the length of time it takes for the marble to fully sink into the dough (set a 2-minute time limit for this to happen). Increase absorption until you get this effect. Calculate the flour absorption (water weight divided by flour weight X 100). So now you can say that you need to add sufficient water to the dough so the marble Fully sinks (until JUST submerged) this is important as it is a constant. and then you need to make a pizza dough using that same flour to find your "dough absorption", now just divide the dough absorption by the flour absorption to get the desired absorption factor for your SPECIFIC pizza dough formula and procedure.

Example:

100-grams of flour.

80-grams of water (80F MUST BE A CONSTANT TEMPERATURE) added to sink the marble.

80 divided by 100 X 100 = 80% flour absorption.

Your pizza dough was best when made with 60% absorption.

Divide 60% by 80% and you get an absorption factor of 0.75

Using the ABSORPTION FACTOR:

Find the new flour absorption %.

Multiply that by 0.75 to find the dough absorption needed to make your dough using that flour, in this case 0.75 X flour absorption = the percent dough absorption needed for your specific dough.

Be aware that, even when using the best instrumentation, the absorption factor is only accurate to +/- 2%. That's the best you can hope for.

Tom Lehmann/The Dough Doctor  
2225

### [\*\*Dough Clinic / Re: Testing for absorption\*\*](#)

Rats!!! Don't you just hate it when that happens? :-D

Tom Lehmann/The Dough Doctor  
2224

### [\*\*Dough Clinic / Re: Testing for absorption\*\*](#)

It's not the quality of the flour where the issue is at, while it indeed does vary, and depending upon the year and circumstances sometimes considerably, at most all we ever see is a 1 or 2% variation and that's well within our level of tolerance for a pizza dough. Where things begin to go off in a different direction is when we begin seeing on-site (farm) stored wheat getting introduced into the grist over which the mill has no control. This grain can be up to 2-years in storage and in many cases has been stored under warm conditions both of which contribute to oxidized grain. What does this mean? It means that the flour performs as it it has been given an overdose of oxidation. When I was working at AIB I used to get calls from bakers all the time just a couple of weeks prior to the new wheat crop coming in. It seems

that farmers were selling off their stored grain to make room for the new crop (part of which they would store on-site waiting for a better price as the price is always lowest right at harvest time). Additionally, bagged flour is prone to drying out too. When flour leaves the mill it is around 13% moisture but under certain storage conditions it can dry down to about 10.5%, when combined with normal flour absorption variations, if the planets are aligned correctly, you could see a variation in dough absorption of as much as 5% which you would see even in a pizza dough. I've dealt with a lot of calls from operators complaining that while they have done nothing different, the dough is difficult to open or exhibits excessive memory characteristics since they got their last flour delivery. In almost every case I tell them to increase the dough absorption by 3% to see if that helps. It does help when the issue is due to drying of the flour but when it's due to oxidation of the wheat prior to milling we usually have to give the dough more fermentation or include a little reducing agent (dead yeast or PZ-44) in the dough formulation but then watch the dough VERY carefully because as soon as the mill works through the on-site stored grain (almost always within 3 to 4-weeks) the situation will immediately reverse itself. This is so bad in the wholesale baking industry (which includes commissary pizza) that companies have developed strategies for coping with what is called new crop transition which usually include a contracted blending of new crop with old crop or some just go "cold turkey" by cancelling all leave for senior supervisors and getting all new crop flour in their next delivery. With a little luck they normally sort things out in a day or two and life returns to normal for the better part of a year, then the cycle repeats itself.

Tom Lehmann/The Dough Doctor  
2223

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Looking after a wooden peel\*\*](#)

Never, ever wash a wood peel unless you are fond of a warped peel. If it needs cleaning just wipe it down with a damp towel. To maintain your peel periodically wipe it down with a light coating of mineral oil to help keep the surface sealed. If it gets rough sand it lightly with 200-grit sand paper and re-treat with mineral oil. Use your wood peel only as a prep-peel, prep the pizzas on the peel and peel them into the oven, then use a metal blade peel to remove the pizzas from the oven. I've had wood peels last me over 20-years with a little care.

Tom Lehmann/The Dough Doctor  
2222

### [\*\*Dough Clinic / Re: Testing for absorption\*\*](#)

2% for the trained person.  
Tom Lehmann/The Dough Doctor  
2221

### [\*\*Newbie Topics / Re: Making pizza in bottom heating oven\*\*](#)

One thing that comes to mind is have you considered baking on a pizza screen rather than directly on the steel hearth? The screen will allow you to bake the pizza longer without getting excessive bottom crust color. You might want to use a higher rack position to control the top bake as the top of the oven will be hotter than the bottom. If in doing this you find that you want more bottom crust color then add a percent or more sugar to the dough formula to enhance bottom crust color development.

Tom Lehmann/The Dough Doctor

2220

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Looking after a wooden peel\*\*](#)

When applying mineral oil to my peels I've always put the oil onto a cloth towel and rubbed it in. You don't want to oil soak the wood as that would affect the way the wood releases the dough but you just want to seal the surface so go light and rub it in well, then burnish it by rubbing again with a clean, dry towel as if you are trying to rub off the oil that you just applied.

Tom Lehmann/The Dough Doctor

2219

## [\*\*Chitchat / Re: Ruger American Rifle Vortex Scope Package\*\*](#)

Actually, I've done it before. I used a (8-inch) pizza screen under the pizza and a 2" deep aluminum pizza pan (with a few nail holes in the bottom) inverted over the pizza for top heat. I put a small wood drawer pull on top of the pan for ease of removal. Not the best pizza but no one refuse to eat it! We also had a stove top oven made from a large popcorn tin. I used a .22 to shoot two holes across the diameter of the can about 2/3 of the way up from the bottom, ran wire through the holes to create a shelf for holding an 8" cake pan. I flared the edges of the lid with a rock so the lid would just lay over the top. We used both for many years making camp pizzas and cakes for dessert....earned me the nick name "Camp Momma".

Tom Lehmann/The Dough Doctor

2218

## [\*\*Newbie Topics / Re: High protein flour.\*\*](#)

Chicago thin is typically made using Ceresota flour (about 11.7% protein content) while N.Y. style is typically made using All Trumps flour (about 14.2% protein content). Chicago style is edge to edge while New York style has an exposed raised edge. Also, Chicago style is party cut while New York style in pie cut.

Tom Lehmann/The Dough Doctor

2217

## [\*\*Chitchat / Re: Ruger American Rifle Vortex Scope Package\*\*](#)

Deer heart pate anyone? ;D

Tom Lehmann/The Dough Doctor

2216

## [\*\*Newbie Topics / Re: High protein flour.\*\*](#)

The KA flour should work just fine for you. Chicago style crusts are best made using a dough sheeter/dough roller, whatever you like to call it.

Tom Lehmann/The Dough Doctor

2215

## [\*\*Pizza Toppings / Re: Tessemae's Slow Roasted Garlic\*\*](#)

I usually just make my own. Put a couple bulbs of garlic in the oven and roast until soft, cut the top off of each bulb and squeeze out the roasted garlic. I like to mix this into my home brewed basil pesto when I'm getting ready to dress a pizza.

Tom Lehmann/The Dough Doctor

2214

## [\*\*Newbie Topics / Re: High protein flour.\*\*](#)

Godfather's uses a "cutter" pan having 40 degree angles sides designed for cutting the dough into the pan. In Chicago they bake the thin crust pizzas directly on the deck using bakery type reel ovens.

Tom Lehmann/The Dough Doctor  
2213

**[Dough Clinic / Re: dough too soft, need advice](#)**

Try this:

Immediately after mixing scale and ball the dough, box, lightly oil the top of the dough balls, cross-stack (leave container open) and place in the fridge. After 3-hours down-stack (cover) and allow to cold ferment for 24 to 48-hours. Remove from fridge/cooler and allow to temper AT room temperature until 50F then do your magic and open the ball into a skin. Let me know how this works for you.

Tom Lehmann/The Dough Doctor  
2212

**[Dough Clinic / Re: Optimal temperature of cooked pizza crust?](#)**

208F is about as hot as you can get the internals and still call it bread. After that the temp rises due to loss of evaporative cooling (crumb drying out) and things begin to appear more like melba than bread....DoouBall nailed it!

Tom Lehmann/The Dough Doctor  
2211

**[Dough Clinic / Re: NY Style vs Spongy Pan Pizza](#)**

Here is a pretty typical deep-dish dough formula:

Flour: 100% (bread type flour with 11.2 to 12.5% protein content)

Salt: 1.75%

Sugar: 2%

Shortening: 4% (Butter flavored Crisco works well)

IDY: 0.4%

Water: 62%

Target finished dough temperature: 75F.

add water to bowl first then flour and all remaining ingredients.

Mix to a smooth dough consistency (about 8 to 10-minutes).

Scale, ball and box the dough, wipe the top of the dough balls with oil.

Cross-stack in the cooler for 3-hours assuming 14 to 16-ounce dough balls for 12-inch pizzas.

Down-stack and allow to ferment for 36 to 48-hours.

Remove dough from cooler and allow to warm AT room temperature until internal dough ball temperature reaches 50F.

Using a rolling or pastry pin, roll out to a size just a little larger than the pan.

Fit the opened skin into an oiled pan and set aside to proof for 60 to 75-minutes.

After 45-minutes check the dough in the pan and stretch to fit the pan if necessary.

After dough has proofed you can use your fingers to form an edge by pulling dough up on the side of the pan or leave it as it is. Then add sauce and dress to the order.

If using a deck oven bake the pizzas with a screen under the pan to prevent burning the bottom.

You will need to experiment with the amount of dough used in the pan to determine the thickness of finished pizza you want to have.

Cut finished pizzas using a rocker knife.

Tom Lehmann/The Dough Doctor  
2210

**[Dough Clinic / Re: Tripoli's or Cristy's style dough](#)**

Can you provide any pictures?  
Tom Lehmann/The Dough Doctor  
2209

**Shop Talk / Re: At ground zero - thinking of doing a thing - might need sense talked into me.**

What, if any, experience you have in the pizza/restaurant or food industry?  
Tom Lehmann/The Dough Doctor  
2208

**Cracker Style / Re: Looking for thin crust sauce recipes**

Have you tried any of the Stanislaus products? Their 7/11 Ground Tomatoes with a little fresh or roasted garlic and fresh basil added to the sauced skin is one of my favorites after nothing but thin sliced vine ripened tomatoes (brush the skin with olive oil add the garlic and fresh basil then lay the slices of fresh tomato over the skin in place of a conventional sauce...excellent flavor, my all time favorite, but that's just me. Sometimes simple is the best.

Tom Lehmann/The Dough Doctor  
2207

**Dough Clinic / Re: Dough Doctor New York Pizza Recipe Issue**

What kind of flour were you using? What was your finished dough temperature? How did you manage the dough? These are all questions that play an important part in answering the question you posed.

The flour should be a high protein flour such as All Trumps (14+% protein content). The finished dough temperature should be targeted for 75F.

Dough management should look something like this: Mix, scale, ball, place in lightly oiled container (DO NOT COVER), after 3-hours cover the dough, cold ferment 24-hours, remove from fridge and allow to warm to 50 - 55F, (3-hours seems a bit long) open dough ball into a pizza skin for dressing and baking.

Let me know how it works for you.

Tom Lehmann/The Dough Doctor  
2206

**Dough Clinic / Re: I want pizza dough, not play-doh**

Well, let's see if we can pick this apart a bit. You buy your dough from a local bakery, I'm assuming this is a retail bakery as opposed to a large wholesale bakery. I really can't think of many retail bakeries making "pizza" dough as a regular item unless it's by request or under contract so there is an excellent probability that what you are getting for dough is some type of bread dough rather than a formulated pizza dough, if this is the case, do you know what type of bread dough you're getting? Many bread doughs are formulated quite differently from pizza dough. Additionally, bread dough is fermented MUCH LESS than what we would typically ferment a pizza dough....hours as compared to days. It is this fermentation that is responsible for essentially all of the flavor we taste in a baked pizza crust, it is also responsible in a large part for the crispiness of the finished crust too. While you don't provide any information on baking your pizzas all I can say right now is that if indeed you are using some type of a bread formulated dough it might have more sugar than desired for the way you are baking your pizzas which would cause you to short bake the pizzas (we bake pizzas to bottom color) which in turn give the crust a very thin layer of crispy dough on the bottom, if the dough is formulated as a pizza dough using little or no sugar one would need to bake the pizza longer to establish a desirable crust color which develops a thicker crispy layer on the

bottom of the crust which in turn retains its crispiness for a longer time after being removed from the oven, this is assuming you are placing the pizzas on a screen or rack as opposed to placing them onto a metal pan immediately after removal from the oven. Baking develops flavor in the crust too, the longer the crust/pizza can be baked the more flavor it will develop due to the denaturing of proteins during the baking process. Without more information this might all be construed as just speculation...we all know what happens when we "assume". :-D

Tom Lehmann/The Dough Doctor

2205

### **Dessert Pizza / Re: Berry tart pizza**

That's a lot like the dessert pizza that I've written about here a number of times. The difference is that I use a regular dough skin, brush it with melted butter and sprinkle with cinnamon-sugar mixture, then apply a cheese base made with ricotta, sour cream, and cream cheese which is blended with whole egg, sugar and salt, the viscosity is adjusted to that of mayonnaise so it can easily be spread on the skin about 3/16-inch thick, apple slices, peach slices, kiwi, sliced grapes, strawberries, blue berries, black berries, mango, banana or just about any kind of fruit you might have on hand can be added as a topping. These pizzas are baked right along with your regular thin crust pizzas, after baking they are cooled and sliced for sale by the slice. They are usually finished with the addition of a drizzle of string icing (powder sugar-water icing) after reheating for a few seconds for sale. Some even add a pre-bake topping of streusel which I personally think takes it to a higher level. These can be served cold, hot (reheated) or à la mode. There's a lot to be said for this type of dessert pizza, no matter how it's made. It sure beats dumping a can of pie filling on a crust and calling it a dessert pizza as many do!

Tom Lehmann/The Dough Doctor

2204

### **Dough Clinic / Re: Dough Doctor New York Pizza Recipe Issue**

Q.J.

Has it "nailed" spot on! ^^^

If you cover the dough right away it will sweat which results in an overly soft and usually sticky dough. The dough is also very slow to cool which further compounds the issue by leading to more fermentation than planned for within any specific period of time. In some cases the dough will actually continue to heat up in a covered container while in the fridge due to heat of metabolism (the heat generated by the yeast as a result of metabolizing nutrient during the fermentation process).

Tom Lehmann/The Dough Doctor

2203

### **Dough Clinic / Re: Dough Doctor New York Pizza Recipe Issue**

Over fermentation can turn an otherwise great dough into slime or anything in between depending upon how much the dough is over fermented. This is why the dough handles so well after a fermentation period (it exhibits less memory characteristics/snap back). For home pizza making 75F is a good finished dough temperature to always shoot for however with so many different methods of dough management used in home pizza making this might easily be higher or lower for any specific application, but in general, 75F is a good number. For use in a commercial application/pizzeria we commonly see finished dough temperature of 80 to 85F with an occasional 70 or 75F tossed in for good measure. Those lower temps are usually used where we have high shop temperatures or where long cold

fermentation times (4 to 7-days) are being targeted.

Tom Lehmann/The Dough Doctor

2202

### **Specialty-Grain Pizzas / Re: Spelt**

I've used it successfully to replace up to 25% of the regular white flour used in the dough formulation. Watch your dough formulation too as you will need to increase it a bit when using spelt flour.

Tom Lehmann/The Dough Doctor

2201

### **Dough Clinic / Re: Sheet pizzas**

Stretching dough from a ball to fit a sheet pan can be really troublesome, instead, ask the bakery to make the dough into 24-inch long loaves when they provide them to you. For a thin crust start out with 45-ounces of dough, for a thick crust try using 60-ounces of dough weight. You will find it easier to fit the dough to the sheet pan if you use shortening, like Crisco as opposed to oil.

Place dough onto greased pan (down the middle), cover and allow dough to warm for about 2-hours then use a pastry pin or rolling pin to roughly fit the dough to the pan, cover and allow to rest for an hour, using your hands begin fitting the dough to the pan (into the corners and up the sides) cover and set aside again for 30 to 45-minutes, give the dough one final fitting to the pan and it should be ready to dress and bake.

Tom Lehmann/The Dough Doctor

2200

### **Dough Clinic / Re: Sheet pizzas**

Yes it is, after stretching and fitting the dough for the last time you will need to experiment with how long to proof the pizza to get the desired finished crust characteristics. Some will go as long as 90-minutes while others as short as 30-minutes. In this case you will need to proof in 20-minute increments and take to the cooler (uncovered) for 45-minutes, then wrap or bag for storage. On the following day pull all of the pizzas for baking. Be sure to allow them to warm to 55-60F before dressing. So...you will be baking pizzas that were proofed for 20, 40, 60, and 80-minutes prior to being placed in the cooler. After baking pick the one that you like best and note the length of time it was proofed prior to being placed in the cooler. Problem solved. :)

Tom Lehmann/The Dough Doctor

2199

### **Neapolitan Style / Re: Good Results with Biga - Question about Olive toppings**

I always use pitted olives and slice. As for onions I mostly use raw onions.

Tom Lehmann/The Dough Doctor

2198

### **Dough Ingredients / Re: Need help!!!! Bakers percentage**

This is happening because you are not accounting for the high absorption of the barley flour. If you will go back through previous discussions on whole wheat flour you will find where I've written about how to determine the absorption of non-wheat as well as whole-wheat flours which absorb water so the dough looks normal at first but with time the "other" flour hydrates thus exhibiting a severe drying effect upon the dough making it hard/firm and difficult to work with

and if you were to make a pizza from it disappointment would reign supreme.  
Tom Lehmann/The Dough Doctor  
2197

### **Dough Ingredients / Re: Need help!!!! Bakers percentage**

You will use about 60% absorption for the white flour portion and whatever absorption that is indicated for the barley flour, that will be your total dough absorption.

The test that you need to do will be done only on the barley flour as we need to know what its absorption is before we can make a dough using it, especially at 50% of the total flour.

Tom Lehmann/The Dough Doctor  
2196

### **Dough Clinic / Re: Refrigerate first or later?**

Also need to know what the finished dough temperature is.

Tom Lehmann/The Dough Doctor  
2195

### **Dough Clinic / Re: White crust**

Josh;

In this vein the test where you pull one dough ball for baking after 24-hours and the other one after 48-hours would provide some direction.

Tom Lehmann/The Dough Doctor  
2194

### **Dough Clinic / Re: Refrigerate first or later?**

So your dough is coming off of the mixer at 82F/28C.

If you were to ferment the dough for 24-hours at room temperature 77F/25C and then ball it for 24-hours fermentation in the fridge 2 - 3C/35.6 - 37.4F There would be little benefit from the cold fermentation as the dough would be so gassy as to insulate the core from much of a temperature change during the cold fermentation period. In my opinion, it sounds exotic but in reality it's an exercise in futility. In addition, with the RT fermentation coming first any change in finished dough temperature will create a significant change in the amount of fermentation the dough receives during that first 24-hours. Over the long haul you will experience quite a bit of variability in fermentation which can result in unexplained differences in the finished crust or the way it (the dough) handles.

Putting the dough in the fridge first for 24-hours CF and then giving it an additional 24-hours RT fermentation would provide greater overall consistency in the amount of fermentation the dough receives and since the dough wants to increase in temperature (dough increases in temperature due to heat of metabolism as the yeast ferments at the rate of about 1F per hour) it will take about 4 to 5-hours for the dough to fully warm to room temperature, depending upon dough size and the container, so you could figure on the dough ACTUALLY receiving close to 30-hours of CF with the remainder being RT fermentation.

With the potential for inconsistencies in fermentation by the first procedure (RF followed by CF) and more overall fermentation I would think that the first process would give you a dough with potentially more extensibility and a finished crust with more of a fermentation flavor, ALL THINGS EQUAL, than dough made by the second procedure (CF then RF) which would exhibit much better overall dough consistency though less fermentation flavor due to the initial inhibition of fermentation by placing it in the fridge right after mixing and allowing it to slowly

warm back to room temperature for the remainder of the fermentation period. While it is true that a different flavor profile is achieved under cold fermentation conditions than at room temperature fermentation I find it highly unlikely that one would find the difference significant in application (fully dressed and baked pizza) under the conditions you have prescribed.

Tom Lehmann/The Dough Doctor  
2193

### **Dough Clinic / Re: Refrigerate first or later?**

Fermentation flavor is a very complex thing, it is the result of the byproducts of fermentation at work on flour proteins as well as their residuals (mostly different acids/acetic, lactic and propionic) and a little alcohol too, but like the carbon dioxide most of it is long gone due to the baking process. Some people call it a "yeasty" flavor but this is incorrect as yeast actually has a musty taste (like old wet news papers), the taste/flavor they are actually referring to is the taste and flavor resulting from fermentation. Since acids are the main residual byproduct of fermentation this is why as fermentation progresses the flavor of the baked product may become slightly more acidic which has a good/bad influence on flavor. Like I said, it's a very complex thing, most people like it in moderation, some don't like it at all, and some can't get enough of it we used to call those people "sourdoughs" in reference to their affinity to well fermented and/or sourdough products which are characterized by their pronounced acidic taste. By the way, there is a difference in taste, aroma and flavor. Taste is based just on the taste buds (coffee for example has a pronounced bitter taste), aroma is sensed only by smell and flavor is the combination of aroma and taste....look what happens to coffee when you combine aroma and taste, you get what we all relate to as "coffee".

Tom Lehmann/The Dough Doctor  
2192

### **Dough Clinic / Re: White crust**

Properly cold fermented dough balls will slowly become gassy and continue to grow in size maintaining something of a round shape but more flat than the ball it was when it went into the fridge. I can't speak for cold fermenting dough as to what it should look like because we typically don't use dough boxes lie we do in commercial/pizzeria practice. In commercial practice the dough balls should not more than Just "kiss" or at the very most come together about 1-inch by the last day of use. If they do more than that the dough either needs to be cross-stacked longer or the targeted finished dough temperature needs to be lowered. Cold fermented dough in the fridge will not feel soft and supple as warm fermented dough will because the temperature causes the dough to become firm, this is why it's easier to open the dough ball into a skin if you allow it to warm to 50 - 55F before opening.

If you go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and click on the option to learn how to make dough one of the first photographs you will see is a properly cold fermented dough ball being removed from the dough box, it actually gives you a pretty good idea of what a properly cold fermented dough should look like even for the home pizza maker.

Tom Lehmann/The Dough Doctor  
2191

### **Dough Clinic / Re: White crust**

When we use the commercial dough boxes the dough balls are usually placed about 4-inches apart, in some cases maybe a little less depending upon the dough

formulation and projected holding time.

Tom Lehmann/The Dough Doctor

2190

### **Dough Ingredients / Re: Need help!!!! Bakers percentage**

Kinda salty I would think, not to mention its impact upon fermentation.

Tom Lehmann/The Dough Doctor

2189

### **General Pizza Making / Re: EVO Before Pizza Sauce**

There is a very decided advantage to applying a very light application of oil as a moisture barrier between the sauce and the crust when using par-baked crusts. Your sauce, and vegetable toppings are all roughly 90% water and are just looking for an excuse to water out during the baking process. The sauce though is the worst contributor to moisture migration into the crust, if you want to see how bad it can be just place a portion of sauce on a china plate and let it stand for 15-minutes, if you see a water ring around the sauce that's the water that would potentially soak into the par-baked crust. The same can happen with raw dough but since raw dough has a higher moisture content than a par-baked crust the affinity isn't as great with the raw dough, but it can still happen. This is why it is usually recommended that the dough skin or par-baked crust be lightly brushed with oil prior to sauce application. Admittedly, the problem may not be as prevalent when making pizzas at home as it is when making pizzas in a commercial setting/pizzeria, this is because there is a greater potential for the pizzas to be pre-prepped at the pizzeria (which allows time for the moisture migration to take place) but even with home pizza making a lot of times we are pressed for time when making several pizzas so the pizzas might be pre-prepped thus setting the stage for moisture migration and the development of a "dreaded gum line" which also manifests itself as a limp pizza or a tough, chewy pizza, in any case, I've not seen anything good come to a pizza which has a gum line.

Tom Lehmann/The Dough Doctor

2188

### **Dough Clinic / Re: Milk in dough**

Jackitup is spot on, the good news is that the calcium in the milk helps to strengthen the gluten forming proteins in the flour and the lactose (milk sugar) content helps with the browning of the crust, like I said, that's the good news, the bad news is the amount of milk you're adding (liquid milk I assume) really doesn't contribute to either of these effects as the amount is much too low. To get any realized effect you need to have the liquid milk at about 40% of the total liquid ( $40\% \text{ liquid milk} + 60\% \text{ water} = 100\% \text{ of the total liquid added}$ ). Or if you use dry milk solids you can use 5% but remember to increase the dough absorption by 1% for each 1% milk solids added. Also keep in mind that lactose sugar is not metabolized by bakers yeast so it is not a source of food for the yeast to feed upon. Additionally, if using liquid milk it is a good idea to scald the milk before using it as this will help to improve its baking properties. Due to the cost of milk we really don't see much milk being used anymore, instead we use soy flour to replace the protein content of the milk and calcium sulfate to provide the calcium and whey to provide the lactose (whey solids are about 33% lactose, and because lactose is the least sweet of all the sugars there is essentially no sweetness associated with whey or lactose).

Tom Lehmann/The Dough Doctor

2187

## [\*\*Dough Clinic / Re: Milk in dough\*\*](#)

Whoa! Correction!

I see you are using 50% of 2% liquid milk. At that level you will see some improvement in the gluten film (drier and stronger) as well as a stronger crust color.

Sorry about that!

Tom Lehmann/The Dough Doctor

2186

## [\*\*Dough Clinic / Re: Ok, what's different\*\*](#)

The interaction between the byproducts of fermentation and the gluten forming proteins in the flour is what's responsible for the rheological properties of the dough (the way it stretches and handles in general), not fermentation in itself. This is why a short time dough can have a lot of fermentation but still exhibit a lot of dough memory. The dough that came from the pizzeria was, in all probability, cold fermented for 2-days or more which, if managed properly, would give the dough pretty decent handling properties. It's not so much the dough formulation that makes the difference, it's how they are put together and managed that makes the biggest difference. Like I used to tell my students, brick castles and brick prives are all made using the exact same ingredients, it's how you put them together that determines the finished product.

Tom Lehmann/The Dough Doctor

2185

## [\*\*Neapolitan Style / Re: Too much salt in dough\*\*](#)

Here is what I've done in the past when an error such as this was made at a pizzeria.

Make another dough but do NOT put any salt in the dough. Mix the dough just until comes together and forms a nice cohesive ball in the mixer. Remove the dough from the mixer and divide it in half. Now divide the dough with with 5% salt in half. Combine a half from each dough and mix until a smooth surface is achieved. Do this for the other two halves too. You will now have two doughs with, in your case, 2.5% salt in each. Freeze the surplus dough balls for use next week.

Tom Lehmann/The Dough Doctor

2184

## [\*\*Dough Clinic / Re: Why is my dough floppy\*\*](#)

Dpp83;

I think the first place for you to start is getting a scale that will weigh in grams. There are a lot of them available on the Internet priced very reasonably at around \$20.00. This will allow you to actually weigh each of your ingredients for much improved accuracy and consistency. If I'm reading your post correctly it appears that you are adding 100 ml. olive oil to 500-grams of flour weight which is 20% olive oil (much more than what is typically used in making thin crust pizzas, 0 to 4% might be considered to be a more "normal" range for oil in a thin crust pizza dough formula). The dough formula is only a part of the crispy crust equation, the other part is how you manage the dough and then how the pizza is baked.

To get you started, here is a well proven dough formula and procedure. Once you have master this one you can begin to make calculated changes or try other formulas and/or dough management procedures.

Flour (Pillsbury Bread Flour) 100%: 500-grams.

Salt: 2%: 10-grams.

Sugar: 2%: 10-grams.

IDY (instant dry yeast) 0.4%: 2-grams.

Water: 62% (65F): 310-grams.

Olive oil: 2%: 10-grams.

You don't say how you mix your dough so for now I'll ASSUME you are using a mechanical mixer.

Put the water in the bowl first, then add the salt and sugar followed by the flour and the IDY.

Mix at low speed just until the dough begins to come together then add the oil.

Mix again at low speed to incorporate the oil then mix at a higher speed to develop the dough, this should take 5 to 8-minutes. The time is not critical for now.

Check the finished dough temperature, ideally it should be 75 to 80F.

Take the dough directly to your counter top, remove it from the bowl, lightly flour it and begin scaling 300-gram pieces, this will make 12-inch diameter pizzas.

Form each piece into a ball and lightly oil each ball.

Place each ball into individual plastic bags (like bread bags) NOT ZIP-LOCK BAGS.

You can buy very economical food storage bags from the supermarket that will work very well for this.

To close the bag, pull the bag close to the dough ball, twist the open end of the bag into a pony tail and tuck the pony tail under the dough ball as you place it intro the fridge.

Allow the dough balls to remain in the fridge for at least 24-hours before using. They can go as long as 72-hours. The dough will probably be at its prime after 48-hours.

To use the dough remove from the fridge and allow to set AT room temperature until the dough ball reaches 50 to 60F internal temperature. Depending upon room temperature this will take about 2-hours +/-.

Turn the dough out of the bag by rolling the bag down around the dough ball, and inverting the bag over a floured surface allowing the dough ball to invert the bag as it falls from the bag.

Flour the dough ball and open into a pizza skin for immediate use.

Bake your pizzas on a stone or steel or a screen in a hot 450 to 550F oven. In a rack position about 2/3 of the way up (you will most likely need to experiment to see where the pizzas bake best in your specific oven).

Tom Lehmann/The Dough Doctor

This is really easy to do and once you get the hang of it you will enjoy experimenting with different dough formulas, dough management procedures as

well as pizza styles.

2183

### **General Pizza Making / Re: Some Unanswered Questions**

The thing to remember about water is that it's the temperature of the water that is used to adjust the finished dough temperature. For many of us we are looking for a finished dough temperature someplace in the 70 to 85F range, for me I like to target 70 to 75F. A simple method for determining the water temperature is to use 145 minus the flour temperature with the difference being the water temperature.

Tom Lehmann/The Dough Doctor

2182

### **General Pizza Making / Re: Some Unanswered Questions**

Any type of a dial AKA stem type thermometer will work. If it's electronic that's fine, if it isn't, try to get one with a hex nut under the head. This is the calibration nut, by holding the head firmly and turning the nut you can easily calibrate the thermometer. Best way to calibrate is to use an oral thermometer (designed to be most accurate at 98.6F) in a cup of water at a temperature that will read on the oral thermometer, place the stem of your thermometer next to the oral thermometer and allow time for the needle to stop moving, compare the temperatures and calibrate the stem thermometer if necessary.

Tom Lehmann/The Dough Doctor

2181

### **Dough Clinic / Re: Dough balls have rips in them??**

The problem you're experiencing is due to insufficient gluten development. In your case I think it might be due to less than ideal biochemical gluten development caused by improper use of ADY complicated by a cooler than what might be desired finished dough temperature.

Doing the easy things first, try suspending the ADY in a SMALL portion of warm (100F/use a thermometer) and letting it stand for 10-minutes to activate, then add it to the cool (measure the temperature) water. I would start with 70 to 75F water temperature and target as finished dough temperature (after kneading) of 80 to 85F. Then proceed as you normally do.

Suggestion: After the dough has been in the fridge for 2 to 3-hours divide it to make your dough balls, lightly oil each dough ball and place back into the fridge for the remainder of the CF period. When ready to use remove from fridge, allow to warm AT room temperature until the dough reaches 50 to 60F, then turn the dough ball out of its container onto a flour dusted surface and open into a skin for immediate use.

Let us know how this works for you.

Tom Lehmann/The Dough Doctor

2180

### **Dough Clinic / Re: Soft wheat vs. Hard wheat**

It's actually not the significance of hard v/s soft wheat it's just the fact that the "00" flour is not malted or treated with amylase enzymes.

Tom Lehmann/The Dough Doctor

2179

### **New York Style / Re: Making pizza at home, thin crust NY style**

Sure, here's a formula and procedure to work with.

Flour: 100% 500-grams.

Salt: 2% 10-grams.

Sugar: 2% (optional) 10-grams.

Oil: 2% 10-grams.

IDY: (instant dry yeast) 0.375% 1.875-grams

Water: (65F) 62% (variable) 310-grams.

Put water in mixing bowl.

Add salt and sugar (if used) no need to stir.

Add the flour, then add the IDY right on top of the flour.

Mix at low speed just until all of the ingredients are incorporated and no dry flour is seen in the bowl.

Add the oil.

Mix at low speed for 1-minutes.

Mix at the highest speed possible without stressing your mixer for 8 to 10-minutes or just until the dough is smooth. Check the finished dough temperature, you are looking for a targeted temperature of 75 to 80F.

Remove dough from mixer and place on floured surface, divide into 300-gram dough pieces.

Round each piece into a ball and lightly oil.

Place each ball into individual plastic bags (food bags or bread bags) NOT Zip-Lock Bags.

Twist the open end into a pony tail and tuck under the dough ball as you place it in the fridge.

Cold ferment the dough for at least 24-hours (48-is better) and you can go as long as 72 to 96-hours.

To use, remove dough from fridge, allow to temper AT room temperature for about 2-hours or until the dough ball reaches 50 to 60F.

Roll bag down around the dough ball and invert over a floured surface, flour the dough piece and open into a skin to 12-inches for immediate dressing and baking.

Bake preferably on a stone or steel at 550F or hotter. If you don't have either, a seasoned screen will do in a pinch until you can get one.

Note: Any unused dough balls can be placed in the freezer not more than 48-hours after the dough is made. The frozen dough will keep for about 10-days in the freezer. To use the frozen dough transfer the frozen dough ball from the bag to a suitably sized bowl that has been lightly oiled, cover with a lid or stretch wrap, place in the fridge for 24-hours to slack-out (thaw), turn out of the bowl directly from the fridge onto a floured surface and partially open the skin to about 8-inches, cover and allow to rest for 20-minutes, then finish opening to 12-inches for immediate use.

Tom Lehmann/The Dough Doctor  
2178

### **Neapolitan Style / Re: Olive Oil Pre-Bake or Post-Bake**

I think a lot has to do with preference. To me, adding EVOO to the dough is a waste of a great product since many of the aromatics are lost during the baking process but by putting the oil on post bake (immediately after removing the pizza from the oven) allows the heat of the pizza to "pop" / release the aromatics from the EVOO giving the pizza a wonderful aroma as well as taste.

Tom Lehmann/The Dough Doctor  
2177

### **Dough Clinic / Re: Ok Tom... what gives??**

QJ:

Based on all of the things that you've mentioned, it appears that indeed there might be a common denominator. Finished dough temperature (now lower with your new spiral mixer) would prove to be a reasonable explanation. As for the difference in mixing action between a planetary mixer and a spiral mixer, the planetary mixer with a dough hook develops the gluten by driving the hook into the dough and pulling it slightly from the side of the bowl while the spiral mixer develops the gluten using a true stretching and pulling action, sound familiar? That's the same action exerted on a dough when it is kneaded. This action exposes a greater dough surface to the air for better oxidation of the gluten forming bonds resulting in a stronger and drier feeling dough, it also works to help align the gluten for a smoother dough feel (this is just like giving the dough a little kneading after it has been machine mixed). At the same time a spiral mixer tends to mix the entire dough, regardless of size, all the same while a planetary mixer tends to mix different size doughs somewhat differently, especially where large size doughs are employed. The one exception to this appears to be the new HL-Series of Hobart planetary mixers, with these mixers we still see a difference with smaller size doughs but when you get into the larger size doughs for the bowl capacity there doesn't seem to be as much, if any difference between say a half size dough and a full capacity sized dough.

I'm glad to hear that you and your crew are seeing the benefits of your new spiral mixer, now if they could just figure out a way to make sauce in them? :)

Tom Lehmann/The Dough Doctor  
2176

### [\*\*Pizza News / Re: The most popular frozen food in every state\*\*](#)

Oregon has at least three major pizza or pizza crust manufacturers that I can think of. That says quite a bit about both Oregon and pizza considering where/how the state is located in regards to major metropolitan areas. We only have one here in Kansas, Schwan's Foods but their distribution is a full 360 degrees. They even truck their pizzas all the way to Pennsylvania and back-haul with a load of pepperoni.

Tom Lehmann/The Dough Doctor  
2175

### [\*\*Resources / Re: Help finding good cheese retail\*\*](#)

Have you looked at Provolone cheese? Similar to mozzarella but with a higher fat content. When we did our pizza seminars one of the cheese blends that we used was a mozzarella - provolone blend (75/25).

Tom Lehmann/The Dough Doctor  
2174

### [\*\*Dough Clinic / Re: Soft wheat vs. Hard wheat\*\*](#)

Actually, you're posing two different questions, the difference between the performance characteristics of a hard wheat flour and a soft wheat flour as well as the difference in performance due to protein content.

Hard wheat flour v/s soft wheat flour: A lot of the performance characteristics will depend upon the varieties of wheat making up the grist that is being milled but in general, the gluten structure obtained with a hard wheat flour will be stronger than that from a soft wheat flour, think softer, more extensible doughs with soft wheat flour. Additionally, soft wheat flour typically do not have the fermentation tolerance exhibited by hard wheat flours as they tend to show more of the effects of fermentation, especially when longer fermentation times are employed. Some of the "00" flours reflect this difference by stating that specific "00" flour types are

designed for long or short fermentation doughs, and they are correct, if you give a short fermentation designated flour a long fermentation time the dough can get pretty soft and extensible, probably more than what many people would care to work with.

As to the difference in protein content, in this case you have to compare the protein content only from hard wheat varieties, work that I did back in the 80's clearly showed that doughs were equally as strong when made using flours of the same protein content whether the flour was milled from a hard red spring wheat grist or a hard red winter wheat grist. We found this to be true over a wide range of protein levels. In our view at the time these results totally debunked the premiums paid on spring wheat over winter wheat at the time, kinda irritated the branch of the U.S. Government responsible for the export of U.S. wheat at the time.

Tom Lehmann/The Dough Doctor  
2173

### [\*\*Dough Clinic / Re: Why is my dough floppy\*\*](#)

I always enjoy hearing how others make their pizzas. :chef:

Tom Lehmann/The Dough Doctor  
2172

### [\*\*Resources / Re: High Gluten Flour\*\*](#)

While there is no standard of identity or specification for "hi gluten flour" most would generally consider any white flour in the 12 to 14% range as "hi gluten"

Tom Lehmann/The Dough Doctor  
2171

### [\*\*Dough Clinic / Re: Ok Tom... what gives??\*\*](#)

I wish I had an answer to that question, but I don't. There are many more different designs of home dough mixers than there are commercial mixers and as you have heard me say many times before about ovens, "Every oven is a law unto itself and only itself", the same might be said for home mixers too. When it comes to commercial size mixers it seems that the manufacturers are more interested in duplicating a design as opposed to improving upon a design, where as with home mixers there seems to be more emphasis on improving a design. With the increase in home baking over the past few years there seems to be a trend towards better (more powerful and better mixing action) home mixers and I'm really glad to see an increase in interest in spiral design mixers for home use.

Tom Lehmann/The Dough Doctor  
2170

### [\*\*General Pizza Making / Re: Some Unanswered Questions\*\*](#)

Your question on the different forms of yeast;

The amount of water that you suspended the yeast in will have an impact upon what you see on the surface. A good amount of water would be about 5X the weight of yeast , with more water you should still see a few bubbles but not a "foam" forming over the surface of the water.

IDY should be suspended/activated in 95F water while ADY 100 to 105F is better. For suspending CY 100F water is recommended. If you are experiencing an initial slow yeast fermentation rate it is probably not due to the mineral content of the water unless you have sulfur water but instead the pH (acidity) of the water can/will have a dramatic impact upon how the yeast ferments initially. High pH (above 7.5) water can slow yeast activity until acids are formed through fermentation at which point the fermentation rate will gradually increase. Slightly

acid water (below pH 7.0) is good for the yeast as yeast performs well in a moderately acid environment. It's easy to measure the pH of your water using litmus strips available from a pharmacy or pool supply outlet.

On a personal note: We are also on our own private well (120-feet deep) with great water but we also have a lot of limestone here and that is reflected in our water pH of 7.8. In other wells I've seen it as high as 8.2. Not a big deal, I just replace 2% of my dough water with white vinegar and everything is good. If this were a pizzeria I'd opt to use 0.25% (based on flour weight) MCP (mono calcium phosphate) instead.

We have discussed this in posts about water previously and I wrote an article on the topic some time back.

Tom Lehmann/The Dough Doctor  
2169

### [\*\*Dough Clinic / Re: Ok Tom... what gives??\*\*](#)

Change the bench kneading time to something closer to 20-minutes and the answer is yes. A planetary mixer can mix a dough as well as a spiral mixer in many cases (if the planetary mixer isn't too old and tired) but if can only do so with a specific amount of dough in the bowl too much or too little dough and it doesn't get mixed as well as it should as the dough either grabs onto the hook and receives little mixing action or it either climbs up the hook or gets forced to the top of the bowl where the dough doesn't get the contact needed with the hook for proper mixing action. The spiral mixers handle doughs of different sizes quite well with very consistent mixing results across all reasonable dough sizes.

Tom Lehmann/The Dough Doctor  
2168

### [\*\*Dough Clinic / Re: WFO \(Ooni Pro\) temp and time for NY Style?\*\*](#)

Philia36;  
Ira is spot-on. Look for a temperature of around 800F or a bit more for a true N.Y. presentation.

Tom Lehmann/The Dough Doctor  
2167

### [\*\*Neapolitan Style / Re: Flour after initial mix and effect on hydration %\*\*](#)

Yes it does, for every ounce of flour that is incorporated into the dough it's like reducing the amount of water in the dough by about 1/2-ounce BUT most of the flour you see being brandished about really isn't incorporated into the dough so the impact really isn't all that great.

Tom Lehmann/The Dough Doctor  
2166

### [\*\*General Pizza Making / Re: Pizza toppings\*\*](#)

Maybe too much cheese?  
Tom Lehmann/The Dough Doctor  
2165

### [\*\*Newbie Topics / Re: What does CY stand for?\*\*](#)

C.Y. = compressed yeast/cake yeast/fresh yeast/brick yeast/block yeast/baker's yeast/wet yeast and more recently crumbled yeast which is the same as all of the other except it is sold in crumbled form (only in 50# bags). C.Y. is the same as all of the above, they are just referenced by different names.

Tom Lehmann/The Dough Doctor

2164

### **Neapolitan Style / Re: Saf-Instant Yeast**

Actually, there is no such thing as "instant compressed yeast". There is instant dry yeast (IDY) and compressed yeast which goes by a bunch of other names too (see my post in the question on C.Y.). To reconfirm, yes, SAF, IDY is the same as "IDY" the SAF part just references the manufacturer of the IDY.

Tom Lehmann/The Dough Doctor

2163

### **Neapolitan Style / Re: Saf-Instant Yeast**

When IDY made its first appearance here in the U.S. back in the 60's people would return the packages thinking that they were bad because they were so hard.

Actually, it's the soft packages that are bad as the vacuum seal has been compromised on those packages.

By the way, there is no such thing as a silly or ridiculous question, but there is such a thing as someone who is too silly to ask a question.

Tom Lehmann/The Dough Doctor

2162

### **Dough Clinic / Re: Please recommend how much AT flour for 16" thin crust, small rim, NY pizza**

If you're scaling up from 12-inch to 16-inch the surface area of a 12-inch circle is 113-square inches and the surface area of a 16-inch circle is 201-square inches (those numbers are rounded off). The difference being 88-square inches so if we divide 88 by 113 = 77.876 (78) we see that a 16-inch pizza is 78% larger than a 12-inch pizza so all things equal a good place to start is to scale your dough ball weights 78% heavier than you do for the 12-inch format. Ditto for cheese and sauce. While not 100% accurate this will get you very close to where you want to be.

Tom Lehmann/The Dough Doctor

2161

### **Newbie Topics / Re: Help keeping my toppings on**

The most common cause of this is due to using too much sauce. Try making a pizza with minimal sauce, if that works out better you know what the issue is, then you can begin to increase the amount of sauce until you find a happy compromise.

Tom Lehmann/The Dough Doctor

2160

### **General Pizza Making / Re: Pizza toppings**

If your crust isn't browning sufficiently with the reduced bake time try adding some or more sugar the the dough formulation to promote crust browning.

Ever have a Papa Murphy's pizza? 5% sugar. Can't say I like their sweet tasting crust but that's how they get their crusts to brown consistently in home ovens. If I was on their development team I would have used whey instead of sugar to promote crust color development, whey is roughly 70% lactose (milk sugar), it's a reducing sugar so it browns quite nicely, it is non-fermentable by baker's yeast so the amount doesn't change with the age of the dough and best of all, it's the least sweet of all the sugars so it doesn't impart sweetness to the finished crust flavor profile. Typical use levels are 8 to 12%.

Tom Lehmann/The Dough Doctor

2159

## [\*\*Newbie Topics / Re: Yeast Amounts & Fermentation Times - please help\*\*](#)

If you are converting from CY to ADY you use only half as much ADY as CY. But don't forget to hydrate/activate the ADY in 100F water before adding it to your dough.

Tom Lehmann/The Dough Doctor  
2158

## [\*\*Dough Clinic / Re: Crunchy Dough\*\*](#)

I'm assuming you mean crust and not dough as crunchy dough is wwaayy different from a crunchy crust. You have my curiosity up when you mention differences in stone and oven temperature...this is not common for a commercial oven. As for the handling properties of the dough when you open it, are you allowing the cold dough balls to warm to 50 to 60F (50F is the most commonly used temperature for use in a pizzeria) before you begin opening them into skins?

Tom Lehmann/The Dough Doctor  
2157

## [\*\*Dough Clinic / Re: Yesterday's dough as starter\*\*](#)

Pretty much so. It's an old method of leavening the dough but it does have its limitations since yeast doesn't multiply/divide under normal dough conditions you are adding less and less yeast every time you do it so fermentation times need to be progressively longer with each use. This is different from a true starter which is based on bacteria (lactobacillus/lactic acid forming bacteria) propagation in addition to yeast cells which are present in the air.

Tom Lehmann/The Dough Doctor  
2156

## [\*\*Dough Clinic / Re: When the right fermentation turns wrong\*\*](#)

Since you have a preference for the flavor imparted by CF (as I do also) why not just go straight to balling after mixing and dispense with the RT part? This will allow you to control the fermentation a bit better through manipulation of the finished dough temperature but more importantly it will allow the dough balls to cool down more efficiently allowing the refrigerated temperature to effectively slow the rate of fermentation. With the RT phase first you are balling a gassy dough which is a much better insulator than the dough right after mixing, combined with the heat of metabolism your dough most likely isn't cooling off sufficiently to provide you with the CF time you are targeting before becoming over fermented.

Tom Lehmann/The Dough Doctor  
2155

## [\*\*Dough Clinic / Re: Crunchy Dough\*\*](#)

Is there not a heating element on the bottom of the oven too? If your oven only has a top element you might not have a "pizza" oven but instead a "baker's" oven which is significantly different. Also, 4 to 5-minutes baking time in a deck oven is pretty short as most deck oven bake a pizza in the 6 to 7-minute range for a single pizza and then when loaded the time jumps to around the 9 to 11-minute mark.

Tom Lehmann/The Dough Doctor  
2154

## [\*\*Dough Clinic / Re: Anyone actually par bake with a dough presser?\*\*](#)

The DoiughXPress like the DooughPro press and all other hot presses, DOES NOT create a par-baked crust in any way, shape or form. Anyone who tries to tell you

that it does doesn't know what they're talking about. The hot press heats the dough to both relax it for ease of forming under the press head and to help it retain its shape after press forming. If the heat is applied to both sides of the skin during forming like it is with the Little Toro hot press from AM-Manufacturing the heat creates a dry skin on the surface of the crust which allows it to be placed directly onto a belt/conveyor for further proofing prior to further processing such as dressing and or baking or even freezing.

Tom Lehmann/The Dough Doctor

2153

### **Dough Clinic / Re: Crunchy Dough**

That is correct, you can indeed adjust the crust color of your pizzas by adjusting the amount of sugar used in the dough formulation, sometimes when we have an uncooperative oven we can improve upon the bake a bit by adjusting the sugar level up or down a little. An infrared thermometer is an excellent idea for measuring the deck temperature and setting your oven up don't worry about what the thermostat or whatever says, go by the readout from the IR thermometer.

Tom Lehmann/The Dough Doctor

2152

### **Dough Clinic / Re: Anyone actually par bake with a dough presser?**

It's kinda hard to use the term "par-bake" incorrectly. Like you, I've heard these types of claims before but they were made many years ago back before most people really understood what hot pressing was all about. I launched a huge campaign to educate people on hot pressing of pizza crusts more than 30-years ago and to dispel the false belief that hot pressing actually par-baked the dough/crust at the same time as forming. I guess I missed a few people. Your beliefs are spot-on and if you ever find any validation to a hot pressed crust being par-baked as it is being formed please let me know. During the hot press forming of the dough into a skin only the outer surface area of the dough get hot, not the center section (which is still raw). In order for a dough/crust to be par-baked it must reach a minimum internal temperature of 180F but most will target 185 or even 190F to ensure the crust is thoroughly baked (par-baked means that the product is fully baked BUT without the development of crust color or minimal crust color).

Your instincts are good! :)

Tom Lehmann/The Dough Doctor

2151

### **Newbie Topics / Re: Problem making cheese first pizza**

When putting the cheese right on top of the dough I never use shredded, instead I like to use sliced. Being from Chicago that's an old habit that's hard to break away from.

Tom Lehmann/The Dough Doctor

2150

### **Newbie Topics / Re: Help keeping my toppings on**

To me that looks like a lot of sauce.

Tom Lehmann/The Dough Doctor

2149

### **General Pizza Making / Re: Crust gets dense after frig leftover**

As the crumb structure cools it shrinks (becomes tighter) and then as moisture migrates out of the more moist crumb section to the less moist crust portion it

shrinks even more. You even see this with bread where you see the entire loaf shrinking. The shrinkage is so pronounced that when measuring the volume of a loaf of bread using the rape seed volume displacement method you have to measure the volume of all loaves being measured at precisely the same time, otherwise waiting an extra 5-minutes will produce a smaller loaf due to the shrinkage.

Tom Lehmann/The Dough Doctor  
2148

### [\*\*Newbie Topics / Re: Stones/tiles/steel, Pans & Accessories / Re: Pizza Pans\*\*](#)

The biggest problem with pans in deck or stone ovens is that of the bottom getting too dark before the rest of the pizza is finished baking. This is easily addressed by placing a pizza screen under the pan.

Tom Lehmann/The Dough Doctor  
2147

### [\*\*Newbie Topics / Re: Problem making cheese first pizza\*\*](#)

The dough that you are using might be a commercially frozen dough which means that it has not received any fermentation what so ever. Try slackening the dough out in a lightly oiled bowl in the fridge for 12-hours, then bring out to room temperature for 1-hour and place back into the fridge for 24 to 48-hours. We developed this procedure for pizzerias using frozen dough balls and it works quite well.

Note: Dough that is insufficiently fermented has a propensity to bubble.

Tom Lehmann/The Dough Doctor  
2146

### [\*\*General Pizza Making / Re: Crust gets dense after frig leftover\*\*](#)

The sugar helps to keep the moisture in place and the fat helps to slow its rate of migration. This is one reason why you don't see cakes shrinking like breads and rolls.....high levels of fat and sugar.....two important food groups. :-D

Tom Lehmann/The Dough Doctor  
2145

### [\*\*Newbie Topics / Re: Problem making cheese first pizza\*\*](#)

Sauce is roughly 90% water, as the water evaporates from the sauce it cools the top of the pizza keeping it from baking/setting as fast as the remainder of the pizza this is what prevents the bubbling of the pizza and it also helps to form a thinner top crust. We try to make it a practice to put half of the sauce on a skin before we par-bake it for this very reason.

Tom Lehmann/The Dough Doctor  
2144

### [\*\*Newbie Topics / Re: Some newbie questions\*\*](#)

I think you're wasting your time by pre-heating a pizza tray/pan as the metal won't hold enough heat to make much of a difference. Next time try just putting the skin directly onto your lightly oiled tray, then dressing it and placing it in your oven about 1/3 of the way up from the bottom, after about 7-minutes move it to a high position being sure to spin it 180 degrees as you place it onto the higher rack position.

To address the light crust condition you might need to include some sugar in the dough formula, 2% would be a good place to start at. My home oven also has a top broiler coil so I turn it on when I get ready to move the pizza to the higher rack

position.

Tom Lehmann/The Dough Doctor  
2143

### **New Forum Members / Re: yung dad looking for pizza connections**

And don't forget to get them involved in the pizza making process, there's nothing better than knowing that you made the pizza and now you're about to enjoy eating it, and your kids will love you for the fact that you got them involved with making pizza and hopefully carry on the tradition. :)

Tom Lehmann/The Dough Doctor  
2142

### **Newbie Topics / Re: Dough Recommendations - Two Scenarios**

The dough absorption and the yeast levels are not fixed, they are to a great extent variable depending upon how the dough is being managed and to some extent the skill set for the pizza maker with lower absorption levels being easier for the beginner/novice to handle, then once mastered they can experiment with higher absorption levels. Point is, use whatever works best for you in your specific case. That said, 0.375% IDY and 62% absorption is usually a pretty good starting point unless there are mitigating circumstances such as an unusually high or low absorption flour or a very high oil level in the dough formulation, or a fridge that doesn't hold temperature very well, or failure to follow good dough management practices which usually dictates a very low yeast level.

Tom Lehmann/The Dough Doctor  
2141

### **Dough Clinic / Re: vinegar in the dough**

Actually, vinegar isn't added to cakes to react with the baking powder, it is added to react with baking soda (big difference). Baking powder is a fully balanced leavening system, just add water and heat and it generates carbon dioxide as a leavening gas. Baking soda, on the other hand, will only make the cake more alkaline (too much will turn the fat in the cake into soap through a process called "saponification" resulting in a soapy flavor in the finished cake. When vinegar (dilute acetic acid) is added along with the soda they two quickly react to form carbon dioxide as a leavening gas. The only reason for adding vinegar or any acid to a cake batter with a fully balanced leavening system is to adjust the finished pH of the cake, making it more acid which is common in white cake and angel food cake as it produces a brighter, whiter crumb color. Soda, on the other hand is commonly added to chocolate cake as it makes the crumb darker and intensifies the chocolate flavor (dutched process cocoa is just cocoa treated with an alkali to make it darker and more flavorful).

Now to pizza dough. The reason for adding vinegar to pizza dough or any yeast leavened dough, is to acidify the dough slightly, thus helping to "jump-start" the yeast with fermentation. Since acetic acid is one of the acids formed during fermentation it will also help to lower the pH of the finished crust but not much below pH 4.2 (sourdough has a pH of 3.8 or a little lower), so its impact upon the finished flavor is marginal at best if the dough is already being properly fermented, where there is some benefit is in doughs that are fermented for only short times, in this case the lower dough pH will help to speed up the rate of fermentation and give a lower finished crust pH for a slight flavor improvement over a short time fermented dough without added vinegar. How much vinegar is added? Typically 2% of a 50-grain strength vinegar is used, be sure to remove 2% water when adding 2% vinegar.

Tom Lehmann/The Dough Doctor  
2140

**[General Pizza Making / Re: Should I sand my metal peel?](#)**

Why would you want to sand a metal peel? If you have a lot of "gunk" on it and you want it to look pretty just soak it in hot water (no soap) and go at it with a scrubbing pad. A wood peel can be sanded with very fine (600-grit) sand paper to remove any roughness and improve release properties but a metal peel is best relegated to removing the pizzas from the oven. In all of my 50+ years working with pizza I only found it necessary to sand my metal peels on the leading edge if they got beat up by slamming them into the back of the oven, I don't think I ever had to sand the entire peel, with that said, we did wash all of our oven peels at the end of each day so they stayed pretty clean.

Tom Lehmann/The Dough Doctor  
2139

**[Dough Clinic / Re: Steam in a pizza oven](#)**

The purpose for adding steam during the baking of crusty breads is to allow for greater oven spring during the first minutes of baking. We usually figure that the steam is most beneficial during the first 20% of the total baking time, after that the steam is vented from the oven and the bread is baked in a dry oven. In a way, pizzas are already baked with steam since the top of the pizza is cooled through evaporation of water from the sauce and toppings, this cools the air and this cooler air flows down around the pizza during baking (deck ovens and stone hearth ovens only). The addition of more steam might result in greater oven spring for an even larger raised edge, if that's what one is looking for but like I said, just for the first 20% of the baking cycle. Remember also that steam has a cooling effect upon the baking chamber so expect baking times to be a bit longer. Also, if the oven is not designed for steam application significant damage can result over time to the metal frame/superstructure of an oven if steam is used regularly. During baking the oven cavity is filled with acids released during baking (by products of fermentation/acetic, lactic and propionic acids), these acids are carried by the steam and when they contact something cooler condensation takes place, then the heat of the oven removes the water leaving behind concentrated acids which raise havoc on any carbon steel part of the oven, it's like a cancer, first you see the rust that wasn't there before then the rust does its work over time, and there is no acceptable way to really address the problem.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
2138

**[General Pizza Making / Re: The dough recipe on a Fleischmann's yeast packet](#)**

With exception to the low salt level it looks like a pretty good no-time dough formula.

Tom Lehmann/The Dough Doctor  
2137

**[Dough Clinic / Re: Low IDY = D.O.A.](#)**

With all things combined, cold dough temperature, low IDY and high salt I'm guessing that the yeast really wasn't able to do much so there would have been little to no biochemical gluten development. Maybe experiment with increased finished dough temps...shoot for 75F to see if that helps.

Tom Lehmann/The Dough Doctor  
2136

**[Dough Clinic / Re: 25kg bag questions](#)**

Frenchy2000;

This same question has been addressed a number of times so you might want to look through the archives here to get a bigger picture of what others do. My approach is to break the large bag down into smaller bags which I label and store in the freezer. When I'm ready to use the flour I remove a bag and allow it to warm back to ambient for at least 24-hours before opening the bag. Then you can use from the opened bag for a month or more. That which is stored in the freezer will remain good to use for a very long time, at least 10-years. I do not recommend storing flour for much more than a few weeks at room temperature unless you are fond of salt and pepper flour aka "buggy" flour. Additionally, once the flour has been frozen for a period of 30-days or more, not just in the freezer, but FROZEN, so consider 45-days in this case, it can be removed from the freezer and stored in an insect proof container for several months. This flour will not develop an insect infestation due to any intact insect eggs or larvae in the flour as the long term freezing will kill them but it is still prone to infestation from the outside, hence the insect proof containers. Now the only thing that will happen over the next few months will be natural oxidation of the flour. as close as we have been able to determine, this natural oxidation, over a 12-month period, is about the same as adding 15 to 20-ppm potassium bromate to the flour. This means that the flour will exhibit greater strength characteristics over time which may manifest itself by increased dough memory/snap-back and possibly greater oven spring characteristics. If you want to prevent the oxidation issue the only option you have is to keep the flour frozen until you're ready to use it.

Tom Lehmann/The Dough Doctor  
2135

**[Dough Clinic / Re: 25kg bag questions](#)**

As for baking results in a home baking environment you probably won't see too much difference BUT you might want to think about buying a cheap flour sifter as this will keep you informed of any unwanted infestation problem which potentially could crop up. Look for the little cigarette and confused flour beetles as well as Indian meal moth whose presence is identified by its web which results in what we see as clumping of the flour. Also look for any larvae that might be present. My advice to home bakers is to sift the flour after a month and turn the screenings (anything that didn't go through the sifting screen) onto a clean paper towel where you can inspect it for insect presence. If consuming a few bugs doesn't bother you disregard the above, they won't hurt you, just a little added protein in your diet.

Tom Lehmann/The Dough Doctor  
2134

**[Dough Ingredients / Re: Natural sugars in flour. Breaking down the Carbohydrates. How healthy is it?](#)**

That is absolutely correct. A number of years ago most white breads were made with 4 to 5% sugar added to the dough formulation which wasn't too bad since a good portion of the sugar was metabolized by the yeast but today we find that the sugar levels are increasing with some white breads containing up to 8% added sugar (sugar and fat sell) and if you think that's bad, think again, the popular whole-wheat breads quite often contain 10% or more added sugar to off-set the bitterness of the bran which is present from the whole-grain, and if you look at

some of the specialty (soft and sweet) breads the sugar level jumps to close to 20%. Kinda makes the worst pizza crust formulation look pretty tame. If one was to use little (not more than 2%) sugar or no sugar, and ferment the dough out to 2-days or more, use a sauce with no added sugar, go easy on the cheese and select the toppings carefully (vegetables, skinless chicken breast, fish, etc.) pizza, in moderation, really isn't all that bad. We did a study on a pizza made in this manner a good number of years ago and we found that a lightly cheesed (no other toppings) pizza had a similar caloric density to white bread, meaning that a 2-ounce slice of white bread provided about the same calorie contribution as a 2-ounce slice of the cheese pizza. When it comes to pizza, I used to say that it suffers from the potato chip syndrome: You can't eat just one (chip or 2" X 2" slice).  
Tom Lehmann/The Dough Doctor

2133

### [\*\*Dough Clinic / Re: 25kg bag questions\*\*](#)

Amen to that! ^^^

Remember the discussions we recently had concerning insect fragment counts in flour.

An interesting point: Figs, the flower of the fig tree is pollinated only by mites (fig mites), they cannot be separated from the figs during processing so fig mite fragments are present in fig past at a high count. This is allowed so long as they are "fragments" meaning that they have been processed and not introduced post processing of the fig. I happen to have a fond liking for Fig Newtons and when our kids were small I used to tell my wife and kids this story embellished with: "Now you know why Fig Newtons are kinds crunchy inside". Those Fig Newtons were ALL MINE from that point on. OK, truth is it was the fig seeds (like sesame seeds) that make it crunchy), none of them will eat Fig Newtons to this day.

Tom Lehmann/The Dough Doctor

2132

### [\*\*Dough Clinic / Re: Faux sourdough?\*\*](#)

With stout and bison who could ever resist it? :-D

And the pecans, well....that's just icing on the cake! :drool:

Tom Lehmann/The Dough Doctor

2131

### [\*\*Dough Clinic / Re: Low IDY = D.O.A.\*\*](#)

With a poolish you are also adding acids in addition to fermenting yeasts and bacteria so, depending upon the pH of the poolish it could very well be acidifying the dough which would result in accelerated fermentation due to the acidified dough.

A poolish, can impart a different flavor from a regular yeast leavened dough just like a liquid ferment (brew) produces a different finished flavor than a yeast leavened straight dough process. As for like or dislike, it all depends upon where your taste preferences lie.

Tom Lehmann/The Dough Doctor

2130

### [\*\*New York Style / Re: Making pizza at home, thin crust NY style\*\*](#)

Ditto.

All Trumps is the "go to" flour for New York style pizza, but in truth, any good bread flour will work well unless ya just gotta have all the chew possible, then go with All Trumps, for most though, they like to temper the "chew" factor down a bit

and use lower protein content bread type flours to accomplish this.  
Tom Lehmann/The Dough Doctor  
2129

**General Pizza Making / Re: Does container size matter**

Agreed.  
Tom Lehmann/The Dough Doctor  
2128

**New York Style / Re: Lamonica's Frozen Dough Ball**

So it's not really a whole-wheat dough it's just a "wheat-dough". By regulation, whole-wheat cannot contain any whiter flour. Unless the label reads "whole-wheat" the amount of white flour can be anything from 1 to 99% of the total flour weight. As the label shows whole-wheat flour first the amount of whole-wheat flour in this case should exceed the amount of white flour, but by how much?

Tom Lehmann/The Dough Doctor  
2127

**New York Style / Re: Making pizza at home, thin crust NY style**

I've found that some of my dough formulas end up sticking to the plastic bag if I don't lightly oil the dough ball, just like the dough balls always end up sticking to the bottom of the commercial dough boxes, hence the need for a scraper to remove them from the box. I really like the idea of the plastic containers...that's a pretty cool idea! Just make sure the dough doesn't expand too much.

Tom Lehmann/The Dough Doctor  
2126

**Dough Clinic / Re: WFO (Ooni Pro) temp and time for NY Style?**

62 to 66% depending upon how skilled you are at opening the dough balls into skins.

Tom Lehmann/The Dough Doctor  
2125

**Shop Talk / Re: Few questions before my shop opens**

Lots of things to cover there, please call me at 785-537-1037 as soon as possible and I'll be glad to answer your questions for you.

Tom Lehmann/The Dough Doctor  
2124

**Shop Talk / Re: Few questions before my shop opens**

Yes, that certainly puts a different slant on it :-D  
Tom Lehmann/The Dough Doctor  
2123

**Shop Talk / Re: Few questions before my shop opens**

Hillbillypizza;  
Weighing in on your questions;  
1) Don't cook it. If you do the sauce will lose flavor after being baked on the pizza. Additionally you will run the chance of scorching it which would destroy the flavor and once it is cooked you will then need to cool it back down to 40F or less for holding.  
2) You might want to consider using sheet pans and single bags to cover each sheet pan of dough balls. This is a widely used method for cold storage of the dough

balls. Make sure the bags are at least 8-inches longer than the pan which will allow the bottom of the bag to be folded up over the end row of dough balls and the top of the bag to be folded down over the end of the pan and tucked under the pan. In this application the pans are usually stored in a rack in the cooler. The bags can be reused a number of times, my suggestion is to use the bags for a full week and change out weekly.

3) Opening the dough balls using a rolling pin is fine for a thick crust, just be sure to open the dough to a diameter slightly larger than the pan itself as the dough will exhibit some memory as you place it into the pan. With this said, you will need to allow the formed dough to proof in the pan prior to baking. We normally like to proof for 45 to 75-minutes (you will need to experiment to see what time gives you the finished crust you're looking for). If you want a raised edge on the crust the time to form it is just prior to baking, do this by pulling some of the dough up onto the sides of the pan using your fingers (this will typically result in something of a Chicago pan style of raised edge). If you want to have a more rounded raised edge prepare the pan using a shortening (plastic fat) like the U.S. product Crisco. Using this in the pan will allow you to place the dough ball into the pan and press it out to fit the pan without the dough pulling away from the pan, this will allow you to form an edge at this time which will create a rounded edge on the finished/baked crust.

4) A par-baked crust does not need to be refrigerated, it can be stored at room temperature without any issues at all. Some find it easier to par-bake their crusts with 1/2 of the sauce applied to the skin prior to par-baking (helps to avoid bubbles), the remainder of the sauce is then applied when the crust is used to make a pizza. These par-baked crusts can also be stored at room temperature. I do not recommend carrying par-baked crusts over from one day to the next.

As to your question on slices, yes it will impact the overall quality of the presentation BUT if you refreshen the slice by adding a LITTLE fresh cheese to the slice at the time of reheating it can make a big difference in perceived quality. A quick spritz of EVOO onto the top of the slice as it goes into the oven can also make a big difference too.

5) Pre-cooked bacon bits, in my opinion, is the only way to go. As for toppings/mushrooms just make sure they are thinly sliced and don't overload the pizza with them and you'll be fine, we do it all the time.

6) Have you explored the Internet for ideas? Lots of them out there. One of my favorites is to use a commercially prepared Ranch Dressing to which I add dried dill weed or basil pesto. Or make your own Ranch Dressing and doctor it up. A plain old vinegar and oil with mustard also works well. This is a good opportunity to let your imagination run wild.

By the way, when I did pizzas in Korea I found that substituting small pieces of dried squid for the bacon bits was a very popular topping too. You might give some thought to a seafood pizza using Alrbedo sauce (no red sauce) then sprinkle with dried dill weed, add THIN SLICED seafood, garnish with fresh onion, and tomato slices. Top with a 1/2 application of a 50/50 shredded mozzarella and Parmesan cheese. Drizzle with EVOO as soon as it comes out of the oven.

Tom Lehmann/The Dough Doctor  
2122

### **Dough Clinic / Re: wet doughs**

I normally have a metal bench scraper in one hand too which I use to help lift the dough off of the bench, after a few stretch and folds the dough will begin to get sufficiently developed so as not to require the use of the bench scraper to help lift it. I learned this technique back in the late 50's when working for a small retail bakery and making Danish dough. Not a very high absorption dough but as it

contains up to 20% sugar it's super soft and sticky and all but impossible to handle any other way until you get a little gluten development and get the dough chilled.

Tom Lehmann/The Dough Doctor

2121

**[Dough Clinic / Re: wet doughs](#)**

75-years young!

I've seen a lot of water pass under my bridge.

Tom Lehmann/The Dough Doctor

2120

**[General Pizza Making / Re: Does oil affect crust color?](#)**

Absolutely correct, couldn't have said it any better. If you put it ON the dough prior to baking it will impact the crust color more than putting it into the dough.

Tom Lehmann/The Dough Doctor

2119

**[General Pizza Making / Re: Breaking down dough recipe for one pizza](#)**

Edward05;

Good grief! Sugar and oil look to be all "outta whack", but can't be sure since all ingredients are shown in volumetric portions instead of weight measures. If you are going to be making dough for just one 12" pizza you will need to have about 10-ounces (285-grams) of dough for a thin crust or 14 to 16-ounces (398 to 454-grams) for a deep-dish type of crust so you will need to have a grams scale to weigh out your ingredients with doughs.

The first thing that needs to be done is to get some actual weight measurements on each of the ingredient portions which you have shown, once you have provided that we can then put the "recipe" into a dough "formula" and convert it, very accurately, into any dough size you want. But keep in mind that with such small dough sizes your ingredient amounts will be quite small and shown in grams weight so you will need to have a scale capable of at least weighing to the nearest gram for weighing the ingredients for making your dough.

Tom Lehmann/The Dough Doctor

2118

**[Off-Topic Foods / Re: Anyone tried this for storage?](#)**

The bread is about 40% total moisture content and the apple peel is almost 90% moisture so moisture migrates to the driest of the two (the bread), thus increasing the moisture content, this makes it more moist but doesn't impact staling at all.

Tom Lehmann/The Dough Doctor

2117

**[Newbie Topics / Re: Conversion from ADY to CY and Cold Fermenting](#)**

Additionally, if you're just changing from ADY to CY you would use twice as much CY as ADY.

Tom Lehmann/The Dough Doctor

2116

**[Off-Topic Foods / Re: Anyone tried this for storage?](#)**

It works pretty well to soften the hard lumps of brown sugar.

Tom Lehmann/The Dough Doctor

2115

## [\*\*General Pizza Making / Re: Does oil affect crust color?\*\*](#)

I'm temporarily back but not too much to add as the addition of oil to the dough at "normal" levels 5% and less just doesn't have a significant impact upon crust color characteristics. When you begin to get into the 8 to 10% and higher range it adds more luster to the color due to increased light reflection from the crust but that's about all that you get. Consider some of the pastry items where the total fat content is closer to the 20 to 25% range, or look at pie crust where the fat is around 30 to 35%. Most of the color there is due to the application of egg wash to the item prior to baking or the use of corn sugar in a pie crust or milk on it as a wash where the lactose in the milk is providing the color. In all of these though the color is more lustrous due to the high fat content but not darker.

When oil is used in the pan for making pan type pizzas you will consistently see a fried effect and a darker crust color where the dough was in contact with the hot fat and fried but again this is a topical thing ant based on the oil/fat being in the dough, think of a tortilla....on average 8% fat is used in that dough...think about the color, what color?

Tom Lehmann/The Dough Doctor  
2114

## [\*\*Dough Clinic / Re: wet doughs\*\*](#)

Was able to help out a large group of new operators at Pizza Expo too, one session (scheduled for 4-hours went to 6-hours) and the other session scheduled for 1-hour went to nearly 7-hours. It was time well spent. Even had a chance to meet a few of our followers from here too.

Tom Lehmann/The Dough Doctor  
2113

## [\*\*General Pizza Making / Re: Does oil affect crust color?\*\*](#)

We've never seen any affect upon the crust due to oil addition to the dough unless as otherwise previously stated.

Tom Lehmann/The Dough Doctor  
2112

## [\*\*Dough Clinic / Re: Obtaining a fluffy but crunchy crust with my lactic/acetic acid infused dough\*\*](#)

Samuelgross;

What type of yeast are you using? Malt/diastatic or non-diastatic? Degree L.? Whey, bakery grade or non-bakery grade? Lactic acid, dry or liquid? Concentration? Ditto for the acetic acid. What is the pH of the dough after mixing? Are you interchangeably hand tossing and sheeting? If not which forming method do you use to open the dough balls into skins?

Normally when you proof the dough/skins on a screen the dough tends to flow into the screen openings and then expand during baking to effectively lock the dough to the pan after baking, this can be compounded when you over wrap the skins on the screen which further pushes the dough into the screen openings. One effective solution to this is to simply turn the proofed skin off of the screen on which it was proofed and onto another screen so the screen marks are now oriented to the top of the pizza where they can be covered by sauce and cheese, plus, since they are on the top they will also tend to come out or lessen during the oven spring phase of baking.

I should also point out that Mondako flour is shown to be at 12% protein content and 475F with a 4-minute and 55-second baking time seems rather low temperature and short baking time for a highly acidified dough....usually I see a

temperature of 500 to 510F with a baking time of 6.5 to 6.75-minutes, but then I don't know what your top finger configuration is or how many top fingers your oven has so I can easily be wrong on that for your specific oven. In any case a pH of the dough would give the necessary direction.

I'm sure with a little work we can work this out.

Tom Lehmann/The Dough Doctor

2111

### **Off-Topic Foods / Re: Anyone tried this for storage?**

Due to their acidity apples are pretty resistant to mold, at least much more than bread or pizza crust.

Tom Lehmann/The Dough Doctor

2110

### **Dough Clinic / Re: When to divide bulk cold fermented dough**

Uncle914;

Unless you are baking at 750F or higher forget about the Caputo flour as it really isn't intended for home use. If you do get some you will want to get some diastatic (enzyme active) malt 20 degree L. value. Then include 0.25 to 0.5% of the malt in your dough formulation. Without the malt you will have poor crust color development and the yeast may run out of nutrient to feed upon during the fermentation period leading to other issues.

Here's the bitter truth about bulk fermenting the dough in small quantities as you are. First, when we think of the difference between mixing, scaling/balling and cold fermenting v/s mixing, bulk cold bulk fermenting, scaling/balling and cold fermenting again the differences most often cited are based on the differences which are due to the dough in significantly larger quantities, at least 5 Kg. (11-pounds) total dough weight. When you bulk ferment 1.5 to 2-pounds of total dough weight the dough is too small to retain much, if any, of the heat generated due to heat of metabolism so the dough performs/ferments just as a large dough ball would, hence.....not much, if any advantage. From research that we did many years ago we found that a 2-pound dough ball (call it a "bulk" dough in this case, will experience only about 1.5 to 2-hours more fermentation in any given period of time than a 12-ounce dough ball in the same period of time under the same dough management procedure.

To do some meaningful testing I would suggest getting a good scale capable of weighing in grams (I use a KD-8000 / about \$40.00) and a dial or electronic thermometer for measuring dough temperature (\$4.00 to \$12.00). With these tools you will be able to change your "recipe" into a "formula" based on weight measures rather than volumetric portions which will allow you to work in bakers percent which, in turn, will allow you to effectively make accurate changes to your dough formulation and manipulate your dough management procedure and accurately tracking your results to making better or different pizzas.

Tom Lehmann/The Dough Doctor

2109

### **Newbie Topics / Re: dough question**

Without knowing just how you are handling the dough it's hard to say exactly what's happening but going on the premise that you didn't cover the dough in the fridge I'll make a "SWAG" that what you are seeing is just common drying or a slight crusting of the dough surface. What we typically do is to lightly oil the dough ball as you did but then after 2 to 3-hours cover the container to prevent the drying that you are observing. The oil on the dough ball only serves to keep it from

crusting during the limited cross-stack/open time, after that it still needs to be covered for the duration of the time in the fridge. An alternative to this is to lightly oil the dough ball and place it into a plastic bag (like a bread bag), twist the open end into a pony tail to close and then tuck the pony tail under the dough ball as you place it into the fridge. By this method no further handling is needed until you're ready to use the dough.

The crust that has formed will no longer turn into anything resembling the un-crusted dough but if it is still pliable and not "hard crusty" you can go ahead and work it back into the rest of the dough.

Tom Lehmann/The Dough Doctor  
2108

### **Dough Clinic / Re: Large air bubbles in crust**

Just fro the looks of it I'd say it is due to your opening technique.

Tom Lehmann/The Dough Doctor  
2107

### **Dough Clinic / Re: Dough balls have rips in them??**

Lookin' good! :chef:

Tom Lehmann/The Dough Doctor  
2106

### **Sicilian Style / Re: Interesting prefermentation technique for short fermentations**

That's how we used to test the dough to make sure yeast was added when I worked in a large wholesale bakery, I'm like Craig..... I sure wouldn't call it a "technique", but everybody's got their "THING" when it comes to pizza. :-D

Tom Lehmann/The Dough Doctor  
2105

### **Newbie Topics / Re: dough question**

Nope, not at all, the crust is insoluble. I wouldn't through the dough out though, just go ahead and use it and take corrective measures the next time. All it's going to do is become the nucleus for some larger holes in the crumb.

In a way, that's how they get the dominant bubbles in a soda cracker.

Tom Lehmann/The Dough Doctor  
2104

### **Dough Clinic / Re: Large air bubbles in crust**

As you're opening the skin keep your fingers closer to the edge of the skin.

Tom Lehmann/The Dough Doctor  
2103

### **Dough Clinic / Re: Large air bubbles in crust**

You might also go to my web site at [www.doughdoctor.com](http://www.doughdoctor.com) and take a look at the video on making dough that I have posted, it shows the dough ball being opened into a skin which might help.

Tom Lehmann/The Dough Doctor  
2102

### **Sauce Ingredients / Re: Freezing sauce**

While I am not an advocate of cooked sauce this is one of those cases where a cooked sauce is going to be better than an uncooked sauce.

Tom Lehmann/The Dough Doctor  
2101

### [\*\*Neapolitan Style / Re: Wrong flour\*\*](#)

First question out of the box, at what temperature are you going to bake your pizzas at?

Tom Lehmann/The Dough Doctor  
2100

### [\*\*Dough Clinic / Re: dough question\*\*](#)

That looks about right. ^^^

Tom Lehmann/The Dough Doctor  
2099

### [\*\*Prep Equipment / Re: Dough proofing box for home use\*\*](#)

For dough storage in a limited space it's hard to beat plastic bagging the dough balls. After forming the dough balls just wipe them with oil and place into individual plastic bags (I use to use recycled bread bags) but just about any reasonably sized bag will work. After placing the oiled dough ball into the bag, pull the bag snug but not tight to the dough ball, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it onto a flat surface. This is important as it allows the bag to "burp" and to expand with the dough ball without ripping or splitting out the seams. To use the dough just pull the bag down around the dough ball and invert the bag allowing the dough ball to fall onto a floured surface, it's then ready for immediate opening into a skin by your preferred method. If you review some of the recent posts you will see some recent discussion on this topic along with a photo of the fermented dough in a bag ready for use.

Tom Lehmann/The Dough Doctor  
2098

### [\*\*Shop Talk / Re: How to organise ingredients\*\*](#)

John;

How many smaller containers do you have on the top of your prep table? Usually we will only have a few of the lesser used ingredients or larger refill containers of the most often used ingredients stored in the reach-in under the prep table. If you have at least 20 ingredients/toppings stored under the table you might be trying to do too much topping wise. just a thought.

Tom Lehmann/The Dough Doctor  
2097

### [\*\*Dough Clinic / Re: dough question\*\*](#)

Sounds like it might be over fermented. I usually just turn the fermented dough ball out of the bag after allowing it to set at room temperature for about an hour, but when making pan pizzas it is usually easier to just place it directly into the pan and immediately fit the dough to the pan, then lightly cover the pan and set aside to proof for 60 to 120-minutes, depending upon formulation, room temperature and how thick you want the crust to be.

Tom Lehmann/The Dough Doctor  
2096

### [\*\*Pizza News / Re: Think you can finish a 32" pie in under 45 minutes?\*\*](#)

That's roughly equivalent to 7, 12" pizzas. Or put another way, eating one 12-inch pizza every 6.5-minutes for 45-minutes.....BURP!

Tom Lehmann/The Dough Doctor  
2095

### **General Pizza Making / Re: Dough Hydration**

It's impossible to answer your question without first knowing your dough formulation, type of flour being used, and how it's being mixed (type of mixer, mixing speed, mixing time and finished dough temperature) as well as any treatment on the flour such as bleached, enriched, bromated, amylase added, malted, etc. the bag will provide this information. With this information we can make a more educated assessment as to what might be happening.

Tom Lehmann/The Dough Doctor  
2094

### **Newbie Topics / Re: Dry dough tough to stretch**

Try doing this:

Form your dough balls and lightly oil them.

Place into individual plastic Food Bags (like bread bags) Don't use Zip-Lock Bags. Twist the open end to form a ponytail and tuck it under the dough ball as you place the ball into the fridge.

To use the dough after 24 to 48-hours cold fermentation remove from fridge, allow the dough ball to warm to 50 to 60F.

Roll the bag down around the dough ball and invert allowing the dough ball to fall onto a floured surface.

Flour the dough ball and open into a skin by your preferred manner.

We have had some recent discussion on this procedure here in other posts.

Tom Lehmann/The Dough Doctor  
2093

### **Newbie Topics / Re: Sugar in the dough?**

You can use just about any type of sugar in your dough but at the typical use levels used in pizza dough (1 to 3%) it really won't impact flavor and it will have little, if any impact upon crumb color. Sugar is mostly all about crust color....the more you use, the darker the crust color assuming all things equal. Sugar also provides nutrient for the yeast to feed upon (exception being lactose).

If sugar is not used in the dough formula the baking is usually done at a higher temperature and sometimes for a longer time. If the flour is malted or treated with amylose enzyme you can easily delete the sugar if you wish but if it is not malted or treated with amylose you will need sugar to help develop crust color unless you are baking at 750F or higher. Sugar is also needed to support fermentation if you plan to ferment for much more than overnight with an unmalted flour.

If you opt not to use sugar in the dough formulation no changes need to be made to mixing but not comments above regarding fermentation and baking.

Tom Lehmann/The Dough Doctor  
2092

### **General Pizza Making / Re: Dough Hydration**

I'm pretty sure your sticky/tacky dough is due to under mixing. You need to mix the dough just until it takes on a smooth, satiny appearance, as soon as it reaches that point the stickiness will disappear.

Also, are you using the delayed oil addition mixing method? If not you really should be with that amount of oil.

Delayed oil addition mixing method: Put water in mixing bowl, then add activated ADY suspension followed by the flour, add salt and sugar, mix JUST until the flour is

whetted, add the oil and continue mixing until you achieve the described smooth dough appearance.

Tom Lehmann/The Dough Doctor  
2091

**[Prep Equipment / Re: Sideways spiral mixer? What is it? Any good?](#)**

Those mixers are OK for bread type doughs but if your pizza doughs are going to be higher absorption than a bread dough (above 68%) that mixer will struggle to give you a consistent dough. Where are you located?

Tom Lehmann/The Dough Doctor  
2090

**[Stones/tiles/steel, Pans & Accessories / Re: Looking after a wooden peel](#)**

If you treat your peel with a little mineral oil it will help to prevent the grain from raising every time you get something wet on it.

Tom Lehmann/The Dough Doctor  
2089

**[Dough Clinic / Re: Gooey Sticky Dough at 64% w/Starter](#)**

While I don't have a hard and fast answer to the problem, lets begin by saying that your starter is the "great unknown" since we don't have a clue as to what we're culturing or how much and specifically what acids are being formed. My recommendation is to reduce the amount of starter being added by 75%, if the dough looks better, then you can begin increasing the amount gradually until you find the optimum addition level for the flour that you're using.

Your dough mixing procedure might also have something to do with it too, how are you mixing your dough?

Tom Lehmann/The Dough Doctor  
2088

**[Dough Clinic / Re: adding salt too early??](#)**

Easiest way is to put the water in the mixing bowl first, then add salt and sugar (if used) no need to stir. Add the flour and the IDY (dry) or ADY (suspended/activated) and begin mixing. As soon as the flour is whetted (dry flour is no longer visible in the bottom of the bowl, add the oil and continue mixing. NOTE: If compressed yeast (CY) is used just crumble it right on top of the flour and begin mixing. As you can see, I'm a firm believer in the KISS principle. Besides, it works just fine.

Tom Lehmann/The Dough Doctor  
2087

**[Dough Clinic / Re: adding salt too early??](#)**

When it comes to impact upon fermentation the yeast doesn't care when the salt is added, it's all the same. As to the impact of salt on dough mixing, you can develop gluten faster without salt in the dough. In a commercial bread or bun bakery the mixing time is reduced by about 2-minutes when the delayed salt addition mixing method is employed (this is when the salt is added to the dough about 4-minuted before the end of the mixing time).

In the mixing of pizza doughs where there is no need or desire to fully develop the gluten the delayed salt addition mixing method is seldom ever used. When making commercial frozen pizza dough, that's a different story, now the salt is almost always delayed as full gluten development is desired plus there doughs are mixed very cold making the doughs quite tough in the mixer, by delaying the salt addition in this case the gluten is developed faster and the dough is not quite as tough so

it's overall easier on the mixer too, when you consider that the mixer carries a price tag of the better part of \$100,00.00 this is an important consideration.  
Tom Lehmann/The Dough Doctor  
2086

### **Dough Clinic / Re: Gooey Sticky Dough at 64% w/Starter**

Check to see if you can find Pillsbury Bread/Bread Maker flour. This is the same as Pillsbury Superlative flour as it comes in at about 12.4% protein content. I've personally used it to make all types of pizzas quite successfully. I like to refer to it as my "all-purpose" pizza flour (not to be confused with All-Purpose flour). With your "J" hook I'm betting that you are not getting sufficient mixing at low speed prior to adding the oil. Try mixing in low speed for 2-minutes and then going to a higher speed, where you can visually see the dough getting a better mixing action for at least 2 more minutes before adding the oil. The oil does not have a whetting effect upon the flour, it only has a lubricating effect. Since your starter is based on 50/50 flour+water, when adding 15% starter you will need to reduce the added dough water by the amount of water contained in the starter. You show a total dough absorption of 64% (this should include both added water and the water coming from the addition of 15% starter. If you are not doing this your absorption is actually  $64\% + 7.5\% = 71.5\%$  and on top of that you are adding 7% oil which further loosens the dough. The oil should not cause a sticky dough but instead only a soft, extensible dough condition. Remember, the percentage shown as the total dough absorption is based on the TOTAL amount of water going into the dough divided by the total flour weight (NOT to include the flour in the starter). To adjust for the lubricating effect of the oil and to improve dough handling properties you might want to reduce the total dough absorption to 59 to 60%.

The oil itself is not going to be directly responsible for a sticky dough condition unless one of two things are happening; 1) The oil is not added AFTER the flour has had a chance to hydrate in the mixing bowl prior to the oil addition. 2) Since the oil is a lubricant it will lubricate the dough during mixing, thus reducing actual gluten development so a longer mixing time will be required than a dough made with a much lower oil level. It is not uncommon to see dough mixing times (with a reverse spiral dough arm) run out to 12 to 15-minutes because of this lubricating effect. With a straight "J" hook it is impossible for me to say how long the mixing time might be without actually watching the dough being mixed, but you can bet it will be in the 10 to 15-minute bracket. With that said, if the dough is clinging to the hook or climbing up the hook (both common problems with the "J" hook) it might never get properly developed unless you can mix the dough at a sufficiently high speed so the dough gets flung off of the "J" hook.

Just to make sure there isn't an issue with ingredient amounts can you please share your dough formula showing the ingredient amounts in both bakers percent (I know you have already done that) and also in the weight measurements you are using.

Tom Lehmann/The Dough Doctor  
2085

### **New York Style / Re: difference between IDY and ADY (glutenboy method vs what Gemignani says)**

The main difference between ADY and IDY is that the IDY doesn't need to be suspended in water and allowed to activate prior to addition to the dough. That's right, it is added in the dry form. The best way to add it is to just place it right on top of the flour, the hook/dough agitator will disperse it in the flour for you. The reference to "instant" in IDY does not have anything to do with activity, it is a

reference to the rate of hydration of the yeast. Due to the differences in moisture content between ADY and IDY you will need to use less IDY to achieve the same fermentation as ADY. On average, you will need to use 25% less IDY than ADY to achieve similar fermentation rates.

There are some cases where the IDY must be suspended in water prior to addition, such as when making a totally hand mixed dough. In this case the IDY is only suspended in 95F water (the temperature is CRITICAL, use a thermometer) it does not need to be activated like ADY. Another case where the IDY needs to be pre-suspended is when the total machine mixing time is less than 5-minutes such as is the case for cracker type crusts as well as use of VCM and similar types of mixers. I'm not sure I understand your mixing process. Put water in mixing bowl, add half of the "dough" do you mean dough ingredients? Let it sit for 15-minutes (without mixing?) I see that you are also adding the salt last, there is really no need to do this as it can be added in the second part of the addition. Something you might want to explore is putting the water in the bowl, adding the yeast, malt (don't know why if your flour is already malted), all of the flour and the salt on top of the flour, mix to incorporate, then proceed as you presently do. Makes for a much more straight forward process.

Tom Lehmann/The Dough Doctor  
2084

### [\*\*Dough Clinic / Re: Is Caputo 00 just hype or am I missing something?\*\*](#)

The "00" flours are not malted so unless you can bake the pizzas at or above 750F you're wasting your money on it. These flours also have a short fermentation tolerance so, depending upon which one you're looking at think in terms of 12 or 24-hours total fermentation time. Because the flour is made from soft wheat varieties the resulting dough is very extensible which can be a blessing or a hindrance depending upon your skills at opening the dough into a skin. There are a handful of flour mills in the U.S. making "00" type flours but they are really not all that common or popular when you look at the big picture of flour as it pertains to use in making pizza....think of it as a specialty flour. Most people do a pretty respectable job of making decent Neapolitan style pizzas using some of the A.P. and bread type flours.

Tom Lehmann/The Dough Doctor  
2083

### [\*\*New York Style / Re: difference between IDY and ADY \(glutenboy method vs what Gemignani says\)\*\*](#)

With all of the flour in the bowl you don't need to worry about the salt and yeast playing well together....they'll be just fine. Your procedure already has me worn out, but remember that I'm a firm believer in the KISS principle, so take it with a grain of salt. Yes, I think you should still take a look at a procedure along the lines of which I proposed, I think it will work well for you.

Don't sweat the coffee thing. Sometimes I'm up until the wee morning hours conversing with International clients, and just before I shut down for the night I come back here to answer any new questions, probably not the best thing to do as my brains are pretty well scrambled and it sometimes shows in my responses as many here can attest to...heck! I have even managed to spell my own name wrong!!! :-D

Tom Lehmann/The Dough Doctor  
2082

### [\*\*Chitchat / Re: Question about using recipes?\*\*](#)

Hopefully you will be using a "dough formula" based on actual ingredient weights as opposed to a "dough recipe" based on volumetric portions as formulas are much more accurate and reproducible plus they have the added advantage of allowing you to easily manipulate the size of the dough you want to make. :-D  
As for using dough formulas from this or any other public site, everything here is in what is referred to as "public domain" so you're free to use it as you wish. For additional help you can also go to my web site at <[www.doughdoctor.com](http://www.doughdoctor.com)> for help with dough mixing and management procedures.

Tom Lehmann/The Dough Doctor  
2081

**Dough Clinic / Re: Gooey Sticky Dough at 64% w/Starter**

Total flour weight (in the dough, not to include that which is in the starter) is indeed the best way to calculate the weight of the starter to be used. Think of it as just another ingredient. The reason why I don't like to use total dough weight as the basis for calculating the weight of the starter to be used is because if your dough happens to be made using a high dough absorption percent it will result in a greater weight for the starter, and a high absorption dough may not be able to tolerate the weakening effect of the starter where as if everything is based on the actual dough flour weight this will not be a problem.

Tom Lehmann/The Dough Doctor  
2080

**Dough Clinic / Re: Is Caputo 00 just hype or am I missing something?**

With the typical soft dough condition with the Caputo flours and relatively high dough absorption when combined with the high baking temperature you get rapid expansion during the oven spring part of the baking process which results in the characteristic open, porous crumb structure. If the flour was malted you would get too much crust color on the bottom of the crust during baking...hence, they don't malt the flour.

Tom Lehmann/The Dough Doctor  
2079

**Dough Clinic / Re: Gooey Sticky Dough at 64% w/Starter**

Rolls;

Here is the dough formula in grams based on 300-grams of total flour weight.

Flour: 100% 300-grams

Water: 62% 163.5-grams ( $186 - 22.5 = 163.5$ ) Test:  $163.5 + 22.5 = 186$  186 divided by 300 X 100 = 62 (62%)

Starter: 15% 45-grams (22.5-grams flour + 22.5-grams water)

Oil: 7% 21-grams

Salt: 3% 9-grams

Malt: 0.25% 0.75-grams

Tom Lehmann/The Dough Doctor  
2078

**Dough Clinic / Re: Low IDY = D.O.A.**

5F could put you into the 40 to 45F or higher range depending upon at what temperature you keep your fridge set at. You say you used colder water temperature, how much colder? How much did it lower/reduce the finished dough temperature? If your dough didn't seem to want to stop/slow down with regard to the fermentation rate I'm guessing that your fridge got into the mid to high 40's

and couldn't cool the dough sufficiently so as the dough continued to ferment it continued to increase in temperature due to heat of metabolism which continued to drive fermentation at an increasingly faster rate.

Tom Lehmann/The Dough Doctor  
2077

**[New Forum Members / Re: is that good or bad if i making pizza by Microwave](#)**

You can even make a pretty decent pizza using just the cook top (burners) and a covered frying pan, similar to the way camp pizza is made.

Tom Lehmann/The Dough Doctor  
2076

**[Dough Clinic / Re: How to fix overfermented retarded dough balls](#)**

Working in a little fresh flour into the dough will help to restrengthen the dough which is most likely being weakened by prolonged exposure to the high acidity of your sourdough starter.

Tom Lehmann/The Dough Doctor  
2075

**[Dough Clinic / Re: Gooey Sticky Dough at 64% w/Starter](#)**

While indeed, there are a number of different ways to formulate a starter into the dough, in the end the only one that counts is the one that works best for you. Dough formulas are the same way as well as dough management procedures (there are soooooo many!), some might be better than others for any number of reasons, but in the end the best one is the one that works best for YOU.

Tom Lehmann/The Dough Doctor  
2074

**[Dough Clinic / Re: A Frivolous Question For The Dough Doctor](#)**

Rolls;

Occasionally I get those feelings but then I'm reminded that there are so many new things happening with pizza and so many people in need of assistance that I quickly put those thoughts to rest and jump right back into the pool and seldom ever look back or have any regrets. I'm always up to trying one more slice because I'm afraid I'll miss something if I don't.

As for my favorite pizza, I'd have to say it's AJ's New York Pizzeria, Manhattan, Kansas. I have to admit that I'm partial to it because my DNA is all over the pizza as well as the pizza concept, so if I don't like it I only have myself to blame. I have two favorite pizza chasers, if I'm driving it's a large, cold root beer. If I'm not driving it'll be a tall Guiness Stout ;D

I've always considered it an honor to be able to participate in sites like this as well as the PMQ Think Tank and to be asked to participate in Pizza Expo (don't know how many years I've done P.E. but it's been most of them).

In the end, my own personal rewards come when someone writes me or approaches me and starts the conversation by saying "You probably don't remember me but your advice helped my get my store off the ground".....what more can one ask for?

Tom Lehmann/The Dough Doctor  
2073

**[Dough Clinic / Re: A Frivolous Question For The Dough Doctor](#)**

Thank you! I'll toast to that! :pizza: ;D

Tom Lehmann/The Dough Doctor  
2072

**General Pizza Making / Re: Help! Accidentally made 50% hydration dough!  
What now?**

Congratulations! You're going to be making some thin crispy pizzas! :-D  
Just handle the dough in your usual manner and when it comes time to open the dough balls into skins use a rolling or pastry pin and dusting flour as needed. Open to about 1.5 to 2-mm thickness, dock the dough skin with a dough docker if you have one or use a new lead pencil for a docker. Oil the eraser end and use this to dock the dough skin....a bit tedious but it works in a pinch. Don't use a fork as that is NOT docking. If necessary, trim the skin to the exact diameter you want. dress to the order and bake at 500 to 550F/260 to 288C.

Let us know how it turns out. You might like it. ;D

Tom Lehmann/The Dough Doctor  
2071

**Dough Clinic / Re: Pizza rim came out flat**

With 3% salt and 2.8% sugar 0.3% IDY was probably not enough yeast. It would have been better to use something closer to 0.5% IDY. Additionally, what was the water temperature that you suspended the IDY in? That's important to know here along with the finished dough temperature.

Tom Lehmann/The Dough Doctor  
2070

**General Pizza Making / Re: Help! Accidentally made 50% hydration dough!  
What now?**

Peter;  
He is still going to get good fermentation in 24-hours. I don't know what the fermentation tolerance of his flour is so I'm hesitant to say that a longer fermentation time would be beneficial. Besides, there's nothing wrong with making a thin crispy crust once in a while, remember there have been some pretty significant products made as a result of a mistake.....bagels for one.

Tom Lehmann/The Dough Doctor  
2069

**General Pizza Making / Re: Help! Accidentally made 50% hydration dough!  
What now?**

Peter;  
Nothing like exploring a path never traveled.

Tom Lehmann/The Dough Doctor  
2068

**Dough Clinic / Re: Pizza rim came out flat**

Your dough temperature was quite cold and the water temperature in which you suspended the IDY in was WWAAYY too cold and in all probability resulted in some damage to the yeast. IDY should never be suspended in water colder than 95F/35C.

Tom Lehmann/The Dough Doctor  
2067

**Dough Clinic / Re: Stiff dough that resists opening**

From your description I'm guessing that your dough is being over fermented. You might try this; Reduce the CF time to 6-hours and then follow your usual procedure

and let us know if you see any improvement. I can say for sure that your dough is not being over mixed.

It's hard to say much more than that without knowing your dough formula and finished dough temperature.

Tom Lehmann/The Dough Doctor  
2066

### **Dough Ingredients / Re: Diastatic malt powder and autolyse**

What is the Lintner Value of your malt?

Tom Lehmann/The Dough Doctor  
2065

### **General Pizza Making / Re: Help! Accidentally made 50% hydration dough! What now?**

Yael;

No truer words were ever spoken. ^^^

When doing research we learn from both our successes and our failures. I've learned a lot from both ends of that stick.

One thing that I might add regarding baking low absorption pizza doughs is to bake them at a lower temperature than high absorption doughs. Low absorption (50% and less) doughs typically bake better at around 500F/260C.

Tom Lehmann/The Dough Doctor  
2064

### **Dough Ingredients / Re: Is there a need for frozen pizza dough?**

Frozen pizza dough is made by some of the major frozen dough manufacturers here in the U.S. (Drayton and Rich's) to name but two. The market is pretty significant in size too. Users include small pizza shops, restaurants, bars, snack food facilities, as well as home use applications. As for cost, the cost of pizza dough in the U.S. is around \$0.25 to \$0.35 per pound but with the cost to manufacture the dough included (2.5 X actual ingredient cost) the cost rises to about \$0.55 to \$0.66 per pound. Frozen dough will typically sell for about \$1.00 to \$1.25 per pound. The individual dough ball cost will less depending upon the weight of the dough ball but an average dough ball will sell for \$0.75 to \$1.00 each. How high have I seen frozen dough being sold for? \$1.50 to \$2.00 per pound is about the highest I've seen it go for in some of the more remote areas of the country.

Tom Lehmann/The Dough Doctor  
2063

### **Dough Clinic / Re: Pizza rim came out flat**

If you can get some VWG use it to increase the protein content of your flout to something in the 12.5 to 13% protein range. How much VWG to use?

Using the 11% protein flour you have available to you, subtract 11 from 13 = 2 (this means that you will need to increase the protein content of the 11% protein flour by 2%. Divide 2 by 0.6 = 3.3 (this means that you will need to replace 3.3% of the 11% protein content flour with 3.3% VWG.

The rule is: Determine how much you want to increase the protein content by, then divide that number by 0.6, the answer will be the % VWG that will need to be used to increase the protein content of the flour to the desired level. BUT remember that for each % VWG that you add you MUST increase the dough absorption by an additional 2%, so in the above example where we found that we need to add 3.3% VWG you will also need to increase the dough absorption by an additional 6.6% to adjust for the absorption properties of the VWG. To add the VWG just lightly

blend/whisk it into the flour.  
Tom Lehmann/The Dough Doctor  
2062

### **Dough Clinic / Re: Pizza rim came out flat**

If your dough is being properly managed it should not need to be re-balled. I only re-ball if the dough is over fermented and then you will need to allow the dough ball to rest again for a sufficiently long time for it to relax sufficiently to be easily opened, this can and usually does require several hours.

Tom Lehmann/The Dough Doctor  
2061

### **General Pizza Making / Re: dough temperature question**

Your problem with stretching the dough wasn't due to lack of gluten development during mixing, biochemical gluten development takes care of the gluten development for you when you ferment the dough for 24 hours or more, instead, the problem was most likely due to not allowing the dough to warm sufficiently before opening it into a skin. In pizzerias we use 50F as the target temperature but in home use where you are only making a few pizzas at most many people opt to go with 60F. Anything above that can result in a gassy dough that can be difficult to work with and open into a skin.

Tom Lehmann/The Dough Doctor  
2060

### **Dough Clinic / Re: Stiff dough that resists opening**

Actually, you're not making a poolish, instead you are making a "pre-ferment" aka "brew". This is likely contributing to the over fermentation condition. Try making your poolish without added yeast, you only need to leave the poolish hydrate for 1 to 3-hours, so even go shorter than that. I seldom ever use a poolish unless I'm working with a high absorption dough (70% and above). As to total fermentation time 48-hours on the dough is a good target to shoot for, once you have mastered that, you can go for 72 then 96-hours if you wish.

Pizzerias, unless they are making deep-dish type pizzas don't proof their dough very often, they get all of their fermentation in the walk-in cooler. A typical dough management procedure for a pizzeria is:

Mix (75 to 80F)

Immediately scale and ball.

Box and oil dough balls

Cross-stack in the cooler for 2 to 3-hours (until dough reaches 50 to 55F)

Down-stack

Cold ferment for 24 to 48-hours (72-hours is typically max.)

Remove from cooler (keep covered) and allow to warm to 50F. (internal ball temperature)

Begin opening balls into skins (dough will be good to use for a 3-hour period of time)

If you would like to have a copy of the procedure with all of the details send me an email at <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)> requesting a copy of my Dough Management Procedure.

Tom Lehmann/The Dough Doctor  
2059

### **Prep Equipment / Re: Dough rounder BALLMATIC 1000**

That's a knock-off of the AM-Manufacturing Round-O-Matic R-900 series dough ball rounder.

I can't speak for the one you have referenced but the Round-O-Matic is a great little dough ball rounder as long as the dough absorption isn't much above the 66 to 68% range (American type flour) and the dough isn't overly soft/extensible. Only four parts to clean, super easy.

Tom Lehmann/The Dough Doctor  
2058

### **Prep Equipment / Re: Dough rounder BALLMATIC 1000**

Where is it made? Assuming China?

Tom Lehmann/The Dough Doctor  
2057

### **Prep Equipment / Re: Dough rounder BALLMATIC 1000**

After I responded I Googled them and saw that they are made in Italy. I don't have any experience with that brand, but the Round-O Matic is a great performer and very fast too. As there are only 4 parts to remove for cleaning there isn't much to go wrong. Cost is about \$9,000.00 depending upon specific model. At \$3,300.00 this would appear to be a pretty good buy, maybe if you also post in the PMQ Think Tank you might be able to find someone who has one and can comment on their experience with it.

Tom Lehmann/The Dough Doctor  
2056

### **Prep Equipment / Re: Dough rounder BALLMATIC 1000**

The whole objective in baling the dough is best summarized by one word....consistency. If the dough is balled sometimes tight and sometimes lose there can be considerable variation in the way the dough ball expends during fermentation as well as the way it reacts during opening. One thing I can say about mechanical rounders is the they are consistent in the way they round the dough balls. If you want the dough balls rounded tighter you just pass them through the rounder twice aka double rounding.

Tom Lehmann/The Dough Doctor  
2055

### **Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature**

I make mostly a New York style pizza, and I typically use 65 to 67% dough absorption. My "go to" baking temperature is 500 to 550F. The Marsal deck ovens are the deck ovens of preference for me, they have a deck that is thicker than most deck ovens and they hold heat and retain baking temperature very well. As for the oven, it all depends upon what style of pizza you're making. For N.Y. style pizza the Marsals are hard to beat in both performance and price.

Tom Lehmann/The Dough Doctor  
2054

### **Dough Clinic / Re: Dough recipe questions**

If the 24-ounce dough balls are being used for the 16-inch deep-dish pizza your dough loading factor is 0.1194 so  $0.1194 \times 113$  gives you a suggested scaling weight of 13.5-ounces for the 12-inch deep-dish pizza as opposed to the 12-ounces you're presently using.

If you would like to discuss these issues with me please feel free to call me at

785-537-1037, I think I can get you pointed in the right direction with a short phone call.

Tom Lehmann/The Dough Doctor  
2053

**Dough Clinic / Re: Pizza rim came out flat**

The dough ball has a smooth skin with no rips or tears, looks great to me.  
What was the finished dough temperature?

Tom Lehmann/The Dough Doctor  
2052

**Dough Clinic / Re: Dough recipe questions**

Not so strange here, we're all here to help you, more like a family.

Are you in Watertown, South Dakota?

Tom Lehmann/The Dough Doctor  
2051

**Dough Clinic / Re: Nonfat milk powder vs Full Cream milk powder vs Oil vs High hydration**

Very few pizzerias use NFDM or dry milk derivatives due to their extraordinarily high cost v/s benefit. The benefit to be gained is the introduction of lactose sugar aka milk sugar which helps to induce crust color development just as any other sugar would. While there would be some potential dough strengthening due to the calcium ion effect this would be important only in bread production as pizza doughs are not based upon full gluten development as bread doughs are. It is true that the addition of oil at high levels too soon in the mixing process can/will interfere with gluten development this is easily addressed by adding the oil later in the mixing process as we do in my delayed oil addition mixing procedure. It is indeed the addition of water to the dough (increased dough absorption) that is responsible for developing crispiness in the finished crust but only if the crust is baked properly to begin with. This means that you will want to experiment with balancing baking time and temperature with sugar level to allow the crust to be baked for optimum oven spring and crispiness without excessive crust color development. A number of factors will come into play when doing this, for example type and weight of pan, color of pan, type of oven, gas or electric oven, baking surface, oil or shortening in the pan and of course dough formulation. Most of these will cancel out as a constant, but if you change any thing it will become a variable so just record it and track the changes to help you keep track of what's happening.

Tom Lehmann/The Dough Doctor  
2050

**Other Types / Re: Anyone got the recipe for "puff pastry dough"**

Here's a dough formula for puff pastry in bakers percent so you can adjust the amount to any size dough you wish to make.

Flour: (pastry or bread type flour may be used) 100%

Salt: 2.5%

Nonfat dry milk: 2% (variable to adjust crust color).

Water: (ice cold) 35%

Shortening: 20%

Roll-In : 60% (this is a high temperature plastic fat containing water) This portion of the fat is added ONLY as a roll-in fat.

Note:

While a commercial Roll-In fat designed specifically for puff pastry application works best butter or margarine can also be used. Danish butter works better than other types of butter due to its unique plasticity at low temperature. DO NOT USE A PLAIN ALL PURPOSE SHORTENING FOR THE ROLL-IN AS IT DOESN'T CONTAIN THE NECESSARY WATER NEEDED FOR EXPANSION (LEAVENING) OF THE DOUGH.

Add flour, salt and NFDM to the bowl first, then add the shortening in chunks, using a pastry knife mixing attachment cut the fat into the flour, then add the water in a steady stream while continuing to mix at low speed. When a "shaggy" dough consistency is achieved change to a dough hook/reverse spiral dough arm and mix at low speed JUST until the dough begins to take on a smooth appearance.

Remove the dough from the mixer, cut into approximately 3Kg. pieces, pin out to fit onto an 18 X 26 lightly floured sheet pan, cover with plastic and refrigerate about 30-minutes. Process all of the dough in this manner. Remove a pan of dough from the cooler and begin sheeting it to about 1/2-inch / 12.5 mm thickness, add roll-in fat to 2/3 of the dough and give the dough a 3-fold, pin out to fit the sheet pan again and refrigerate for 20 to 30-minutes (time will be variable), roll the dough out again to 1/2-inch / 12.5 mm thickness and give the dough a 4-fold. Roll out again to fit the pan and refrigerate. NOTE: You will need to experiment with the number of folds to give the dough to determine the type of flake you want. Some will stop at just one 4-fold while others will go to one additional 4-fold followed by a 3-fold.

The idea is to keep the dough cold as you are rolling/sheeting it as this will prevent the roll-in fat from being incorporated INTO the dough which will destroy the flake properties of the finished pastry.

When sheeting the dough for cutting/shaping reduce the dough to about 1/4-inch / 6mm thickness.

Puff pastry is typically baked at about 400F/205C.

Things to keep in mind:

As you continue to give the dough more folds you may need to leave the dough in the cooler longer for it to sufficiently relax between folds. The dough will be easier to work with if you allow the dough to relax in the cooler for a few hours before sheeting the dough to it's final thickness for shaping.

Depending upon the finished color you are looking for and the strength of the flour you are using you may want to consider adding 1% vinegar or lemon juice to the water. This will help to relax the dough as well as reduce the crust color development during baking.

NOTE: After you have divided the dough into 3kg. pieces, be sure to divide the roll-in fat into the same number of pieces as you will need to use one portion of the roll-in to one portion (3Kg) of the dough.

Tom Lehmann/The Dough Doctor  
2049

**Dough Clinic / Re: Nonfat milk powder vs Full Cream milk powder vs Oil vs High hydration**

Both brewers and bakers yeast can be used in making dough. There is little, if any, significant difference in the finished product when either yeast is used. The only main difference between the two yeasts is in their tolerance to alcohol, brewers yeast has about a 1% higher tolerance to alcohol than bakers yeast.

Tom Lehmann/The Dough Doctor

2048

**[Newbie Topics / Re: Instant Sourdough Yeast](#)**

From the looks of it I'm guessing that it's nothing more than IDY with an added inactive white sour for flavor. We have been doing this for decades in the wholesale baking industry as well as in some segments of the frozen dough and frozen pizza industries. Red Star manufactures both of these items so it would only be natural that they combine them.

Tom Lehmann/The Dough Doctor  
2047

**[Dough Clinic / Re: Isoamyl acetate in dough?](#)**

The only off aromas that I'm familiar with in baked products are best described as over ripe cantaloupe, acetone/nail polish remover both of which are due to bacillus mesentericus/bacillus subtilis aka "rope", but this are found in the finished/baked product not in the dough. Rope is due to a spore forming bacteria which not only survives baking temperatures it is also more active after being exposed to baking temperatures. Beside its characteristic aroma, it is also identified by a slight brown discoloration in the crumb which when touched is very sticky and forms a thread (rope) when the finger is pulled away. Rope is insidious and the #1 fear of any facility processing baked goods.

Tom Lehmann/The Dough Doctor  
2046

**[Dough Clinic / Re: Elastic? Shrinkage?](#)**

If the skin is shrinking significantly during transfer to the peel it was most likely due to insufficient fermentation. Much of this can be either reduced or eliminated by placing the opened skin directly onto the peel and then dressing the skin on the peel. If this is the way you are presently handling the skins the problem is almost guaranteed to be due to insufficient fermentation. If it was due to excessive fermentation which results in a "bucky" dough condition the dough would have been much more difficult to open from a dough ball.

Tom Lehmann/The Dough Doctor  
2045

**[Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature](#)**

Q.J. is spot on with his time and temperature recommendations, couldn't have said it better myself. :)

Tom Lehmann/The Dough Doctor  
2044

**[Dough Clinic / Re: Elastic? Shrinkage?](#)**

JPB;

That sounds as if you might be over extending the dough (opening it too much). The dough in the rim shouldn't get there by shrinking it back onto the peel, it's formed at the time of opening the dough ball into a skin by keeping your fingers away from the edge during the opening process. If you want to accentuate the rim on the finished pizza the correct way to achieve it is to use a bit more dough. I'd suggest trying 2-ounces more dough weight the next time and just opening the dough to fit the peel, if done right the center section should be like a normal pizza for you and the extra dough will end up more so at the edge where it will contribute to a more pronounced rim on the finished crust.

Tom Lehmann/The Dough Doctor  
2043

**Dough Clinic / Re: Flat dough**

I've got a bag of Caputo Pizzeria Flour (blue bag) that I've been working with lately and one thing I can say about it is that it sure doesn't have tolerance for much more than 12 to 18-hours of total fermentation. When I evaluated it for fermentation tolerance I saw the same thing that you are seeing. The next time you make your dough schedule your fermentation sequence to keep the total dough fermentation within the 12 to 18-hour window. You don't mention anything about the finished dough temperature, this can also have a significant impact upon how much fermentation the flour/dough will exhibit.

As you were previously using a 14% protein content flour (All Trumps?) I'm assuming it was a U.S. milled flour which is very different from Italian milled flour. One of the greatest differences I'm seeing is in fermentation tolerance. U.S. milled flours are milled from wheat varieties that are bred for fermentation tolerance as one of their breeding criteria. Another is protein strength, our wheat varieties are bred to have high protein content and also high strength (elastic) characteristics. Italian flours are designed to have a shorter fermentation tolerance and a significantly more extensible gluten characteristic. If your pizzas were OK with the 14% protein content flour but the dough was just too difficult to open a better approach might have been to just change to a lower protein content flour, possibly something in the 10.8 to 12% protein content range.

Tom Lehmann/The Dough Doctor  
2042

**Dough Clinic / Re: Flat dough**

The flour that you've referenced is a durum semolina flour which is not well suited for use by itself as a pizza flour but it can be blended with a regular bread type flour at levels of up to 25% for improved chew and crispiness. The problem with durum semolina flour is that it produces a dough with EXTREMELY tough, elastic properties. This is a characteristic of the durum wheat from which this type of flour is milled, it's a different type of wheat than what is used for making regular bread type flours. I would suggest that you pick up a bag of any regular white flour suitable for making bread and give that a try, I'm betting it'll work better for you. Once you begin making pizzas more to your liking you can begin experimenting by blending in some of the Caputo and/or semolina flour that you have to see if you like the characteristics imparted by these flours when used as a blending flour.

Tom Lehmann/The Dough Doctor  
2041

**Dough Clinic / Re: Flat dough**

Peter;  
It was the one referenced in the link in reply#2.  
Tom Lehmann/The Dough Doctor  
2040

**Dough Clinic / Re: Elastic? Shrinkage?**

General Mills Full Strength flour about 12.6% protein content, essentially the same flour as the Pillsbury Bread/Bread Maker Flour available in many supermarkets.  
Tom Lehmann/The Dough Doctor  
2039

## [\*\*Dough Clinic / Re: Elastic? Shrinkage?\*\*](#)

JPB;

That edge sure doesn't look flat to me! :-D  
Great lookin' pizza man!  
Tom Lehmann/The Dough Doctor  
2038

## [\*\*Forum Info / Re: average age?\*\*](#)

If it's true about what they say about life starting at 40, I guess that makes me 35.  
Right in line with the rest of the pack. :-D :-D :-D  
Tom Lehmann/The Dough Doctor  
2037

## [\*\*Forum Info / Re: average age?\*\*](#)

For myself personally, I'm on track to enjoying the second 40 as much or more than the first 40. Sure, I've gotten a little help along the way but that just makes things more interesting, and I really have to say that since my retirement 5-years ago my enjoyment factor went up by several notches and that's saying a lot since I really loved my job at the American Institute of Baking where I was employed for almost 50-years. So, why did I retire? To prove to myself that indeed there is a life outside of AIB.

Tom Lehmann/The Dough Doctor  
2036

## [\*\*Off-Topic Foods / Re: First try at tartine English muffins\*\*](#)

Two main things to remember about English muffins, if trying to replicate the Thomas brand, 70% dough absorption and calcium propionate at 1% for the flavor. We did a sensory panel evaluation of English muffins one time when looking at alternatives to calcium propionate as there was some speculation that it might be banned (thankfully never happened). What we found was that without the propionate our panel participants did not readily recognize the product as an English muffin. It's the calcium propionate that provides the sinus clearing effect when you smell an English muffin being toasted. It's also the reason why you never see an English muffing getting moldy too, calcium propionate is the most commonly used rope and mold inhibitor used in yeast leavened foods.

Until we got our English muffin griddle we made our English muffins using an McDonalds 3D/triple decker (Big Mac) bun pan with a snug fitting lid, The dough was placed into the lightly greased and corn meal dusted pan, allowed to proof for 15-minutes and then went to the oven at 500F. The resulting muffins were pretty close in appearance, looking a lot like hockey pucks.

Tom Lehmann/The Dough Doctor  
2035

## [\*\*Dough Clinic / Re: First post, first NP, so yeah, I have questions\*\*](#)

I think a good deal of your problem is stemming from the low % total dough absorption you're using which was further lowered when you added an additional 50-grams (5%) flour right up front. Staying with the method you're using, the changes I would make are as follows:

- 1) Suspend the IDY in a small portion of 95F water not the cool tap water. This will be much less damaging to the yeast.
- 2) Increase the dough absorption to at least 70% you will probably be able to go even higher but start at 70% and work up from there.
- 3) After hand mixing the dough in the Cambro tub, drape the tub with a piece of

plastic and allow the dough to hydrate/ferment for 1-hour, or you can use an autolyze method where you mix only the flour and the water, then set it aside and allow it to hydrate for at least 30 to 60-minutes, then add the remainder of your ingredients and continue with your process.

This should help to address the stickiness and give you improved oven spring.

Tom Lehmann/The Dough Doctor  
2034

### **Shop Talk / Re: Need 600 dough balls in one Day**

To answer your question we need some important information, what is sum of the bakers % of the ingredients used in your dough formulation and how much flour do you use to make a single dough?

Tom Lehmann/The Dough Doctor  
2033

### **Shop Talk / Re: Need 600 dough balls in one Day**

To add to my previous post, you are going to need to make a calculated 412.5-pounds of dough, divide this by your total dough weight for a single dough and you will have the number of doughs needed to make the order. To be more precise I still need to know your total bakers% as well as flour weight.

Tom Lehmann/The Dough Doctor  
2032

### **Dough Clinic / Re: Tom Lehman, 1962**

Even more amazing is that your birthday is the same as my wife's!

Tom Lehmann/The Dough Doctor  
2031

### **Dough Clinic / Re: Dough SNAFU - Should I throw it out?**

That's about what one would expect with such a low salt level, most relate the flavor of a dough with such a low salt level to tasting "starchy". Actually, you could have just added the corrected amounts of each ingredient to the dough and reballed it for later use.

Tom Lehmann/The Dough Doctor  
2030

### **Dough Clinic / Re: Water types as a factor in pizza flavor/crust texture?**

Water does play an important part in pizza dough. Hard water is good for the dough while soft water is not good for the dough as it imparts tackiness into the dough. Ditto for distilled water as well as R.O. water. The pH of the water can be critical with how the dough ferments, typically water has a pH of 6.8 to 7.2 which is fine. When the pH is higher than this the water is alkaline and will slow the start of fermentation. Water that is lower than this is said to be acid water which can be good for the dough as yeast is an acid loving micro organism so it can actually speed up the rate of fermentation slightly, BUT you will seldom find acid water coming from a municipal water supply as the acidity can erode copper pipes but more so, the lead in the joints holding it together, the dissolved lead then goes into the drinking water...not a good thing. There are cases where we want to acidify the dough slightly such as is the case when making an emergency dough, in that case some will replace 1% of the dough absorption with 1% of a white, household 50-grain strength vinegar to achieve a slight acidification, but this is all done in the mixing bowl, not out of the tap. I've written a couple of articles about this in PMQ Magazine.

Tom Lehmann/The Dough Doctor  
2029

**Dough Clinic / Re: Where to start? Starting over, that is.**

Approach this in the same manner as you would eat an elephant, this is one bite at a time. If you can get it, use All Trumps flour, if not use one of the KA flours with 13 to 14% protein content. Here is a dough formula:

Flour: 100%

Salt: 2%

Water: 62%

IDY: 0.4%

Oil: 2%

Put water (70F) in mixing bowl, add salt, add flour.

Mix just until you don't see any dry flour in the bowl, then add the oil and continue mixing just until you get a smooth dough appearance.

Targeted finished dough temperature: 75 to 80F

Divide into desired weight pieces, round into balls.

Oil the dough balls, place into individual plastic bread type bags.

Twist the open end of the bag to form a pony tail and tuck it under the dough ball as you place it in the fridge.

Allow to cold ferment for at least 24-hours, 48-hours is better.

Use a rolling pin to CAREFULLY open the dough ball about 2-inches smaller than what you want.

Finish opening the dough skin by hand stretching to full diameter.

Skin is now ready for dressing and baking.

Dough weight: For a 12-inch pizza try starting with 11-ounces of dough weight.

Adjust up or down from there depending upon the thickness you're looking for.

Tom Lehmann/The Dough Doctor

2028

**Dough Clinic / Re: Where to start? Starting over, that is.**

Not much to add except that when you place the dough ball into the bag pull the bag snug to the dough ball DO NOT leave an air space as this will contribute to condensation forming in the bag. The bag will expand just fine with the dough ball.

Tom Lehmann/The Dough Doctor

2027

**Starters/Sponges / Re: storing stiff starter in water**

I'm in agreement with Craig.

Tom Lehmann/The Dough Doctor

2026

**Dough Clinic / Re: Where to start? Starting over, that is.**

I like to use semolina flour to dust the dough balls in preparation for opening, most of it will come off as you open the dough into a skin.

Tom Lehmann/The Dough Doctor

2025

**Dough Clinic / Re: Tom Lehman's dough recipe**

Johnny:

If by equation you mean dough formulation, here it is.

Flour: 100% (12 to 12.8% protein content)

Salt: 1.75%

Sugar: 2% (optional)

Oil: 2%

IDY: 0.375%

Water: 62% (variable)

Tom Lehmann/The Dough Doctor

2024

## [\*\*Dough Clinic / Re: Problems with my dough \(not elastic: stretching is too easy, no leopard skin...\)\*\*](#)

Your dough balls REALLY LOOK GOOD! :)

Tom Lehmann/The Dough Doctor

2023

## [\*\*Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature\*\*](#)

Jerry5010;

Not a problem at all, feel free to jump right on in at any time.

The main reason for using cold fermented dough at pizzerias is because of the ease and consistency of dough management. Dough which is managed through the cooler (cold fermented) is overall, much more consistent performing than dough which is managed at room temperature (remember that room temperature can be highly variable). Since temperature is the main driver of fermentation, even slight differences in the finished dough temperature can have a dramatic impact upon the dough and finished crust when projected out to several days when the dough is managed at room temperature. When the dough is managed at refrigerated temperature slight differences in finished dough temperature are not as critical as the dough will be subdivided into individual, smaller weight pieces for the fermentation process, this allows for faster, more consistent cooling of the dough which in turn allows for improved dough consistency. Does this mean that room temperature managed dough is not as good as cold fermented dough? Absolutely not, it's just a different animal that must be managed entirely differently and I hate to say this BUT, when one considers the quality of help (workers in the food industry) today we have to take as much of the human factor out of dough processing as possible if we want to have a consistent product for our customers. I'm not sure I fully understand your last question, but if you want your dough to bake faster, look not further than your oven, if you want the dough to open easier consider increasing the dough absorption and/or increasing the dough fermentation. Along these lines it's been my experience that while most properly managed cold fermented doughs can be used after 24-hours, their "sweet spot" is at about 48-hours. Keep in mind too that the flour you're using will also influence both dough absorption and fermentation time. As a rule, the higher the protein content of the flour the higher the dough absorption will be and it will require more fermentation time to open without exhibiting excessive dough memory aka snap back. Along these same lines, have you ever wondered why high protein flours are synonymous with pizza? The answer goes back to the 1950's when pizzerias were all operating using some form of room temperature fermentation procedure which usually involved mixing the dough and just leaving it in the bowl or some other container and allowing it to ferment for the better part of the day. This dough was used for making pizzas until the dough was gone, then the lights were turned off (not a good business model, I know). In order for the dough to withstand all of the fermentation it received by this process we needed to use a high protein flour with excellent tolerance to fermentation. Flour suppliers soon recognized this and when

the next person approached them and said that they too wanted to open a pizza shop the response was "well then you will need to buy a high protein flour", today though we seldom use processes like this in a commercial setting as cold fermentation dough management procedures have replaced it and with more effective dough management we have been able to reduce the need for high protein flours too, so today it is common to see flours being used in commercial pizzerias that are in the range from a low of 11.8% to about 12.8%. While many stores still use higher protein content flours (13 to 14+) we finding that their pizzas can be made better with a lower protein flour, especially if they are a DELCO shop, which are popping up like mushrooms in the spring.

Tom Lehmann/The Dough Doctor  
2022

### **Dough Clinic / Re: Where to start? Starting over, that is.**

Next time also show a picture of the bottom, it's a lot easier to assess the bake of a pizza if you can also see the bottom.

Tom Lehmann/The Dough Doctor  
2021

### **Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature**

Sure.....I do it all the time.

For most home pizza makers the doughs size is so small so as to be equivalent to a single dough ball anyways so in my opinion, there is little or no significant difference between ball and bulk fermentation when the dough weight is less than 1-Kg. (2.2-pounds) or so. This does not mean that there isn't a difference between cold and room temperature fermentation, there's a huge difference. The only difference between "bulk" fermentation where we have a larger dough mass (under 1-Kg.) and individual dough balls weighing 225 to 500-grams is that it will take a little longer for the bulk dough to change in temperature. Additionally, the temperature gain due to heat of metabolism in the bulk dough mass is minimized if not cancelled out by its small size. Where bulk dough fermentation really makes a big difference is where we have large size doughs capable of retaining the heat generated by the yeast fermentation (about 1F per hour of fermentation). These doughs will ferment vastly differently than doughs of small size or in dough ball form.

Tom Lehmann/The Dough Doctor  
2020

### **Dough Ingredients / Re: Best Flour to use at HR 65%-70%**

My own personal "go to" flour for making pizza is Pillsbury Bread/Bread Maker Flour which is available at most supermarkets across the U.S. It comes in at approximately 12.6% protein content, it is the same as General Mills Full Strength but in a consumer size package.

Tom Lehmann/The Dough Doctor  
2019

### **Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature**

That's because the flour has had more time to hydrate. Remember that pizza doughs are NOT fully developed at the mixer so they are naturally a little tacky when balling right after mixing. If your dough is indeed "sticky" you are probably not mixing it enough. If you are using a high dough absorption you can also use an

autolyze where you mix just the flour and water together (just enough to wet the flour) and allow this to rest in the mixing bowl for 30-minutes, or so, then add the remaining ingredients and mix the dough just until it takes on a smooth, satiny appearance.

Tom Lehmann/The Dough Doctor  
2018

### **Dough Clinic / Re: Achieving biscuit-like pan pizza**

Begin by moving away from the high protein flour and move more towards a lower protein bread type flour with around 10 to 11% protein content. Don't use oil, instead use shortening at 8%. Whole egg only contributes to a dry, firm crumb structure, instead, if you have to use an egg product, use only egg yolk at 5%. Remember to mix the dough JUST until it's well incorporated...5 to 6-minutes, don't over mix it. Also remember to proof it after forming, 30 to 45-minutes should be sufficient.

Tom Lehmann/The Dough Doctor  
2017

### **Neapolitan Style / Re: Excessive hydration?**

Warm dough + Cold refrigerated temperature + closed box = condensation. How to prevent it? Place dough ball(s) in box/container, lightly oil said dough ball(s), leave container open (all the way open) as this will promote consistent and complete cooling of the dough ball(s). Leave container uncovered for whatever period of time is necessary for the dough to cool to 50F (internal temperature), then cover for the remainder of the cold fermentation time. To use the dough: Remove from cooler/fridge and leave the container covered until the internal dough ball temperature reaches 50 to 60F, then remove dough and begin opening into skins by your preferred method.

No condensation. This is how the stores do it.

Tom Lehmann/The Dough Doctor  
2016

### **Dough Clinic / Re: bulk fermentation yeast**

Neither is correct as the greatest factor involved with cooling the dough is going to be the surface exposed to the walls of the container and to a lesser extent the material the fermentation container is made from. Due to the number of variables we have never been able to accurately predict the rate of fermentation of large doughs when the dough is bulk fermented in the cooler. You will need to experimentally find the yeast level that works best in your specific case, the good news is that once you find the correct yeast level, if you always get the same finished dough temperature, and always ferment in the same container (has to be the same size dough), and always place it in the same spot in the cooler, your end result should be somewhat consistent with regard to fermentation BUT do realize that you will, in essence, have two different doughs in the fermentation container, that which is in contact with the wall of the container will be significantly different (due to more effective cooling) than that which is in the center of the dough mass where heat is not being removed very efficiently so it will show the impact of more fermentation. This characteristic of bulk fermentation in the cooler is the reason why the process never gained any popularity and is seldom used.

Tom Lehmann/The Dough Doctor  
2015

### **Newbie Topics / Re: Cooking pizza with a thick crust?**

Things to keep in mind about baking deep-dish pizzas:

- 1) Allow the dough to proof in the pan for about 45-minutes, or more between fitting the dough to the pan and dressing/baking.
- 2) Use oil in the pan for a fried effect, but shortening makes it easier to fit the dough into the pan.
- 3) Most deep-dish pizzas bake better without a stone.
- 4) Use a dark colored deep-dish pan.
- 5) A 2-inch deep pan is the best as it helps to prevent scorching the toppings in view of the long bake time required. (A little physics at play here, the higher walls hold the cool, moist air over the top of the pizza to protect the toppings during baking).
- 6) Most deep-dish pizzas are going to take close to 20-minutes to bake in a home oven at 450 to 500F.
- 7) Remove the pizza from the pan IMMEDIATELY after baking.
- 8) Not knowing anything about your oven you will need to experiment with rack placement.

Tom Lehmann/The Dough Doctor  
2014

### [\*\*Dough Clinic / Re: Achieving biscuit-like pan pizza\*\*](#)

Your 11.7% protein content flour should work well for a starting point.  
Tom Lehmann/The Dough Doctor  
2013

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: 18inch pizza screen in a home oven\*\*](#)

You're going to need to make sure you have at least 1-inch of clearance on all four sides. This is necessary to allow for airflow around the pizza and to keep the pizza far enough away from the walls of the oven to allow for a consistent bake. Rack position will be more critical than it would for a smaller diameter pizza, a slightly higher than normal rack position will probably provide the best bake.

Tom Lehmann/The Dough Doctor  
2012

### [\*\*Dough Clinic / Re: bulk fermentation yeast\*\*](#)

If you can drop the finished dough temperature to 65F/20C, 0.15% compressed yeast should work OK for you. Are you planning to cut the dough directly off of the bulk dough or are you going to scale and ball it after the bulk fermentation period?  
Tom Lehmann/The Dough Doctor  
2011

### [\*\*Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature\*\*](#)

While dough formulation is an important factor as well as fermentation and baking conditions I've found that dough absorption probably has the greatest influence on crispiness. Within reason, the higher the dough absorption, the more crispy the finished crust will be.

Tom Lehmann/The Dough Doctor  
2010

### [\*\*Shop Talk / Re: How can I make my pies and process better -Made in Blackstone oven\*\*](#)

Regarding your question #2 where you ask about getting a stronger, but more

elastic dough. Elasticity is a characteristic of a stronger dough. Are you sure you are not looking for a dough that is stronger but more extensible? This would be a dough that opens easier without tearing, and can be stretched to a greater extent without it tearing or exhibiting excessive snap-back/dough memory. If it is strength and extensibility that you are looking for changing to a stronger, higher protein content flour might be what you need, BUT keep in mind that a thinner dough does not translate to a crispier crust, just the opposite is true, so if you want to achieve a crispier center section going with a SLIGHTLY thicker center section might be the direction you need to go.

Tom Lehmann/The Dough Doctor  
2009

### **Dough Clinic / Re: bulk fermentation yeast**

You've lost me here? You said you want to bulk ferment in the cooler because you don't have sufficient room in the cooler but yet you have room to inventory the balled dough in the cooler after the bulk fermentation. I'm confused. Maybe it would help if you described your work flow to me for clarity.

Tom Lehmann/The Dough Doctor  
2008

### **Neapolitan Style / Re: Excessive hydration?**

What is your dough temperature and what is the fermentation room temperature? Most fermentation rooms are also humidified so they can maintain temperatures of around 90F/32.2C with 80 to 85% R.H. (relative humidity) which means that under these conditions the dough doesn't need to be covered. It's the temperature difference between the dough and the surrounding environment that can result in condensation on the dough. Also keep in mind that a dough that is not sufficiently developed will exhibit stickiness and be difficult to handle.

Tom Lehmann/The Dough Doctor  
2007

### **General Pizza Making / Re: "Healthier" pizza?**

There has been much past discussion here on how to properly determine the dough absorption when using whole wheat flour.

Tom Lehmann/The Dough Doctor  
2006

### **Neapolitan Style / Re: Excessive hydration?**

With a dough temperature of 19C (cold) and a room temperature of 20 to 22C (more like room temperature) you should not be getting much, if any, condensation, that being the case I would consider mixing the dough longer.

Tom Lehmann/The Dough Doctor  
2005

### **Shop Talk / Re: Is delivery worth it??**

That's a good question, you don't! That's just one of the nicer things delivery does to your pizzas. That's one of the reasons why I never recommend delivery unless the community you're in demands delivery, then it's only through one of the contracted delivery companies.

Tom Lehmann/The Dough Doctor  
2004

### **Dough Clinic / Re: In need of guidance**

If I understand your dilemma correctly the dough was too extensible (stretchy) is that correct?

What can you tell me about how the dough was mixed as well as the finished dough temperature and the dough management procedure you used.

Tom Lehmann/The Dough Doctor  
2003

**[Stones/tiles/steel, Pans & Accessories / Re: Does dough absorb wood board oil ?](#)**

If you are looking for an oil to use to seal a wood work surface look no further than plain old white mineral oil.

You flood the surface with it, allow it to soak in a few hours and then wipe off any remaining oil and burnish the surface with a clean dry towel. Periodically clean the surface by using a metal blade bench scraper.

Tom Lehmann/The Dough Doctor  
2002

**[Newbie Topics / Re: Why shape dough into balls before fermenting?](#)**

Plus, you can fit the dough balls in between the other stuff in the fridge or even place them on top of other things. They're actually easier to fit into a small fridge than a larger size bowl, not to mention that they will cool down more efficiently than a single larger size dough. Bring the individually bagged dough balls out of the fridge to warm to at least 50F prior to opening, some like to allow the dough to warm to 60F (Note: this is in reference to internal dough ball temperature), but depending upon your skill level at opening the dough balls into skins you might want to experiment with the temperature. The colder the dough is the easier it is to handle but it can be more difficult to open as the dough tends to be more elastic when cold. By allowing the dough to warm up a bit it becomes softer and more extensible which is easier to open if you have the necessary skill-set.

Tom Lehmann/The Dough Doctor  
2001

**[Dough Clinic / Re: In need of guidance](#)**

If your mixer has a common "J" hook the dough most likely just grabbed onto the hook and went for a ride with it around the bowl without receiving much, if any, mixing input/action. In a case like this if the dough temperature was much under 80F/26.6C with your yeast level, the dough was under significantly under mixed (making it sticky to handle with poor shape retention) and quite likely it was under fermented too resulting in a tight, bucky (elastic) dough condition when you were trying to form the skins.

You might try this:

Mix your dough as you are, check the finished dough temperature, you are looking for 80F/26.6 to 85F/29.4C (adjust the water temperature to give you this finished (mixed) dough temperature. Immediately scale and ball the dough, place into individual plastic bread type bags (twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge). Note: Lightly oil your hands to make handling the sticky dough easier, make sure dough balls are lightly oiled when placing into bags. Allow the dough to cold ferment in the fridge for 24 to 48-hours, remove from fridge and allow to warm AT room temperature for about 1-hour, turn dough ball out of the bag onto a floured surface, flour the dough ball and open into a skin. It should handle and open much easier thanks to bio-chemical gluten development.

To answer your question about "dough management": Dough management is

everything that you do to the dough from the time it is mixed until you open it into a skin.

Tom Lehmann/The Dough Doctor  
2000

### **Dough Clinic / Re: In need of guidance**

If you are using a mechanical dough mixer it will take care of distributing the yeast throughout the dough just fine, if you are hand mixing it will be necessary to suspend the yeast in all or a portion of the water (compressed yeast). Process is the same if you ferment the dough balls at room temperature, just don't put them in the fridge and adjust the finished dough temperature to 70F/21.1C to 75F/23.8C.

Tom Lehmann/The Dough Doctor  
1999

### **Dough Clinic / Re: In need of guidance**

There is no need to "bloom" IDY when hand mixing, just suspend it in a small amount of plain water at 95F (temperature is critical with IDY).

No need to "eye ball" the yeast, just put it into a known quantity of 95F water, suspend it and divide the water. for example, if you need 1-gram of IDY you can weigh 2-grams into the water and use only half of the water. If you want 0.5-gram just divide the water by four. This is a pretty common practice where small amounts of an ingredient are needed, it sure beats the "guess and by gosh" method.

Tom Lehmann/The Dough Doctor  
1998

### **Dough Clinic / Re: Ice cubes in dough hydration and adding oil**

Mix the dough until all of the ice has melted, then add the oil gradually over 60-seconds or so.

Tom Lehmann/The Dough Doctor  
1997

### **Dough Clinic / Re: In need of guidance**

PA;

No offense taken. :)

Tom Lehmann/The Dough Doctor  
1996

### **Dough Clinic / Re: Ice cubes in dough hydration and adding oil**

You get a higher BTU exchange when using ice as opposed to ice water...big difference. When using ice it is not recommended that "ice cubes" be used as they do not melt very well, instead, use shaved ice or flake ice. Very seldom do we ever need to add ice to a dough to achieve the desired finished dough temperature unless we're making some type of a frozen dough or we have a very hot mixing room to contend with. For most doughs with a targeted finished dough temperature in the 70 to 85F range water temperature in the 55 to 65F range will be sufficient.

Tom Lehmann/The Dough Doctor  
1995

### **Dough Clinic / Re: Better / best water to use?**

Hard tap water is going to be the best to use. Don't worry about the hardness, the harder the better as far as the dough is concerned. If taste is an issue for you use an activated carbon filter. R.O water is probably the worst water to use in a dough

with softened water running a close second. The dissolved minerals actually strengthen the dough (especially the calcium).

Tom Lehmann/The Dough Doctor  
1994

**Shop Talk / Re: Keeping pizza hot and not soggy when transporting to customers**

Here are some suggestions for a better DELCO pizza.

- 1) Bake the pizzas as long as possible.
- 2) Bake your pizzas in an air impingement oven for a drier top.
- 3) Minimize vegetable toppings.
- 4) Do not cut the pizza.
- 5) Allow pizza to steam off for a minute prior to boxing.
- 6) Use a ripple sheet or Dri-Pie Mat under the pizza in the box.
- 7) Make sure steam vents in boxes are opened.

That's about the best you can do.

Tom Lehmann/The Dough Doctor  
1993

**Dough Clinic / Re: Better / best water to use?**

The main "good thing" in the water used for making dough is calcium. If you use "0" water and add 0.25% (total flour basis) calcium sulfate you will have about the best you can hope for in a bread or pizza dough.

Tom Lehmann/The Dough Doctor  
1992

**Dough Clinic / Re: Dough Formulation and bake time**

Factors affecting baking time:

Dough formulation.

Dough fermentation.

Oven type and design.

How the oven is fired (gas, electric, wood, coal)

Baking temperature.

Baking platform and color.

Dough weight/thickness.

Type of pizza.

Application of pizza (dine in v/s DELCO)

Type and amount of toppings.

I probably missed a couple but I think those are the high points.

Tom Lehmann/The Dough Doctor  
1991

**Stones/tiles/steel, Pans & Accessories / Re: Wooden pizza peel in WFO?**

All the time.

Tom Lehmann/The Dough Doctor  
1990

**Dough Clinic / Re: Ice cubes in dough hydration and adding oil**

If you're machine mixing and you are using all very cold water it's best to add the IDY to the dough after about a minute of mixing time. If you are hand mixing you are better off suspending the IDY in a small amount of 95F/35C water, you can then add it to the cold water without any issues.

Tom Lehmann/The Dough Doctor  
1989

**Dough Clinic / Re: re-ball the dough before use?**

To answer your first question it has to do with two things, one is realignment of the gluten bonds and the second has to do with exposing the gluten bonds to oxygen which restrengthens the gluten. We do this on a commercial basis using 2,800 pound dough mixers where the dough is mixed until it becomes almost too soft to handle, then the mixer door is opened to allow air/oxygen to replace the carbon dioxide inside the mixing chamber and the dough is then mixed at slow speed to expose it to the air, much like what you do when re-rounding the dough balls, the dough is then finished with a short mix at high speed and discharged for processing. This is done for either of two reasons, it can be done to address an over fermented dough resulting from a delay in production or it can be done to allow for the addition of more water (higher absorption) to the dough.

To answer your second question, this is a step commonly taken when working with high absorption doughs, the rest period in the mixing bowl acts like an autolyse period allowing time for the flour to better absorb the water. If done correctly, there is good scientific evidence that the dough mixing period prior to the rest period opens the gluten structure allowing it to better absorb water which allows the dough to carry even greater amounts of water without becoming excessively soft and unmanageable. In bakery terms this process is referred to as the "fatigue dough mixing method". By this method the dough is mixed to just short of full development with the greater dough absorption, it is then tumbled in the mixer at low speed with the mixing bowl partially open to allow for the entry of air, this is done for several minutes during which the dough becomes noticeably tighter, it is then mixed at high speed for a very short time just to give it the desired extensibility and discharged for processing. This procedure really isn't suited for pizza production though as pizza doughs are NOT mixed to full development in the manner as bread doughs are.

Tom Lehmann/The Dough Doctor  
1988

**Shop Talk / Re: Keeping pizza hot and not soggy when transporting to customers**

Parchment paper will not help in the least, the idea is to have the pizza supported/raised up off of the bottom of the box to allow steam/moisture to escape (that's what makes the bottom soggy). Cutting a delivered pizza in front of the customer? I can see it for a carry out pizza but not for a delivery pizza.

Tom Lehmann/The Dough Doctor  
1987

**Dough Clinic / Re: Better / best water to use?**

Actually, any potable water with a neutral or very near neutral pH should work just fine. Remember, sourdoughs were born in the presence of well water/natural spring water. With today's municipal water treatment facilities seemingly all over the board with water quality (well documented fact) as a general rule I might suggest that bottled spring water/mineral water be used when working with sourdough systems unless you know that your doughs will perform OK with your tap water.

Tom Lehmann/The Dough Doctor  
1986

## **Dough Clinic / Re: Timing my dough balls**

Here's another idea to try,

Remove the dough balls from the fridge, make sure they are lightly oiled to prevent crusting, partially flatten the dough balls to about 1.5-inches thick, place the flattened (puck shape) dough balls onto a cookie sheet and place in a warm location (on top of the stove?), turn the dough pieces over after 20-minutes and allow to go for another 20-minutes, then begin opening them into skins by your preferred manner. This is similar to how we force the dough in a commercial pizzeria setting. If you don't pre-flatten the dough balls into "pucks" they are very difficult to warm properly as only the outside gets warmed while the middle is still cold.

Tom Lehmann/The Dough Doctor  
1985

## **Dough Clinic / Re: Tweaks for using cold dough?**

Without knowing your dough formula and management procedure I can't say too much but as a rule, by adjusting the IDY to about 0.45% and increasing the total dough absorption to around 65% (assuming you are using a flour with 12 to 12.8% protein content) you should be able to effectively manage your dough straight out of the cooler after 36 to 48-hours cold fermentation time, again assuming a finished dough temperature of 70 to 75F and balling the dough immediately after mixing for cold fermentation and cross-stacking/down-stacking after at least 2-hours (another assumption). A lot of assumptions I know, but that's the best I've got to go on for now.

Tom Lehmann/The Dough Doctor  
1984

## **Shop Talk / Re: Repetative strain in hands from rounding**

Carl;

Are you saying that you don't have 4-square feet (2 X 2) to spare in your kitchen? That's all the space required by an AM-Round O Matic. Sure rounders cost some money but then so does a life long disability not to mention the associated medical costs. I don't know how you're presently rounding your dough balls but if you go to my web site at <[www.doughdoctor.com](http://www.doughdoctor.com)> and peruse through my videos you will be able to see how I round my dough balls. I've been teaching this method to operators for years and it really works well, fast and with a lot less strain (absolutely nothing on the fingers).

Tom Lehmann/The Dough Doctor  
1983

## **General Pizza Making / Re: Pizza with last minute balling ?**

The method described here, cutting a piece of dough from the large fermented dough mass, and immediately flouring and sheeting it (NOT ROUNDING IT) is the same process commonly used by pizzerias back in the late 40's and through the 50's. It died out in the 60's when we began looking for a more effective way to manage the dough as this method had two major flaws. 1) It gave pizzas that were somewhat inconsistent as the dough continued to ferment and change throughout the day. 2) It limited the number of pizzas which could be sold without fear of having to toss out masses of unused dough. This procedure was ultimately replaced by a variation of the cold fermented dough ball method of dough management we see widely used in pizzerias today. It was also this process that resulted in high protein flour becoming known as "pizza flour" as you needed all that protein content to give the dough the necessary fermentation tolerance to hold up to all

those hours of fermentation at room temperature. A typical dough formula from those bygone years will look something like this:

Flour: All Trumps 100%

Salt: 2.5%

Yeast: (compressed, as we didn't have IDY at that time) 0.5%

Sugar: 2%

Water: 55%

The dough was started approximately 6 to 8-hours prior to use and used throughout the day/evening or until it was gone. Unused dough was tossed out. A piece of dough was grabbed and cut from the bulk dough piece, it was floured and sheeted to thickness and trimmed to size. Trim scrap might have been saved but was usually just tossed out. The dough sheet was commonly docked, then dressed and baked in a deck oven at 500 to 525F.

Tom Lehmann/The Dough Doctor

1982

### **Shop Talk / Re: Repetitive strain in hands from rounding**

The other thing you can do to help alleviate things a bit is to increase the dough absorption which will make for a softer, more easily rounded dough, if this will alter the style of pizza you're making is something that I cannot answer.

Tom Lehmann/The Dough Doctor

1981

### **General Pizza Making / Re: Pizza with last minute balling ?**

I think what you were seeing was the lose ends of the piece of dough being tucked into the body of the dough as it was being prepared for sheeting, this is a far stretch from actual rounding/balling of the dough.

Tom Lehmann/The Dough Doctor

1980

### **Stones/tiles/steel, Pans & Accessories / Re: Wooden pizza peel in WFO?**

Great looking peel!

Treat it with mineral oil to protect it and it should last a very long time.

Tom Lehmann/The Dough Doctor

1979

### **Chitchat / Re: Food Quotes**

If the food was good, don't ask to see the kitchen.

I've never had a pizza I couldn't learn to like.

Tom Lehmann/The Dough Doctor

1978

### **Chitchat / Re: Food Quotes**

Craig;

I'm betting if she was on a diet that she'd have the pizza cut into only two slices!

:-D :-D :-D :-D

Tom Lehmann/The Dough Doctor

1977

### **General Pizza Making / Re: Multiple pizzas**

Suggestion, have you thought about par-baking the crusts with only the sauce, then add the remainder of toppings and just finish baking. This will reduce the baking time by about 50% for most pizzas. You can make the par-baked crusts about an hour in advance of using them without any issues at all.

Tom Lehmann/The Dough Doctor  
1976

### **Shop Talk / Re: Pizza Dough**

We used to demonstrate frozen dough in our pizza seminar. What we found to work quite well with frozen dough is to slack it out in the cooler over night on an 18 X 26 aluminum sheet pan, then bring it out of the cooler, brush the dough balls lightly with salad oil and slip a large, food contact approved, plastic bag over the sheet pan containing the dough balls, pull the bottom of the bag up over the dough balls and then bring the top down and tuck everything under the pan. Allow the dough balls to remain at room temperature for 1-hour, then place back into the cooler for 24-hours. After the 24-hour cold fermentation period the dough balls will be ready to open. Because most commercially made frozen dough contains L-cysteine you should be able to take the dough directly from the fridge to the prep-table for opening and immediate use. I would suggest using a dough docker with your frozen dough. Any dough balls not used during the first day of use can be left in the cooler for use on the following day but remember FIFO.

This process will give your frozen dough much of the flavor characteristics typically obtained with dough that's made in-house and you will also find that it's much more consistent when managed in this manner.

Tom Lehmann/The Dough Doctor  
1975

### **Chitchat / Re: Life's Meaningful Quotes.....**

My personal favorite:  
Death....Natures way of saying "slow down".

Tom Lehmann/The Dough Doctor  
1974

### **Starters/Sponges / Re: Sourness in Pizza Dough**

Victor;  
Since every starter culture is different it is not unusual to achieve different flavors or magnitudes of sourness/tartness from the different cultures. The micro flora that your specific culture consists of is most likely producing a lower pH which results in the more tart flavor profile of the finished/baked crust. I would suggest using less of the starter when making your doughs. A good starting point would be to use 5% less and bench mark from there.

Tom Lehmann/The Dough Doctor  
1973

### **Prep Equipment / Re: Murenking / Aikok dual hook mixer**

Craig is correct, most, if not all planetary type mixers do have a dough weight sweet spot that falls within a fairly narrow range. I've found over the years that this applies to essentially every mixer utilizing a vertical bowl design. Spiral dough mixers which utilize a horizontal bowl design typically have a much wider dough weight range sweet spot. It all has to do with the way the dough interacts with the agitator and the bowl. In a spiral design mixer the dough reacts more with the agitator than the bowl, hence the difference.

Tom Lehmann/The Dough Doctor

1972

**Dough Clinic / Re: Kneading AT and Autolysing**

The only time I use an autolyse is when I'm working with high dough absorptions (above 70%). When using a mechanical dough mixer you can use 100% of the flour in the autolyse but when hand mixing I suggest not going over 75% as the remaining flour will help to disperse the ingredients into the dough after the autolyse period. When hand mixing it takes some effort to mix the dough to a smooth consistency much less actually over mix it, and with bromated flour it is all but impossible to over mix the dough by hand.

Tom Lehmann/The Dough Doctor  
1971

**Dough Clinic / Re: Will Tenderflake Deep Dish Pie Shells work for Chicago Deep Dish Pizza?**

I've never done it before but it should give you an interesting take on a Chicago type of deep-dish pizza. Without question it should be tender and flaky. If it works for you an experiment you might want to look at would be using a double thickness (two pie skins) as this might give a crust thickness more in keeping with a Chicago style pizza.

Keep us posted on your results.  
Tom Lehmann/The Dough Doctor  
1970

**Dough Clinic / Re: Oil option(s)**

Expense, and I've already got the salad oil so why stock yet another ingredient? Over spray can be an issue too.  
Tom Lehmann/The Dough Doctor  
1969

**Dough Clinic / Re: Oil option(s)**

A little oil on the hands, wipe your hands on the dough ball(s) and drop it into the bag.....done.

We did a study a number of years ago to determine if spraying of hand wiping put more oil onto the dough ball. Spraying put significantly more oil onto the dough ball than wiping the oil on with your hands.. This was done as part of a study where we were trying to reduce the fat content of the dough as much as possible.

Tom Lehmann/The Dough Doctor  
1968

**Dough Clinic / Re: In need of guidance**

To achieve a finished dough temperature in the 70 to 75F range you will need to use colder water when making your dough. When I was working with Greenwich there in the Philippines we were using dough water in the 60F range to achieve our targeted finished dough temperature.

Tom Lehmann/The Dough Doctor  
1967

**Dough Clinic / Re: Slapping it around**

"Whacking" the dough down on the bench top actually helps to relax the dough for the following handling procedure. Bread bakers have been doing it for hundreds of years just prior to forming the dough ball into a shaped loaf.  
Why do some do it and others don't? Habit, training, who knows? In the end you do

what works for YOU and what YOU are comfortable with.

Tom Lehmann/The Dough Doctor

1966

### **Dough Clinic / Re: Dough to throw?**

We used to make exhibition dough aka acrobatic dough for the U.S. Pizza Team the formula which we used was as follows:

Flour: 100% (All Trumps)

Salt: 6%

Oil: 2%

Water: 65% (variable).

You need to machine mix the dough to develop a smooth, extensible consistency.

Targeted finished dough temperature: 80F

Immediately after mixing scale and ball the dough. It will be ready to use in approximately 30-minutes and remain good to use for ??????

If you are looking for something to practice acrobatic dough tossing you might want to look into "Through Dough".

Tom Lehmann/The Dough Doctor

1965

### **Dough Clinic / Re: Changing recipe for bulk ferment**

Anne;

I don't recommend what you are proposing for a pizzeria operation, instead, how about just adjusting your dough formula to allow you to mix, scale and ball the dough in the evening when you have the walk-in space and dough boxes available and then be able to use the dough on the following day, I'm presuming at around 11:00 a.m.? This would mean modifying your dough formulation for an 18-hour cold fermentation process. I assume you are using IDY? If that's the case the only change you will need to make will be to the dough water temperature. You will need to adjust the water temperature to give you a finished dough temperature in the 80 to 85F range. Assuming you are using a planetary mixer and a mixing time of about 10-minutes your water temperature should be between 70 and 75F. With a dough ball weight of about 10-ounces your cross-stack time will be about 2-hours.

Tom Lehmann/The Dough Doctor

1964

### **Dough Clinic / Re: Dough to throw?**

The idea here is to make a single dough which all contestants will have to work with. The dough has to be totally stable at room temperature so yeast is never used. Remember, it's for exhibition purposes only. The All Trumps flour was used to provide the necessary gluten for extensibility without tearing. Because there is no yeast in the dough it has to be mixed/developed to essentially full gluten development being careful not to over develop the gluten. You want to have good extensibility while still retaining sufficient elasticity so the dough will withstand the rigors of being continually tossed. We always worked with the Team to get the extensibility/elasticity balance just the way they wanted it.

Tom Lehmann/The Dough Doctor

1963

### **Dough Clinic / Re: Dough to throw?**

Craig;

That's the "Through Dough" I had previously mentioned. Back in the days of the

"Pizza Cruise" excursions, classes were held using this product to teach the art of pizza tossing/spinning. For a number of years it was all the rage at Pizza Expo. The wet towel works well too but this stuff is much closer to the real thing.

Tom Lehmann/The Dough Doctor  
1962

### **Dough Clinic / Re: Dough help, still not quite right**

Your dough fermentation time seems rather short to me (lack of sufficient fermentation time is a major contributor to excessive elasticity in the dough). My suggestion is to mix, scale, ball, and cold ferment the dough balls for 24 to 48-hours before opening them into skins and dressing for baking. If you don't want to go that route I'd suggest increasing the finished dough temperature to increase the fermentation rate. I see in your last post that you are up to 1.5% IDY which is a very high yeast level for a pizza dough, so if this doesn't improve the handling properties of the dough concentrate your efforts on either temperature or changing over to a cold fermentation process. As a last resort you might need to change your flour or flour blend to something a little weaker and better suited to your short fermentation process.

Tom Lehmann/The Dough Doctor  
1961

### **Dough Clinic / Re: Dough help, still not quite right**

You might start with this:

Flour: 100% (KABF)

Salt: 2%

Sugar: 2% (optional)

Olive oil: 2%

IDY: 0.4%

Water: 65% (70F)

Procedure:

Put water in mixing bowl first, then add the salt and flour, add the IDY on top of the flour, mix just until you don't see any dry flour in the bowl, then add the oil and mix just until the dough takes on a smooth consistency. Targeted finished dough temperature: 80F.

Immediately scale and ball, lightly oil the dough balls and place into individual plastic bread bags, twist the open end into a pony tail and tuck under the dough ball as you place it into the fridge to cold ferment for 24-hours. Remove from fridge, allow to warm AT room temperature for 1-hour, open into a skin, dress and bake. The dough, when made in this manner should be able to be used as soon as 24-hours to a far out as 48-hours, maybe a little more. This process allows you to make the dough at a time when it's convenient for you and use it anytime within the next 2-days or so.

Tom Lehmann/The Dough Doctor  
1960

### **Dough Clinic / Re: Changing recipe for bulk ferment**

Q.J. is spot on, consistency is the name of the game. If the cross-stacking and down-stacking are posing a problem you can always place the dough balls onto an aluminum sheet pan, lightly oil the dough balls and slip a food contact approved plastic bag over each sheet pan. This procedure has been discussed in a previous post. Store the sheet pans in a vertical pan rack for mobility and you're good to go as there is no need to cross-stack or down stack when using this process, it will cut

at least two or more hours off of the process before kissing the dough good night.  
Tom Lehmann/The Dough Doctor  
1959

### **Dough Clinic / Re: Kid-friendly pizza dough recipe**

When I was a very young child I would always look forward to making pizza using the Chef BoyArdee Pizza Kit that my mother would buy from the supermarket (food store back in those days). The dough (as a dry mix, just add water) and the sauce are provided, so you just add water, mix and spread out onto an greased pizza pan or cookie sheet, add the sauce and your choice of toppings and 20-minutes later we were eating pizza. Not fancy or extravagant but for my first real introduction to making pizza it wasn't a bad experience. The good news is that you can still buy it at your local supermarket! :chef:

After the kids get the hang of making pizza you can always advance them on to making your own yeast leavened dough but if the kids attention span is anything like mine was doing that right up front would have been second only to sitting out in the yard and watching the grass grow.

Tom Lehmann/The Dough Doctor  
1958

### **Dough Clinic / Re: Lehmann's naturally leavened recipes**

After re-ballng you will typically need to allow the dough ball to rest for at the VERY MINIMUM, an hour but this can easily double in time before you can re-stretch the dough.

Is your sourdough active at refrigerated temperatures?

Tom Lehmann/The Dough Doctor  
1957

### **Dough Clinic / Re: Kid-friendly pizza dough recipe**

If you go to the PMQ (Pizza Marketing Quarterly) web site <[www.pmq.com](http://www.pmq.com)> and go into the Recipe Bank, use "home made pizza dough" for your search you will find my time proven home made pizza dough formula/recipe that I developed for local farm families to use when making fast and easy pizza. I use it all the time when I'm at my son's home and he wants me to make pizza for dinner.

The pizza dough mix that we used when I was a child was essentially a slightly modified baking powder biscuit mix, you can make something similar by putting together a simple pizza dough (be sure it contains some honey or corn sugar, don't use table sugar as it will not develop crust color) and replace the yeast with baking powder at 5% of the total flour weight. Mix all ingredients together, scale, ball, cover with a piece of plastic, and set aside to rest for about 20-minutes, then lightly oil your fingers and begin opening the dough onto a lightly greased pan, immediately sauce and dress as desired and bake at 425F/218C.

Tom Lehmann/The Dough Doctor  
1956

### **Dough Clinic / Re: Lehmann's naturally leavened recipes**

Are your screens seasoned? From what I see in the picture it appears that they may not be seasoned?

Tom Lehmann/The Dough Doctor  
1955

### **Dough Clinic / Re: Changing recipe for bulk ferment**

After any bulk fermentation process the dough is going to be gassy and difficult, if

not impossible to cool for stabilization so you're going to be looking at bulk fermenting, scaling and balling and then using the dough balls within the next 2 to 4-hours or so. The only option would be to open the balls into skins as soon as possible, place onto screens for storage and place into a wire tree rack stored in the cooler, be sure to place a plastic bag over the rack after an hour to prevent drying. By opening the balls into skins they can be more efficiently cooled for holding throughout the day.

Tom Lehmann/The Dough Doctor  
1954

### **Dough Clinic / Re: Bakers Percent/Formula Question**

Whenever you want to reduce or scale up a dough in size all you need to do is to adjust the total flour weight then use bakers percent to calculate the amounts of the other ingredients. I have no idea where that dough formula is coming from? ???

Tom Lehmann/The Dough Doctor  
1953

### **General Pizza Making / Re: Pre-made Pizza Crust**

The easiest way to make a par-baked crust is to add about 1/2 of the sauce to it prior to baking, this will limit the bubbling significantly. Once it's par-baked you can store it at room temperature for up to 3-days. If you refrigerate it be sure to allow a couple hours at room temperature for the crust to warm up before adding the remainder of the sauce and dressing it for baking. Best results will be had by baking it on a pizza screen as opposed to on the deck for the final bake.

Tom Lehmann/The Dough Doctor  
1952

### **New York Style / Re: Scaling dough recipe up**

Without knowing your dough management procedure it's impossible to say if it can be scaled up or not.

Tom Lehmann/The Dough Doctor  
1951

### **Newbie Topics / Re: What is the worst pizza you have eaten?**

We once had a lab tech that made his pizza using ketchup for the sauce. Can't say I took an immediate liking to it.

Tom Lehmann/The Dough Doctor  
1950

### **Starters/Sponges / Re: Poolish %**

OMG! Where to begin....

The poolish provides flavor and sets the stage for potential crispiness and to some degree tenderness. Depending upon the amount of fermentation and temperature it can also impact crust color too.

The % of poolish and its impact upon the dough are dependent upon such things as the strength of the flour, the fermentation tolerance of the flour, the amount of yeast used in the poolish, the temperature of the poolish and the fermentation time.

All I can say is that when I use a poolish with a 12.8% protein content strong bread flour I use 100% absorption, 1/2 of my yeast and 85F water. I will typically allow the poolish to ferment for about 90-minutes. I'm sure others have their own favorite ways to use a poolish.

Tom Lehmann/The Dough Doctor

1949

**Dough Clinic / Re: Bakers Percent/Formula Question**

Yael;

You're a pretty smart "cookie"! ^^^

You nailed it!

Tom Lehmann/The Dough Doctor

1948

**New York Style / Re: Scaling dough recipe up**

Allow me to elaborate on my previous response.

The ingredient amounts can very easily be scaled up or down to give you any size dough you wish to make but the issue is in the dough management procedure (unknown to me at this time), there are some dough management procedures that just do not lend themselves to being scaled up into a production size dough as they will not be able to provide the overall dough tolerance and consistency needed in a pizzeria operation where failure or inconsistency is not an option. If you want to see a copy of a bullet proof dough management procedure that you can use as a template for developing your own effective dough management procedure feel free to contact me at <thedoughdoctor@hotmail.com> and I'll be glad to send you a copy. Just ask for my Dough Management Procedure.

Tom Lehmann/The Dough Doctor

1947

**Dough Clinic / Re: Did I let my dough proof too long?**

Agreed, the dough really appears to be over fermented.

The only time I ever go over 1% compressed yeast is when I'm making an emergency dough for use within about 2-hours. You don't indicate what kind of yeast you are using but even if it's compressed it's too much and if ADY or IDY wwaayy too much for what you are doing.

Tom Lehmann/The Dough Doctor

1946

**Dough Clinic / Re: Bakers Percent/Formula Question**

Could have been a typo (maybe they meant to show "1.5%") it's close to 1.47%? In any case, don't sweat it, go with the calculations.

Tom Lehmann/The Dough Doctor

1945

**Dough Clinic / Re: Lehmann's naturally leavened recipes**

Your dough will exhibit a pronounced tendency to stick to an un-seasoned screen, pan or disk. To season your screen wipe it with salad oil and place in the oven at 425F. for about 20-minutes, remove, allow to cool for a couple minutes and repeat. After the second application you should see the aluminum taking on a slight amber tint, this will continue to darken with use. DO NOT wash any seasoned pan or screen as it can result in the seasoning coming off like a bad sunburn. Instead, if they ever need to be cleaned because debris is beginning to clog the screen openings, turn your oven to its highest setting and bake the screen for 30-minutes, then you can just tap the screen to dislodge most of the offending material and at the very worst it will now be easier to clear the openings using a common table fork.

Tom Lehmann/The Dough Doctor

1944

## **Dough Clinic / Re: Pedantic Question**

The idea with the bags is to eliminate all head space within the bag, not to reduce drying but to eliminate condensation which will form within that head space. Pull the bag into direct contact with the dough ball, give it a spin to form the pony tail and tuck it under the dough ball as you place it in the cooler/fridge.

If you make a dough without yeast and allow it to set at room temperature for 24-hours you will have an un-risen dough, without any yeast after the 24-hour period.

I've done it before, not on purpose, but it still came out the same way.

Tom Lehmann/The Dough Doctor  
1943

## **Dough Clinic / Re: Did I let my dough proof too long?**

While the dough was over fermented, it was not over fermented to the point of full collapse so it appears that there was still sufficient strength left to support the weight of the toppings, that being said, fermentation develops flavor in the finished/baked crust so it would be expected to be flavorful but difficult to handle the dough. From the looks of the crumb structure it appears to be in the process of collapsing as evidenced by the thick, heavy cell walls, a reduction in yeast level should still give a good flavor but with improved handling properties and a finer, more porous finished cell structure in the crust which will most likely result in a crispier crust too.

Tom Lehmann/The Dough Doctor  
1942

## **Newbie Topics / Re: Low Calorie Pizza**

Low calorie for pizza is all about the toppings. Here is a good dough formula:

Flour: 100% whole white wheat flour.

Salt: 1.75%

Oil: 1%

IDY: 0.375%

Water: 67% (variable)

For the toppings:

Ripe tomato slices for the sauce.

Light on the cheese.

Concentrate more on vegetable toppings.

For a meat topping consider skinless chicken breast.

NOTE: Check at your local supermarket to see if they have a Mozzarella cheese analog from Galaxy Nutritional Foods. This is a soy tofu based product with "0" cholesterol and when blended 50/50 with your regular cheese makes a decent healthy cheese alternative.

Tom Lehmann/The Dough Doctor  
1941

## **Dough Clinic / Re: Pedantic Question**

The percent dough absorption used will be determined by both the flour absorption properties as well as the style of pizza you are making. If by YOUR dough management procedure YOU find that you can open the dough balls easier using a slightly lower dough absorption, by all means do so. As for dough management with high absorption doughs, if you want you can go with an autolyse to give you a slightly easier dough to handle at the same total dough absorption. If you are looking for a dough management procedure that works well with dough absorption

values up into the mid to high 60% range I can send you my Dough Management Procedure that has a very long standing track record of giving very manageable doughs for both hand and machine opening without being sticky on the peel (if you do your part). To get a copy of my Dough Management Procedure just e-mail me at <thedoughdoctor@hotmail.com> and ask for my Dough Management Procedure.  
Tom Lehmann/The Dough Doctor  
1940

**Dough Clinic / Re: How long can we store the dough in the fridge ?**

Without knowing the bulk dough weight as well as the finished dough temperature and how it's being stored in the fridge it's impossible to answer your question outside of a SWAG.

IF your dough size is small, under 1Kg. in weight, there is little to no difference between fermenting the dough in bulk as opposed to fermenting it in scaled dough ball form. If your total dough weight is at or under this weight the finished dough temperature and how you are storing the dough will be the determining factors as to how long the dough can be held in the fridge.

Need more information.

Tom Lehmann/The Dough Doctor  
1939

**Dough Clinic / Re: Best & Fast way to prep chicken breast toppings?**

As I was reading your question poaching them was exactly what I had in mind.  
Tom Lehmann/The Dough Doctor  
1938

**Dough Clinic / Re: CY % in Poolish vs. Final Dough????**

If you are making a "master poolish" 20% would be about right but if you're making pizza at home why not put all or at least half of the yeast in the poolish?  
Tom Lehmann/The Dough Doctor  
1937

**Dough Clinic / Re: What is the point of ADY when IDY appears to be superior?**

IDY isn't "stronger" than ADY, it is just more concentrated as it has a lower total moisture level.

As for hydrating/activating the ADY prior to addition to the dough, it has been proven scientifically many times that overall yeast performance as well as dough consistency are improved when the ADY is hydrated in 100F water prior to addition. IDY was developed specifically for addition directly to the dough without any pre-hydration/activation. Studies that I did at AIB many years ago showed that IDY has a shelf life of up to two years while ADY has a projected shelf life of 12-months. Because of the fact that it doesn't need activation and its better shelf life properties IDY had gained a lot of popularity for use in goodie bags as well as complete pizza mixes.

Tom Lehmann/The Dough Doctor  
1936

**Shop Talk / Re: Question about streamlining dough process**

Some pizzerias will manage their dough directly out of the walk-in cooler but to do so the type of pizza being made must accommodate dough absorptions in the 60% range and a dough sheeter will be required to open the dough into a skin. Where hand forming methods are used (the majority of pizzerias) the dough is brought out

of the cooler, and allowed to warm to 50F before being used, once the dough warms to 50F it will remain good to use for up to a maximum of 3-hours. Any dough not used in this period of time can be opened into skins, placed onto screens and then into a wire tree rack, placed in the cooler and after 30-minutes covered with a food contact approved plastic bag and saved for use as pre-opened skins during the next rush period. To use these pre-opened skins they will turn them off of the screen and finish opening them to full size or just touch them up a bit before dressing and baking.

A few stores will also convert any unused dough balls into bread sticks, garlic knots, etc. These will be par-baked and only require a short finish bake at the time of final use.

Tom Lehmann/The Dough Doctor  
1935

#### [\*\*Dough Clinic / Re: Proper Quantity of yeast\*\*](#)

The highest I ever go with the salt is 2.5% and when fermenting in a similar manner I use 0.15% CY. If you go too low on the yeast you run the chance of not having sufficient leavening power to support the weight of the topping ingredients and the pizza collapsing during baking resulting in a difficult to bake crust with the eating properties of shoe leather.

Tom Lehmann/The Dough Doctor  
1934

#### [\*\*Dough Clinic / Re: What is the point of ADY when IDY appears to be superior?\*\*](#)

I agree with Craig, especially when you consider that you can pitch both and go with a natural starter if you're so inclined and still make a great product.

Tom Lehmann/The Dough Doctor  
1933

#### [\*\*Shop Talk / Re: Question about streamlining dough process\*\*](#)

In one word...no. At 50F you will still get fermentation taking place.

Tom Lehmann/The Dough Doctor  
1932

#### [\*\*Dough Clinic / Re: Proper Quantity of yeast\*\*](#)

No, that's used for bread doughs. The dough should not show signs of collapse and when you begin to open it the dough will not fight you (too elastic).

Tom Lehmann/The Dough Doctor  
1931

#### [\*\*Dough Clinic / Re: Critique my dough/process - first time "experimenting"\*\*](#)

Without at least the sauce on the skin it is literally impossible to learn anything from baking an un-topped skin. If you had flipper the crusts over after about 15-seconds and then baked for another 15 to 20-seconds you would have made pita not pizza. Pita is baked at 750 to 900F for 25 to 30-seconds. Just for the record, pita and pizza can be made from the same basic dough formula, ( flour: 100%/Salt: 2%/ CY: 1%/Water: 52%/ Oil: 1% optional) it's all in how the dough is handled and baked.

Tom Lehmann/The Dough Doctor  
1930

#### [\*\*Dough Clinic / Re: How and when to turn the pizza in the WFO oven ?\*\*](#)

Remember what I was once told: "Every oven is a law unto itself and only itself"  
Literally translated: Every oven is different. You will need to experiment to find out  
what works best for YOUR pizza, made by YOUR dough formula, managed by  
YOUR procedure, in YOUR oven. I can sat this though, make sure you allow the  
pizza to set, undisturbed after peeling it into the oven, long enough for it to release  
cleanly from the deck. Failure to do so will result in tearing the skin/crust as you  
try to move it leaving a pile of toppings on the deck while you're busy creating  
some new four letter words. Think of it as you would when searing a steak.

Tom Lehmann/The Dough Doctor  
1929

**Dough Clinic / Re: What is the point of ADY when IDY appears to be superior?**

SAF IDY contains sorbitan monostearate and ascorbic acid as "added ingredients" in their commercial packages of IDY. The sorbitan monostearate is used to help with rehydration of the dry yeast and the ascorbic acid is added to counter the slight reducing (dough softening) effects of the glutathione present with all forms of dry yeast.

Tom Lehmann/The Dough Doctor  
1928

**Dough Clinic / Re: How long can we store the dough in the fridge ?**

How was the dough bulk fermented? Plastic bag, lightly covered bowl, uncovered, tightly lidded, other?

Tom Lehmann/The Dough Doctor  
1927

**Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

Begin your experimenting with 10% sucrose. The type of flour to use will be a strong bread flour with 12.8 to 13.2% protein content. Yeast will be about 3% CY with salt at 2%, shortening at 2% and water at about 54%. Mix to a smooth dough plus two minutes. Finished dough temperature should be 80 to 82F. After mixing allow the dough to bulk ferment for 1-hour, then divide into smaller manageable pieces and form into loaves, not balls as you will be rolling it out into a rectangular shape later on. Set the dough loaves aside, cover with a sheet of plastic and allow to ferment again 45 to 60-minutes. Exact time may very. Roll out dough to 3/8 to 1/2 -inch thickness and place onto an oiled pizza screen for final proofing. Proof at 85 to 90F with 75% relative humidity. Proofing time will be about 45-minutes. Fry at 365F for about 20-seconds on the first side, turn and fry about 55-seconds on the second side, turn again and fry about 30-seconds before removing from the fryer. Place onto a screen to drain. Allow donuts to cool about 1-minute before icing, this is important as the heat of the donut helps the icing flow over the donut. Use the hand dip method for icing the donuts.

Tom Lehmann/The Dough Doctor  
1926

**Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

Donuts are fries in one of two ways, surface frying which requires that the donut be flipped/turned so as to fry both sides. The other is to fry the donut submerged using a submersion screen on top of the donut. Submersion limits donut expansion but can contribute to uniformity of shape. A good example of submerged donuts is that of the Bismark (not the battleship, the jelly filled donut). Most Bismarks are submersion fried since the white ring due to dough expansion during surface frying

will be a weak spot for the jelly to leak through during injection.

My first shop started out as a donut shop for several years until donuts became a bad thing so we transitioned into a pizza and sandwich shop. I was also a training consultant for Pillsbury when they acquired the Mr. Donut chain.

2% shortening is correct but the range can go as high as 5%.

On average, your donuts should weigh the same coming out of the fryer as the dough did when going in. Total fat absorption will be some place between 16 and 20%.

Tom Lehmann/The Dough Doctor  
1925

### [\*\*Dough Clinic / Re: Starter timing confusion\*\*](#)

After the poolish has matured to the desired level add it to the dough side ingredients but keep in mind that an 18-hour poolish is a long fermentation time for a poolish so in all probability the flour contained in the poolish will be "shot" as the protein will be badly degraded so I suggest not using more than 10 to 20% of the total flour in the poolish. Add the poolish to the dough ingredients as you would any other ingredient but make sure to take the water content into account when calculating the total absorption, you can then manage the dough in your usual manner.

Tom Lehmann/The Dough Doctor  
1924

### [\*\*Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat\*\*](#)

The last turn brings the smooth side back to the top and the rough side to the bottom so as the donuts are lifted out of the fryer the rough side will drain rather than hold the oil resulting in less fat absorption.

I just realized too that I forgot to add the whole eggs to the dough formula. Typically 8 to 10% whole egg is used in the dough formulation. remember that whole egg is 75% water when calculating the dough absorption.

Tom Lehmann/The Dough Doctor  
1923

### [\*\*Dough Clinic / Re: Bulk Cold Ferment vs Dough Ball Cold Ferment\*\*](#)

It all depends upon the size/weight of the dough and how well you are capable of consistently achieving the targeted finished dough temperature and to a lesser extent how consistent the room temperature will be. Since the dough is much more prone to change in the bulk form I would have to say that anytime you are bulk fermenting you are going to experience significantly more variability in the finished dough as well as the finished pizzas.

Tom Lehmann/The Dough Doctor  
1922

### [\*\*General Pizza Making / Re: Pizza shops handling raw sausage bare handed?\*\*](#)

The issue isn't one of contaminating the sausage as the oven should take care of any contamination but instead it's an issue of cross contamination. Any ground meat is more prone to contamination than sliced meat but even that doesn't address the cross contamination issue. Would you ever consider putting raw sausage on a salad? Of course not but that's essentially what happens when you handle raw meat/sausage and then go directly to prepping a salad without removing the gloves or thoroughly (operative word being "thoroughly") washing ones hands.

Tom Lehmann/The Dough Doctor

1921

**General Pizza Making / Re: Pizza shops handling raw sausage bare handed?**

The only benefit that gloves provide it that your hands can be more thoroughly cleaned when wearing them. If not used properly they are of no value.

Tom Lehmann/The Dough Doctor

1920

**General Pizza Making / Re: Pizza shops handling raw sausage bare handed?**

It's all the cracks and fissures in our skin and under the fingernails that make our hands so difficult to clean thoroughly. Gloves eliminate 95% of that making the hands much easier to clean. Don't forget to sanitize each time after a thorough washing too, gotta do both. ;D

Tom Lehmann/The Dough Doctor

1919

**General Pizza Making / Re: Pizza shops handling raw sausage bare handed?**

Just washing the hands isn't enough. you have to scrub with a hand brush and that won't even thoroughly clean the hands. Just look at your hands under a magnifying glass to understand why. Gloves make it a lot easier to clean and sanitize the hands which is why any USDA inspected processing/manufacturing facility requires that all line personnel upstream from packaging wear gloves.

Tom Lehmann/The Dough Doctor

1918

**Dough Clinic / Re: Dough just won't come together? No gluten development?**

To begin can you share a picture of your mixer and the dough agitator with us? Also, what is the bowl capacity and what is your flour weight? How many speeds does your mixer have? At what speed are you mixing the dough?

Tom Lehmann/The Dough Doctor

1917

**Dough Clinic / Re: Wondra Flour for Pizza Crust Recipe?**

Wondra Flour has a protein content averaging about 10.5% and is available both malted or un-malted so you will need to read the label to see if it is malted or not if that's important to you. As for formulation, any decent dough formulation should work OK but owing to the low protein content keep the finished dough temperature between 75 and 80F while keeping the total dough fermentation on the short side. I would expect that the total dough absorption would be in the 56 to 58% range. Wondra Flour is designed to hydrate quickly so it may look different in the bowl at first.

Tom Lehmann/The Dough Doctor

1916

**New York Style / Re: difference between IDY and ADY (glutenboy method vs what Gemignani says)**

DOP;

SAF/Red Star/Lesaffre Yeast recommends that IDY be suspended in 95 to 100F water for addition when very short mixing times (under 5-minutes) are employed.

Tom Lehmann/The Dough Doctor

1915

## [\*\*Dough Clinic / Re: Dough vs peel...Pros vs well, me\*\*](#)

Wrinkling is generally caused by the dough contracting, snapping back. A major cause of this is insufficient dough fermentation. This might be an area you would want to investigate further in your testing.

Tom Lehmann/The Dough Doctor  
1914

## [\*\*Dough Clinic / Re: Wondra Flour for Pizza Crust Recipe?\*\*](#)

I think it's a combination of two things, the Wondra Flour is milled very fine and it is "instantized", they do this by a process of wetting the flour and then drying it again, this procedure allows the flour to hydrate more quickly.

Tom Lehmann/The Dough Doctor  
1913

## [\*\*Dough Clinic / Re: Dough just won't come together? No gluten development?\*\*](#)

The dough is SUPPOSED to tear pretty easily when it is correctly mixed. Pizza doughs are UNDER MIXED by design. With this said, biochemical gluten development takes place during the cold fermentation period giving the dough a very fine, well developed gluten structure that has very extensible characteristics. If you take a dough ball that has been cold fermented for at least 24-hours and stretch it in your hands you should be able to see a very nice, strong but yet extensible gluten film. As for the dough balls, after the cold fermentation process they should be "just kissing" as shown in your picture of the boxed dough balls.

Is it possible that you are looking at this all wrong?

Tom Lehmann/The Dough Doctor  
1912

## [\*\*Newbie Topics / Re: Correct way to make pizza?\*\*](#)

Additionally, you do not want to fully develop the gluten, instead, mix the dough JUST until it takes on a smooth, satiny appearance, then as the dough is fermented biochemical gluten development will take care of the gluten development for you providing a dough with good extensibility characteristics, ready to be opened into a pizza skin for dressing and baking. If you are planning to cold ferment the dough for about 24-hours you can go with as much as 1% fresh yeast/compressed yeast/CY.

Adjust the water temperature to give you a finished dough temperature of 75 to 80F/23.8 to 26.6C. Scale and ball the dough immediately after mixing, lightly oil the dough ball and cold ferment it for at least 24-hours. I like to cold ferment my dough balls using the plastic bag method (discussed here in numerous posts), then remove the dough from the fridge and allow it to temper AT room temperature for about 60-minutes before turning it out of the bag onto a floured surface and opening it into a skin ready for dressing and baking.

Tom Lehmann/The Dough Doctor  
1911

## [\*\*Dough Clinic / Re: Dough vs peel...Pros vs well, me\*\*](#)

You say "as thin as possible", there is such a thing as getting the skin too thin. Remember, thin does not equate to crispy. Thin equates to a finished crust that is crispy only for the first minute or two after removing the pizza from the oven, it then quickly picks up moisture from the air as well as the toppings and becomes quite soft, sometimes even tough and chewy.

Tom Lehmann/The Dough Doctor

1910

**[Dough Clinic / Re: Wondra Flour for Pizza Crust Recipe?](#)**

We did look at it at one time but since it is really not intended for pizza application we did not pursue any further evaluation. Our impression of the flour was that it was designed to be more of a "chef's" flour, for general use in the kitchen but not specifically as a baking flour. There were just too many other flour options that worked just as well and at a lower cost too.

Tom Lehmann/The Dough Doctor

1909

**[Dough Clinic / Re: Dough vs peel...Pros vs well, me](#)**

Most of my "go to" pizzas are N.Y. style and I use 10-ounces of dough for a 12-inch pizza which gives a dough loading of 0.08849 (ounces per square inch).

Tom Lehmann/The Dough Doctor

1908

**[Dough Clinic / Re: Dough just won't come together? No gluten development?](#)**

Are you cross-stacking the dough boxes? If you don't cross-stack you will get condensation in the boxes which can raise havoc with opening the dough balls into skins. With cold fermentation I think the best flavor is had at between 48 and 72-hours.

Tom Lehmann/The Dough Doctor

1907

**[Newbie Topics / Re: Activating CY](#)**

Rolls is absolutely correct, one thing I might add though is is you are mixing your dough totally by hand it is easier to incorporate the compressed yeast (CY) if you first suspend it in the dough water. Otherwise, just crumble it on top of the flour and begin mixing.

Tom Lehmann/The Dough Doctor

1906

**[Stones/tiles/steel, Pans & Accessories / Re: Wooden pizza peel in WFO?](#)**

What you are experiencing is called "raising the grain", we need to do this when refinishing gun stocks too. We wet the wood and allow it to dry, then using 220 grit or finer sand paper lightly sand off the "whiskers" as they are called, then repeat again until no more whiskers are raised, it's then time to apply any stain (only on the gun stocks, not on a peel) and the final finish which in your case should be mineral oil.

Tom Lehmann/The Dough Doctor

1905

**[Newbie Topics / Re: Activating CY](#)**

Compressed yeast is an agglomerate of billions of yeast cells, it is not melted, nor is it dissolved, it is suspended in water (that's the correct term).

While yeast and salt can be put together in water it is generally not a good idea since if you get too much salt in the water it will damage the yeast impairing its ability to ferment. The same can be said for sugar too, so, while not necessarily deleterious to the yeast it is not a good idea to put the salt and yeast together in the water. When making sponges for making bread it is common to put salt into the sponge to help control the rate of fermentation of the sponge. A sponge for bread

making will typically contain 60 to 80% of the total flour, all or most of the yeast, salt can be from none to 2% of the total flour weight and water at 50 to 55% of the weight of the flour in the sponge.

Tom Lehmann/The Dough Doctor  
1904

**Dough Clinic / Re: Why is thee humidity higher in plastic dough boxes??**

The increase in relative humidity (RH) that you are seeing is coming from your dough as it is giving up moisture to the warm air surrounding the dough balls. When you put the dough in the fridge you cooled the box as well as the air in the box but the dough balls were warmer than the air so the moisture given up by the dough condensed on the inside of the box. The air will ultimately stabilize when the RH reaches about 85 to 87%. Remember, anytime the surrounding air temperature is cooler than the dough temperature you are going to get some condensation to a greater or lesser extent.

This is why we always want to cross-stack/or leave the boxes open for a period of time when using dough boxes in the cooler/fridge as it reduces/eliminates the condensation problem.

Tom Lehmann/The Dough Doctor  
1903

**Dough Clinic / Re: Why is thee humidity higher in plastic dough boxes??**

I'm sorry but I don't understand "the warm air from the dough did not escape into the box". Cling wrap will allow for transmission of moisture. Just wrap something in it and place it in the freezer for a couple of months.

I don't know what your finished dough temperature was so I cannot comment but it seems to me that it might be easier to just target your finished dough temperature to be the same as the room temperature, but do keep in mind that due to the heat of metabolism the dough is warming at the rate of approximately 1F per hour which can also lead to increased humidity (warm air holds more moisture than colder air). With a RH of about 75% the dough is usually pretty easy to handle but above that things begin to get a bit dicey.

Tom Lehmann/The Dough Doctor  
1902

**Dough Clinic / Re: Dough just won't come together? No gluten development?**

Something else to consider is that the garlic you are adding is a reducing agent (it weakens the dough) so you might want to run a test without the addition of the garlic powder, also you are adding 3% potato flakes, check the ingredient label on the box to see if the potato flakes are sulfited (some form of sulfite, like sodium metabisulfite, would be shown as an ingredient). Sulfites are added to potato flakes to help keep them white and prevent them from turning darker in color during processing, sulfites are also a reducing agent so you want to make sure you are using a product without added sulfites. While on the topic of potato flakes, 3% potato flakes will account for about 5% absorption so your dough with 56% absorption and 3% potato flakes is going to handle more like a dough with only 50 to 51% absorption which may account for the crust not rising and baking properly, especially around the edge.

Tom Lehmann/The Dough Doctor  
1901

**Dough Clinic / Re: Why is thee humidity higher in plastic dough boxes??**

Heat can very easily pass through cling wrap as it is a very poor insulator as insulators go.

Like I said previously, the environment will pretty well stabilize at about 85% R.H. without any apparent condensation, now, if you were to place that box into a cooler, as the walls of the box get colder the moisture in the box will begin to condense on the colder surface of the box walls and eventually drip onto the dough balls creating a wet, sticky mess at the time of opening them into skins.

Tom Lehmann/The Dough Doctor  
1900

**[Dough Clinic / Re: Why is thee humidity higher in plastic dough boxes??](#)**

Because in the box the humidity cannot be dissipated as it is in the house. Additionally, the dough balls gain temperature and this too cannot be dissipated due to the insulating properties of the box.

Tom Lehmann/The Dough Doctor  
1899

**[Dough Clinic / Re: Dough just won't come together? No gluten development?](#)**

While the vitamin C tablets are essentially the same as those intended for use as a dough strengthener, there is one significant difference, the vitamin C that you buy to take as a vitamin supplement is not micro-encapsulated so it reacts very fast in the dough, it has pretty well fully reacted by the time the dough comes off of the mixer while the micro-encapsulated form intended for use in strengthening dough doesn't fully react for at least an hour, maybe a little more.

Tom Lehmann/The Dough Doctor  
1898

**[General Pizza Making / Re: a two-hour pizza](#)**

For an "emergency" dough such as you are making double the yeast, cut the sugar in half, and adjust the finished dough temperature to 90 - 95F, immediately after mixing scale and ball, allow the dough to ferment for 1.5-hours, then open into skins, dress and bake. Why the double amount of 60-L malt? If it was flavor you were going for you can go with 4 to 5% non-diastatic malt for a malted milk like flavor in the finished crust.

Tom Lehmann/The Dough Doctor  
1897

**[Newbie Topics / Re: Activating CY](#)**

Peter;  
This is a good example of where IDY is suspended in warm water and allowed to hydrate/activate prior to addition to the dough as it covers both bases for hand and machine mixing of the dough.

Tom Lehmann/The Dough Doctor  
1896

**[General Pizza Making / Re: a two-hour pizza](#)**

No, just double the amount that you would use for a "normal" fermentation time.  
Tom Lehmann/The Dough Doctor  
1895

**[New York Style / Re: Emergency dough in a Blackstone oven](#)**

If you provide your dough formula I can convert it to a short time dough for you.

Tom Lehmann/The Dough Doctor  
1894

**General Pizza Making / Re: a two-hour pizza**

I think the "after taste" you are referring to is just a lack of flavor in the finished crust, most people relate it to a "starchy" taste. If you want to develop a bit more flavor and stay with a no-time type of dough process you might try using a "poor boy's sourdough". The day before you intend to make pizza, into a cereal bowl add 25-grams of flour and 25-grams of water and 1/5 to 1/4 of your total SAF IDY. Stir it together, drape it with a piece of plastic wrap and allow it to ferment at room temperature until you are ready to make pizza on the following day. To use, just pour it into your dough water but remember to reduce the dough water by 25-grams (which is already in the sourdough), use the full complement of yeast as that which is in the sourdough is pretty well shot.

If you like the flavor contribution you can experiment with different amounts of the sourdough addition.....A word of CAUTION! This can become addictive! :-D

Tom Lehmann/The Dough Doctor  
1893

**Newbie Topics / Re: Activating CY**

"Proving the yeast" is rarely done in a pizzeria setting and never done in a commercial setting here in the U.S. In Europe the practice is more common.

Tom Lehmann/The Dough Doctor  
1892

**General Pizza Making / Re: a two-hour pizza**

The size of the mixture has little to do with it, over a 24-hour period of time at ? temperature the yeast will have consumed all of the available nutrient available to it, once this happens it will begin to cannibalize itself to ? extent. due to the great number of unknowns it is safer to assume the yeast is spent and not include it in the yeast percentage.

Tom Lehmann/The Dough Doctor  
1891

**Dough Clinic / Re: Dough just won't come together? No gluten development?**

Ascorbic acid is used in ppm (parts per million), a typical use level would be between 90 and 180 ppm.

Tom Lehmann/The Dough Doctor  
1890

**Prep Equipment / Re: Need a digital scale: looking for best value..is a Taylor what I need?**

KD-8000 is also my preference in scales. It's a great scale and uses common flashlight batteries. Cost is now about \$45.00 but worth every penny. We also use it when making jerky and when canning.

Tom Lehmann/The Dough Doctor  
1889

**General Pizza Making / Re: a two-hour pizza**

There was recently some discussion on making a sourdough starter and then drying it to be added to a dough at a later time as a flavoring material. This would work great using the poorboy's sourdough, then you can store the dried material in

the fridge to be added to your emergency doughs . We have been doing this for nearly 30-years now in commercial crust production where the dough is never really fermented but yet we still want to have a decent crust flavor. As an added plus....it's a lot cheaper than what they are asking for the sourdough yeast product!  
Tom Lehmann/The Dough Doctor  
1888

### **Dough Clinic / Re: Dough Knead problem**

The dough looks to be very rough to me. If you are sure of your scaling weights I would suggest allowing the dough to ferment at room temperature for about 2-hours (maybe a bit longer), then turn it out of the bowl and try kneading it at that time. If this produces a better product you might then want to look at testing with a higher yeast level.

Tom Lehmann/The Dough Doctor  
1887

### **Dough Clinic / Re: Dough Knead problem**

Yael;

I agree with you on the absorption as the dough does appear to be under absorbed, with that in mind, since we don't know anything about the flour, I'm beginning to wonder if this might be one of those flours that are milled to a higher than normal level of starch damage? This would explain the abnormally high dough absorption. If my suggestion to ferment it for a couple of hours is followed this might provide some insight. If the dough softens excessively during this fermentation period the problem is most likely one of high starch damage, if it doesn't it might be a case of just poor gluten quality, remember, this is a soft wheat flour and soft wheat flours are not known for their gluten forming quality characteristics, hence their main application in cakes, cookies and pastries.

Tom Lehmann/The Dough Doctor  
1886

### **Dough Clinic / Re: Dough just won't come together? No gluten development?**

Mineral yeast food was once widely used by all bakeries across the U.S. but now most large retail bakeries as well as essentially all wholesale bakeries have eliminated using it as it has little demonstrated impact upon the dough or finished product. A typical mineral yeast food consists of calcium salts (the most effective ingredient), ammonium salts (this is where M.Y.F. got its name) and usually some type of oxidizing agent (used to be bromate) but now widely discontinued. Bakers have, for the most part, replaced M.Y.F. with calcium sulfate at 0.25 to 0.5% flour basis.

Tom Lehmann/The Dough Doctor  
1885

### **Newbie Topics / Re: Instant Sourdough Yeast**

The "cultured rye flour" is the tip off that it's a dry, inactive sourdough material that is being added. The ingredients following it in brackets are the ingredients of the "cultured rye flour".

Tom Lehmann/The Dough Doctor  
1884

### **Dough Clinic / Re: Flour**

Since none of those you mentioned contains any gluten forming proteins the short

answer is no, they will not work as a sole flour for making pizza crust, but for the most part they could potentially be utilized as a part of the flour blend, making a composite flour. In this capacity they might be used to replace up to about 20% of the total wheat flour.

Tom Lehmann/The Dough Doctor  
1883

### [\*\*Newbie Topics / Re: Instant Sourdough Yeast\*\*](#)

That would be the cultured rye flour.  
Tom Lehmann/The Dough Doctor  
1882

### [\*\*Dough Clinic / Re: Flour\*\*](#)

If it's something that you just add water to to make a pizza dough, it really isn't "flour", instead it's what is referred to as a "mix", in this case a pizza dough mix because it contains other ingredients than just flour. While they may not want to share with you the amounts of those other ingredients they should be willing to tell you what those other ingredients are.

Tom Lehmann/The Dough Doctor  
1881

### [\*\*Newbie Topics / Re: Instant Sourdough Yeast\*\*](#)

It has to do with the U.S. labeling regulations, the "cultured rye flour" is the flavoring and the fact that the LAB is shown in brackets immediately following the cultured rye flour means that these are the ingredients used to make the cultured rye flour. You will see similar things on the label of various bakery products such as where lecithin is shown as an ingredient immediately followed by brackets showing the source of the lecithin.

Tom Lehmann/The Dough Doctor  
1880

### [\*\*Dough Clinic / Re: Dear Dough doctor..... pizza dough leftovers\*\*](#)

Pizza, pretzels, bagels, French bread/baguette, bread sticks, and croutons can all be made using the very same basic dough formula. The only minor difference might be an adjustment in dough absorption if your pizza dough has an absorption over 55%. For home use in making croutons just form the dough into a ball, place it onto a lightly greased sheet pan, cover it with a suitably large bowl to prevent drying and allow it to proof for about 2-hours or until it at least doubles in size, then dock the dough by cutting a couple slits across the top, spray it with water and bake it at 400F until golden brown, remove from oven, cool on rack, when cooled place in the fridge overnight (place in a paper bag for best results). Then cut into 3/8 to 1/2-inch thick slices, cut each slice into 1/2-inch square cubes, transfer the cubes to a sheet pan and place in a 350F oven to toast lightly. For savory croutons place into a bowl, spray with oil (lightly) add savory as desired, cover the bowl and shake to coat the cubes. Pour out onto a cookies sheet and place back into the oven at 350F for a few minutes (just to heat the croutons up, then immediately transfer to an air tight container for storage. Store at room temperature.

Tom Lehmann/The Dough Doctor  
1879

### [\*\*Dough Clinic / Re: Flour\*\*](#)

Typically, thin crust pizzas are made using a higher protein content flour than thick crust/pan style pizzas are made from. That might have been the difference?

Tom Lehmann/The Dough Doctor  
1878

**Dough Clinic / Re: NY Style Dough Too Crispy**

That's a lot of baking, fine if you want it crispy but if you want the softer (fold-able) texture common to the N.Y. style pizzas you will need to bake at a higher temperature for a shorter time. This may not be possible in your oven so I would suggest adding 2% sugar to the dough formulation which will help to reduce the baking time thus giving you a softer, more pliable finished crust. One other thing, you might also try increasing the dough absorption in 2% increments as I think you might be a bit low on absorption considering the durum flour and the spelt in the dough formulation.

Tom Lehmann/The Dough Doctor  
1877

**Newbie Topics / Re: Instant Sourdough Yeast**

I've contacted Lesaffre and got the answer directly from the manufacturer. It contains no viable lactbacillus. It is indeed a mixture of inactive cultured rye flour and IDY.

Tom Lehmann/The Dough Doctor  
1876

**Newbie Topics / Re: Instant Sourdough Yeast**

Please send me your e-mail address at <thedoughdoctor@hotmail.com> and I'll copy you on my correspondence with the National Accounts Manager, Sandi Cazalet (she was at P.E.).

Tom  
Lehmann/The Dough Doctor  
1875

**Newbie Topics / Re: Instant Sourdough Yeast**

IF the cultured rye flour is indeed inactive as stated, it's my guess that what has been observed is yeast fermentation from minute particles of the IDY which would be impossible to identify much less sort out of the mixture and the acidity of the cultured rye flour would certainly help to accelerate any yeast activity. Just my "SWAG". :)

Tom Lehmann/The Dough Doctor  
1874

**Newbie Topics / Re: Instant Sourdough Yeast**

Sourness from the cultured rye flour (it's quite acidic) plus fermentation from the yeast (remember it's accelerated due to the increased acidity) would create accentuated sourness over time. ?

Tom Lehmann/The Dough Doctor  
1873

**Dough Clinic / Re: NY Style Dough Too Crispy**

Based on a 20 degree L. malt powder use 0.25% to replicate commercial malting of the flour then add whatever amount of non-diastatic malt powder or syrup you need to achieve the desired crust color.

Tom Lehmann/The Dough Doctor  
1872

## **Dough Clinic / Re: Dough help, still not quite right**

Yep, just make sure you oil the dough balls lightly prior to placing in the bags, then just grab a bag as you need it just as you do when using dough boxes. From the time you open the first dough ball the rest will remain good to use for 2 to 2.5-hours on average.

Tom Lehmann/The Dough Doctor  
1871

## **Dough Clinic / Re: Oil in 00 dough**

If you want to see the delayed oil addition mixing method just go to my web site <[doughdoctor.com](http://doughdoctor.com)> and watch my dough making video series. You would be surprised at how few pizzeria operators actually understand very much about the technology involved in mixing dough and making pizza in general. We are trying to educate operators and we're succeeding at it too, just look at the knowledge here in dough mixing as well as at the PMQ web site <[www.pmq.com](http://www.pmq.com)>, it just takes time.

Tom Lehmann/The Dough Doctor  
1870

## **Shop Talk / Re: Smiling With Hope Pizza Closing for a bit**

Walter;  
Wishing you a a very speedy and complete recovery!  
Tom Lehmann/The Dough Doctor  
1869

## **Shop Talk / Re: dialing in the dough**

Did I miss it or something? You don't ever mention anything about temperature in your post. Without temperature control you cannot have effective dough management. you can adjust the yeast level up or down but unless you can achieve effective dough management inconsistency will reign supreme in your land.

Forget about the ambient humidity, instead concentrate of finished dough temperature, trying to achieve a finished dough temperature in the 75 to 80F range is a good starting goal. Do this by adding flake or shaved ice to the dough water to get a temperature of 65F. For dough mixing use the delayed oil mixing procedure and assuming (we all know what that means) you are using a 60 or 80-quart planetary mixer with a reverse spiral dough arm you should put the water in the bowl first, followed by the flour then the remainder of the dry ingredients, mix at low speed just until you don't see any dry flour in the bowl (about 1.5 to 2-minutes, add the oil and mix another minute in low speed, then mix 8 to 10-minutes at medium speed or just until the dough takes on a smooth, satiny appearance. Measure the finished dough temperature. Take the dough directly to the bench, do not "pass go" do not collect \$200.00, immediately scale and ball, lightly oil each dough ball, place into your individual containers, leave the lids off for at least 2-hours before lidding. Make sure you get the entire dough processed within 20-minutes, this is an important step. This should give you a dough that will be good to use over a 3 to 4-day period with the "sweet spot" at about 48-hours. To use the dough, remove from the cooler, allow to temper AT room temperature until the internal dough temperature reaches 50F, you can then begin using the dough, it will remain good to use for the next 2 to 3-hours.

An even better method is to place the dough balls onto aluminum sheet pans and cover each pan of dough balls with a food contact approved plastic bag, place the pans of dough in a wheeled rack in the cooler, no need to cross-stack or lid anything. Follow the same procedure for using the dough. We have discussed this

procedure here a couple of time in previous posts.

Tom Lehmann/The Dough Doctor

1868

### **Newbie Topics / Re: Dough handling+baking**

The foil is reflecting a lot of the heat away from the pizzas during baking so I don't recommend its use. 30-minutes is an unrealistically long baking time for anything but some of the pan pizzas, which I assume you are not making. You can bake directly on the steel unless you have some aversion to doing so, or you can bake the pizza on a piece of ovenable aka bakers parchment paper. It sounds like you may not be adding any sugar to the dough formula? If you can share your dough formula and tell us what kind of flour you're using it would also help.

Tom Lehmann/The Dough Doctor

1867

### **Dough Clinic / Re: Dough just won't come together? No gluten development?**

The first pizza slice being handled is definitely thicker across its entire cross section than the other pizza slices. The fact that it has also been docked might lead one to believe that it has been proofed prior to dressing and baking. This is common at pizzerias where they pre-open the skins which allows them to proof for a period of time prior to use.

Tom Lehmann/The Dough Doctor

1866

### **Dough Ingredients / Re: Salt vs.Yeast**

Given sufficient time either salt or sugar can kill the yeast but but the greatest issue is that of damage to the yeast cells which can impair their ability to ferment a dough so what you get is inconsistent yeast performance, like previously said, not a big deal with home bakers and pizza makers but it can be a real game changer for any kind of bakery or pizzeria. Additionally, when the salt/sugar pulls moisture out of the yeast it is also removing some of the amino acid glutathione which is a reducing agent, making the dough softer and to some extent weaker. This may not be a problem for the home baker but again at the commercial level where failure is not an option it can be a game changer when the dough begins to collapse or otherwise fail out at 3 or 4-days refrigerated time.

Give the potential for damage to the yeast it is still not a good idea to allow the yeast to come into direct contact with the salt or sugar.

Tom Lehmann/The Dough Doctor

1865

### **Newbie Topics / Re: Dough handling+baking**

Michael;

There are a number of good places to find pizza peels on the Internet but for your specific application you might want to see if you can get your hands on a piece of aluminum that you can shape into a simple pizza peel for transferring the pizzas from the counter to the oven. While not a permanent piece of equipment, you can also use a piece of corrugated cardboard too, or how about 1/4-inch thick plywood, or some tempered Masonite? You will want to have your peel about an inch wider X longer than the largest size pizza you plan on making and the handle only needs to be 6 to 8-inches long, use a sanding block or file to put a mild taper on the bottom of the leading edge and you're good to go. Remember, DO NOT wash it! Only wipe it down with a slightly damp towel. If you make one out of wood you might want to

seal it using white mineral oil. We have discusses this a number of times here in previous posts.

There is a food show in Japan with an American Pavilion where pizza is demonstrated along with ingredients and supplies. If you want to get information on the show contact Steve Green at PMQ Magazine <steve@pmq.com>

Tom Lehmann/The Dough Doctor

1864

### **Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

The honey, or dried honey (a special product designed specifically for these types of applications, is used only in the glaze. For your glaze use 100% powdered sugar, add 10% boiling water and 5% dark colored honey. Heat to 115F and adjust the final viscosity through the addition of simple syrup (2-parts sugar and 1-part water boiled together until clear) add to the icing hot. If you need to adjust the honey flavor you can replace a portion of the simple syrup with honey. Too much honey will prevent the icing from setting up resulting in a wet, sticky donut. While yeast raised donuts don't typically contain eggs they can be used. Whole egg will make for a firmer donut crumb while egg yolk will make for a softer donut crumb. 2 to 5% egg can be used but remember to take the water content into consideration when calculating the dough absorption. Whole egg is 75% water and egg yolk is 50% water.

Tom Lehmann/The Dough Doctor

1863

### **Newbie Topics / Re: Dough deflates during cold fermentation?**

What was the finished dough temperature? A dough that is too warm will act exactly as you've described.

Tom Lehmann/The Dough Doctor

1862

### **General Pizza Making / Re: Sifting and autolyse?**

Sifting of flour is helpful if you are bored and have nothing else to amuse yourself with or just need the exercise. It can also be helpful if you have infested (buggy) flour or potentially infested flour and really don't want to eat the little critters or need the additional protein they contribute to the flour.

As for the autolyse, it is still used by a lot of home bread and pizza makers, especially if you are making doughs with a high absorption.

Tom Lehmann/The Dough Doctor

1861

### **Cracker Style / Re: crispy crumbly**

Crispy? Crunchy Chicago style thin crust? I can't say that I've ever seen those adjectives used in the same sentence with Chicago style thin crust. The four corners (party cut) are always the first to go as they have a little something that might be construed as being crispy, but the rest of the pizza is closer to a ravioli (it's that soft). That's not to say that a crispy Chicago style pizza isn't a good thing, and it can be made, but it really isn't a Chicago style pizza when made crispy/crunchy.

Tom Lehmann/The Dough Doctor

1860

### **Dough Clinic / Re: sourdough pizza acidity / ferment identification / criscito**

What he said is correct, some sourdoughs are significantly less sour/tart than

others. We did a study on this quite a few years ago where we made Panatone using a sourdough and it turned out quite good. It all has to do with the bacteria that you're culturing and how it's managed.

Tom Lehmann/The Dough Doctor  
1859

### [\*\*General Pizza Making / Re: Sifting and autolyse?\*\*](#)

Cakes are a different story when it comes to sifting the flour as it helps to prevent lumps in the batter. Depending upon the type of cake being made some like to sift the flour and sugar together with the minor ingredients.

Tom Lehmann/The Dough Doctor  
1858

### [\*\*Prep Equipment / Re: Flour Storage Products\*\*](#)

Six gallons is about 50-pounds of water but flour has a much lower density so the volume needed for 50-pounds of flour is much greater.

Tom Lehmann/The Dough Doctor  
1857

### [\*\*Dough Clinic / Re: Dough just won't come together? No gluten development?\*\*](#)

I might suggest that you find out what flours are available to you and who the manufacturer(s) is/are and then contact the manufacturer directly and ask them what the protein content and typical application of those flours are. You should be looking for a strong bread type flour with 12 to 13% protein content. Even here in the U.S. we find that many flour suppliers are just merchants and know little about the flour they're selling, to them flour is just flour, we have six different kinds, which one do you want? Sound familiar? Many of us here at this web site will contact manufacturers directly with questions regarding flour or whatever when we have a question.

Tom Lehmann/The Dough Doctor  
1856

### [\*\*General Pizza Making / Re: Sifting and autolyse?\*\*](#)

Gluten is formed when the wheat proteins glutenin and gliadin are agitated/mixed in the presence of water. Biochemical gluten development is the result of a number of factors coming together including movement of the dough as it ferments and changes to the protein due to exposure to acids and enzymes from the yeast and byproducts of fermentation which all work together to develop gluten in either cold or warm fermented dough. Biochemical gluten development is by far, the oldest method for developing gluten, and I might add, still the best. The only reason why it isn't used more as the sole method for gluten development is due to the initial poor handling properties of the dough and the amount of time it takes to accomplish. When making yeast leavened products at home neither of these are typically an issue so the process is well implemented for home baking but it's a whole different story in a commercial setting.

Tom Lehmann/The Dough Doctor  
1855

### [\*\*Dough Clinic / Re: Why Does This puff Up So\*\*](#)

If you will provide your exact dough formula by weight and bakers percent as well as your complete dough management procedure I might be able to determine just what the cause is.

Tom Lehmasnn/The Dough Doctor  
1854

**Dough Clinic / Re: Differences in dry active yeasts?**

There are different types of dry active yeast, such as active dry yeast (ADY) and instant dry yeast (IDY) and even protected active dry yeast (PADDY) and within the IDY spectrum there are various strains for specific applications such as high sugar, and freeze tolerant and a new one that is extremely temperature sensitive. However, if you are asking if there is a significant difference in the same yeast types between the different manufacturers, the answer is no.

Tom Lehmann/The Dough Doctor  
1853

**Dough Clinic / Re: Crust Color Differences between Sauced and Unsauced Pizzas**

Basically, it's just a difference in moisture content of the two types of sauce. Red sauce is, on average, about 90% water so as the pizza bakes the moisture is driven off of the sauce, the moisture laden air is cooler than the surrounding air so it settles down around the pizza, enveloping it in a cooling layer of moisture laden air, thus reducing crust color development. Whit sauce doesn't have this amount of water (at least mine don't) so this cooling effect is either diminished or not in play which allows the crust to begin developing color faster with more total color development. This DOES NOT apply for baking in an air impingement oven as the high velocity airflow in these oven remove the cooling, moisture laden air (that's one of the ways they are able to bake faster than a conventional deck oven).

Tom Lehmann/The Dough Doctor  
1852

**Dough Clinic / Re: Dough just won't come together? No gluten development?**

Amount of protein present in a serving divided by the serving weight (in the same weight units) X 100 will give you a very rough estimate of the amount of protein in the flour. However, this does not address the issue of gluten forming quality of the protein. This is why it is also important to know what the intended use of the flour is. An example of this would be durum semolina flour, it can have a protein content of say 13%, the same as a high protein bread type flour but in application they perform very differently.

Tom Lehmann/The Dough Doctor  
1851

**Dough Clinic / Re: minimum time between balling and cooking**

I was once asked this very question by a major box pizza chain, the answer was 1-hour. We mixed the dough at 95F, just barely balled it, after an hour it was opened into a skin, dressed and baked for our lunch. More typical time between balling and baking I would say is 24-hours. For me, using cold fermentation I normally use 48-hours as that is where my preference for crust flavor is at. I totally agree that there are many variables that can affect the time between balling and baking, some of those variables have to do with dough handling properties while other variables have to do with personal flavor preferences. For the shortest rest time between balling (assuming balling immediately after mixing) and baking formulate the dough with 2% compressed yeast (or equivalency in IDY or ADY), dough absorption about 60%, moderate protein content flour (11 to 12%), target a finished dough temperature of 95 to 100F, mix the dough to full

gluten development, ball moderately loose, lightly oil the dough ball, it should be ready to open in 45 to 60-minutes. DO NOT complain to me about the flavor! ;D  
Tom Lehmann/The Dough Doctor  
1850

### **Dough Clinic / Re: Why Does This puff Up So**

Do you know what was missing? No mention of the finished dough temperature. If the dough was ready to open in just 12-hours and the dough appeared to be gassy I'm putting my money on the horse that says your finished dough temperature was too high. The nearly 0.5% IDY didn't help matters any either. I'd suggest reducing the IDY to not more than 0.4%, adjusting the water temperature to give you a finished dough temperature of 75 to 80F, balling the dough immediately after mixing, lightly oiling the dough ball, placing it in an open bowl in the fridge for 2-hours, then covering/lidding the bowl, allow the dough to cold ferment for a minimum of 18-hours (not 12) but longer is better, bringing the dough out of the fridge for at least an hour prior to use (look for an internal dough ball temperature of 55 to 60F).

Tom Lehmann/The Dough Doctor  
1849

### **Dough Clinic / Re: Side crust color and dough handling**

Is there a reason why you are adding so much VWG? Usually half of that amount is sufficient. Additionally, you are using 70% absorption but do you realize that of that 70% the gluten by itself is accounting for nearly 20%? That meany the effective dough absorption is only around 50% which would explain why the dough is so elastic. As for the whit edge I'm guessing it is due to one of two things, either the oven or late/delayed oven spring. You see the same thing on hamburger buns where it is called the "break" and it forms a white ring around the circumference of the bun just below the crown. It is also present in white pan bread where we call it "break and shred", in this case it usually occurs on only one side of the loaf (but it can be present on both sides). If this is the case the cause for it is excessive dough strength (remember all that VWG? That's where it's coming from). So if that's the case, a simple reduction in VWG should address the problem. For starters I would recommend reducing the VWG to 5%, you will need to reduce the absorption at the same time so for each 1% VWG increase or decrease the dough absorption by 2%.

Tom Lehmann/The Dough Doctor  
1848

### **Dough Clinic / Re: Differences in dry active yeasts?**

Once the yeast packet is opened it is best to just discard the remainder but if you want to save it DO NOT remove it from the packet, instead just fold the packet down tightly against the yeast left in the packet and secure the folded top with a binder clip or paper clip.

Tom Lehmann/The Dough Doctor  
1847

### **Dough Clinic / Re: Why Does This puff Up So**

My New York style pizza dough ball weights are typically based on a dough loading of 0.106-ounces per square inch regardless of the diameter.

Tom Lehmann/The Dough Doctor  
1846

### **Dough Clinic / Re: Side crust color and dough handling**

Yep, that's why I mentioned the oven as a possible cause first,  
Tom Lehmann/The Dough Doctor  
1845

**Dough Clinic / Re: Actually 2 questions**

The answer to both questions is yes. You will need to experiment to find the mixing time and speed that works best for the bread. I'm guessing that you might have better luck with a spiral mixer than a planetary mixer in this case. Regarding no knead pizza dough, it's been done effectively on a commercial basis for more years than I've been around. The processing facility will have to be designed from the ground up around the process. In both cases you will most likely need to deviate from the original procedures to some extent but that goes with the scale-up.

Tom Lehmann/The Dough Doctor  
1844

**Dough Clinic / Re: Side crust color and dough handling**

Yael;  
You stole my line. :-D  
Tom Lehmann/The Dough Doctor  
1843

**Dough Clinic / Re: Differences in dry active yeasts?**

Forget the jar, you're obsessed with the jar (sounds like a movie line), just roll the package down onto the yeast and secure with a rubber band. The package is designed to protect the contents for upwards of 6-months to a year (unopened of course) so the jar isn't serving any useful purpose unless you're pulling a vacuum on it.

Tom Lehmann/The Dough Doctor  
1842

**Dough Clinic / Re: Side crust color and dough handling**

While I have seen experimentally grown winter wheat flours with protein levels in the 20% range the highest commercially available flours are just a tad over 14% protein content. Most pizzas are best made with flour having a protein content in the 12 to 13% range.

Tom Lehmann/The Dough Doctor  
1841

**Dough Clinic / Re: The best pizza recipe regardless the price, the time, the equipement, etc. ?**

Because all equipment is different as are kitchens it all boils down to experiment with what you have, read/learn as much as you can and most importantly, PRACTICE, PRACTICE, PRACTICE.

Tom Lehmann/The Dough Doctor  
1840

**Dough Clinic / Re: Break and shred**

The gap between the cap and the side wall is the break and the striated portion (looks like shredded wheat) is the shred. It is a desirable feature in white bread. You can minimize it by placing the dough into the pan with the seam straight down the center of the pan. Also more mixing which creates a softer, more extensible dough will help to minimize it, while most strengthening additives will promote it as will SSL or DATEM. The use of a weaker flour will also minimize it too. Like a

goof farmer takes great pride in plowing straight rows a good baker takes great pride in making loaves with about 1-inch of break and a well controlled shred.  
Tom Lehmann/The Dough Doctor  
1839

### **Dough Clinic / Re: Differences in dry active yeasts?**

Remember it's designed specifically for high sugar (above 5%) dough formulations, also keep in mind that this specific type of yeast has a very low sodium tolerance. If the salt level is above 1% it will significantly impede the yeast action.  
Tom Lehmann/The Dough Doctor  
1838

### **New York Style / Re: difference between IDY and ADY (glutenboy method vs what Gemignani says)**

Suspending IDY in cold water can result in leaching out of the glutathione from the yeast cells, IDY is especially prone to this problem due to the "I" in its acronym. The "I" stands for instant as in instant (actually fast) hydrating. IDY should always be suspended in 95 to 100F water in cases where it needs to be suspended prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
1837

### **Neapolitan Style / Re: Pizza dough expiration / max fermentation**

So much of the answer to this question depends upon variables such as:

Strength of the flour.

Amount of yeast used.

Amount of sugar used,

Amount of salt used.

Temperature of the fridge.

How well the fridge holds a CONSTANT temperature.

Finished dough temperature.

Those are the highlights.

Tom Lehmann/The Dough Doctor  
1836

### **Dough Clinic / Re: How do I store ADY?**

It says in the literature "room temperature" for storage. It is not recommended that you store it in the fridge as this will lead to condensation forming in the container over time which will ultimately adversely impact yeast performance. The literature also says the container has a "use by" date on it. This is all provided at the link you supplied.

One thing I might add, back in the 60's when we were looking at some of these non-domestic (for the U.S.) yeasts we found that we got slightly better shelf life by transferring the yeast to a small plastic bag and placing it back into the original container. Twist the top of the bag to close and apply the lid. This seemed to help keep moisture away from the yeast when stored for longer periods of time. I had even recommended this to the manufacturers at the time. I don't know if they ever acted on it or not.

Tom Lehmann/The Dough Doctor  
1835

### **Dough Clinic / Re: Break and shred**

As long as it is controlled, by that I mean the break isn't excessive and the shred

isn't wild and the top crust is still attached. It's one of the criteria we used to quality score breads on when we offered product scoring (evaluation) as a service to the industry. Large wholesale bakeries like to minimize B&S as if you have it you must be able to control it, this is a critical aspect for them as a poor shred can have jagged pieces of crust sticking out from the loaf which will snag on the bag as the loaf is being mechanically bagged resulting in a slit in the bag and an unsaleable product. If the break is excessive the loaf may not fit into the bag, just all kinds of problems when you're bagging bread at upwards of 60 loaves per minute form a single bagging machine with multiple machines bagging 7,500 loaves per hour for each bread line.

Tom Lehmann/The Dough Doctor  
1834

### **Dough Clinic / Re: Mixing in steel cut cracked wheat w/ 2 other flours**

Steel cut wheat is not considered as part of the flour equation as you will get very little gluten development from it. Instead, look at it as just another ingredient added to the dough. Unless you want the grittiness of the steel cut wheat in the finished crust they really need to be soaked for an hour or more prior to addition to the dough. Steel cut wheat, like whole wheat will have an absorption of something close to 75%. If you will search back to previous posts on whole wheat flour you will find the procedure for determining the absorption of your specific product at hand. The best way to add the steel cut wheat is to mix the dough for about 50% and then add the soaked steel cut wheat and mix to completion. They will add a chunky texture and something of a "nutty" flavor to the finished crust.

Tom Lehmann/The Dough Doctor  
1833

### **Dough Clinic / Re: Break and shred**

12% protein content flour is a bit on the high side for white pan bread. Most white pan bread producers use flour with a protein content in the 10.8 to 11.6% range. Typically, the higher the protein content the more pronounced the B&S will be.

Tom Lehmann/The Dough Doctor  
1832

### **Neapolitan Style / Re: Hydration Test**

If you want to see differences in dough absorption you really need to make 2% incremental changes.

Tom Lehmann/The Dough Doctor  
1831

### **Dough Clinic / Re: Effects of bake temps vs bake times**

To answer your question on bake time v/s temperature, bake time has the greatest impact upon the crispiness of the finished crust in respect to achieving a crispier crust as it allows more time to develop a crispy layer on the crust. Think of a Neo. pizza baked at 900+ F. It's crispy when it first comes out of the oven but within a minute or so it's like limp pasta.

The oven being references is called a "reel" oven, they're a mainstay pizza oven in Chicago.

Tom Lehmann/The Dough Doctor  
1830

### **Dough Clinic / Re: Break and shred**

That is a very high and broad protein range for an A.P. flour. The problem is, do you

know anything about their cake flour? High ratio cake flour or low ratio cake flour? There's a HUGE difference. Is their cake flour milled from hard or soft wheat varieties? BIG difference. Minnesota Girl (11.8% +/-) or Buccaneer (11.4 +/-) would be a much better route to go without the need to blend. Do you have any of these available to you?

Tom Lehmann/The Dough Doctor  
1829

**Dough Clinic / Re: Mixing in steel cut cracked wheat w/ 2 other flours**

No, that's not what I said. What I said only applies to cracked or steel cut. Whole-wheat flour can be used at 100% to make a whole wheat crust since you can develop the gluten in the whole wheat flour it includes as a part of the flour equation so when you add up the white flour percent and the whole-wheat flour percent the sum is 100%. Due to the VERY SLOW hydration of the bran portion of the whole wheat flour it is advisable to prepare a "soaker" with water and whole wheat flour and allow this to soak for 30 to 60-minutes prior to addition to the dough. I've written an article on how to determine the absorption of whole-wheat flour and I've discussed it several times here in previous posts. If you don't get it right the finished crust will eat more like cardboard than anything else. Done correctly, whole-wheat crusts are a bit soft and chewy with a somewhat crispy outer layer.

Tom Lehmann/The Dough Doctor  
1828

**Dough Clinic / Re: Effects of bake temps vs bake times**

Chicago pizzas are baked for a very long time. Thin crust pizzas typically in the 25 to 30-minute range and deep-dish pizzas in the 40 to 45-minute range. I can't speak about HRI pizzas as I've done too much work for them over the years.

Tom Lehmann/The Dough Doctor  
1827

**Dough Clinic / Re: Effects of bake temps vs bake times**

Beg my pardon? For what? :-D Feel free to jump in at any time.  
Tom Lehmann/The Dough Doctor  
1826

**Newbie Topics / Re: Dough handling+baking**

I don't remember, but if you contact Steve Green at PMQ Magazine <steve@pmq.com> I'm sure he can provide you with information and probably even contacts as they have a person in Japan and a presence at the show. I did a series of seminars at one of the food shows in Japan a few years ago, I no longer remember the name of the show or the venue but it was the large building shaped like an upside down pyramid, you can't miss that building!

Tom Lehmann/The Dough Doctor  
1825

**Dough Clinic / Re: Cold Bulk Ferment and the process**

It really doesn't matter much if you take a bulk dough of that size directly to the fridge or if you allow it to ferment for a period of time prior to placing it in the fridge. If it were me, I'd scale and ball the dough immediately after mixing, and get it into the fridge right away. Let biochemical gluten development do the work for you and as an added bonus you will have better consistency in your doughs. I like to lightly oil the dough balls and place them into individual plastic bread bags as

there is no cross-stacking/leaving and down-stacking involved (leaving the dough un-lidded for a couple of hours in the fridge before lidding the containers). To use the dough just remove it about 2-hours prior to use, and allow it to warm to 50 to 60F before opening the dough balls into skins.

Tom Lehmann/The Dough Doctor  
1824

### **Neapolitan Style / Re: not sure - stretching, baking, thickness**

Your pizzas look like they were baked at too low of a temperature which would explain the dull appearance too.

Tom Lehmann/The Dough Doctor  
1823

### **Neapolitan Style / Re: Hydration Test**

I can see a progression in edge thickness as the dough absorption is increased. Could tell more if the slices had been cut from the bottom as this gives a much better view of the center section of the crust.

Tom Lehmann/The Dough Doctor  
1822

### **Dough Clinic / Re: Bigger black bubbles on Neapolitan**

My experience is that it's mostly a matter of oven temperature with #2 being baked in a hotter oven than #8, however, both fermentation and dough temperature as well as dough absorption can impact bubbling too.

Tom Lehmann/The Dough Doctor  
1821

### **Dough Clinic / Re: What causes "pock marks" on cheese?**

A couple of different things come to mind, can you provide a picture?

Tom Lehmann/The Dough Doctor  
1820

### **Neapolitan Style / Re: Hydration Test**

If the bake temperature wasn't confirmed before each bake all bets are off of the table. I withdraw my comments. Only one variable at a time is allowed.

Tom Lehmann/The Dough Doctor  
1819

### **Dough Clinic / Re: Cold Bulk Ferment and the process**

Waiting for the dough to come to room temperature will involve quite a bit of additional fermentation which will become a variable with future doughs, I would suggest scaling and balling the bulk dough as soon as it comes out of the fridge as that will provide for a more consistent form of dough management.

Tom Lehmann/The Dough Doctor  
1818

### **Dough Clinic / Re: Effects of bake temps vs bake times**

Fat in one form or another is a pretty common ingredient in pizza doughs. It provides lubricity to the dough, it helps to seal the gas cell within the dough for improved oven spring, it also helps to retard moisture migration from the sauce and toppings into the dough/crust, and it helps with finished pizza flavor by imparting its own unique flavor such as is the case with olive oil or non-deodorized lard or capturing and retaining flavors otherwise lost during baking. We have

discussed this a number of times before and it might be included in the function of ingredients here.

Tom Lehmann/The Dough Doctor  
1817

**Dough Clinic / Re: Can't get toppings to cook no matter the temperature before crust burns**

In a deck oven (which you have) the typical baking time is about 7-minutes. This is why you are seeing the best bake at around the 7-minuter mark. Your oven does not have the top heat capability to provide a faster bake.

Tom Lehmann/The Dough Doctor  
1816

**Dough Clinic / Re: What causes "pock marks" on cheese?**

The appearance of those pizzas is very reminiscent of diced cheese. The issue can stem from the use of frozen cheese or subjecting it to too high of a temperature during baking.

Tom Lehmann/The Dough Doctor  
1815

**Neapolitan Style / Re: Hydration Test**

In a practical setting the answer might be no but in a research setting where we are looking for differences due to the affect of a variable which we introduced, the answer is absolutely.

Tom Lehmann/The Dough Doctor  
1814

**Dough Clinic / Re: Non-diastatic malt syrup**

Unless you are using non-diastatic malt at very high levels, above 5% the effect of the malt will be on the crust color only.

Tom Lehmann/The Dough Doctor  
1813

**Dough Clinic / Re: Can't get toppings to cook no matter the temperature before crust burns**

Setting the pizza on a screen will create an air gap/thermal break which will slow down the rate at which the crust bakes thus allowing more time to get the toppings done without burning the crust.

Tom Lehmann/The Dough Doctor  
1812

**Dough Clinic / Re: Effects of bake temps vs bake times**

It's in pizza dough, regardless of what it's baked in or on.

Tom Lehmann/The Dough Doctor  
1811

**Dough Clinic / Re: Was this dough overproofed? Please take a look at my latest pies with Poolish**

It does appear that the bulk dough was somewhat over fermented which is why it was so gassy and difficult to ball. When faced with that situation I normally degas the bulk dough by slapping it on the counter top several times and then proceed with scaling and balling.

Tom Lehmann/The Dough Doctor

1810

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza Peel Question](#)**

There is no seasoning of a peel but a new wood peel should be sealed using mineral oil. If you check back in the archives you should find any number of discussions on the topic including how to seal a wood peel using mineral oil. Just DON'T EVER WASH IT, wipe it down with a slightly damp towel but don't put it in the water. With time/use you may find the surface getting a bit rough, just lightly sand the top surface with a 200-grit, or finer, sand paper and reseal and you'll be good to go again.

Tom Lehmann/The Dough Doctor  
1809

**[Prep Equipment / Re: Should my metal peel have a sharpened edge?](#)**

Either flat or rounded works fine. If you are tearing the bottom of the pizza when turning/spinning you are not allowing the pizza to set undisturbed long enough.

Tom Lehmann/The Dough Doctor  
1808

**[Dough Clinic / Re: Was this dough overproofed? Please take a look at my latest pies with Poolish](#)**

The yeast level looks OK (but I have a question: How do you have a "preferment without any yeast?) so I would reduce the bulk fermentation time by 8 to 12-hours and proceed from there as normal.

Tom Lehmann/The Dough Doctor  
1807

**[Dough Clinic / Re: Non-diastatic malt syrup](#)**

Non-diastatic malt is a type of sugar. Like sucrose (table sugar) it provides residual sugar for crust browning while at the same time providing a unique "malty" (think malted milk balls/candy) flavor when used at higher levels.

Tom Lehmann/The Dough Doctor  
1806

**[Dough Clinic / Re: Barley malt syrup](#)**

Actually, it's the kettling process that gives the traditional bagel that chewy texture, those that are used for making bagel sandwiches are typically made using the steaming process since it makes for a more tender eating bagel. The non-diastatic malt syrup used in a bagel formula provides for the crust color that is characteristic to a bagel and to an extent, the "nutty" flavor of the bagel. A good number of posters here have used it in their pizza doughs too.

Tom Lehmann/The Dough Doctor  
1805

**[Dough Clinic / Re: Non-diastatic malt syrup](#)**

Yep.  
Tom Lehmann/The Dough Doctor  
1804

**[Dough Clinic / Re: Barley malt syrup](#)**

Agreed, 2% would be a good starting point. The difference in dough absorption with and without malt syrup would be easily within standard deviation for absorption and undetected. Yes, you can also use molasses, just be sure it's un-

sulfured.

We used to use molasses or industrial grade honey (very dark) at 3% in our multi-grain crusts along with butter for the fat source.

Tom Lehmann/The Dough Doctor  
1803

**Dough Clinic / Re: Non-diastatic malt syrup**

Diastatic (enzyme active) malt contains amylase enzymes which hydrolyze starch into sugars, it does not hydrolyze proteins. Non-diastatic malt does not contain any viable amylase so it does not hydrolyze any starch into sugar, hence non-diastatic malt is nothing more than just another sweetener (sugar).

Tom Lehmann/The Dough Doctor  
1802

**Dough Clinic / Re: AVPN recipe**

I'm confused by your dough formula. 58% = dough absorption; 0.2% = (compressed yeast?); 0.11% = ? Salt should be in the 1.75 to 3.25% range and yeast (as compressed yeast) in the 0.175 to 0.2% range.

Are you planning to do your mixing by hand or machine for your same day dough?  
Do you want to stay close to the AVPN concept or are you just looking for a good same day dough for your wood fired oven?

Tom Lehmann/The Dough Doctor  
1801

**Dough Clinic / Re: agitating dough vs kneading**

The word "agitate" is being used as a synonym for "mix", in many cases the mixer manufacturers refer to the different mixing attachments as agitators too. Kneading the dough by hand is a very gentle way of developing the gluten, so unless you're a "gluten" for punishment and want arms that would put the village blacksmith to shame, it is all but impossible to over develop the gluten when hand kneading. The main reason for this is because kneading the dough exposes the gluten matrix to air/oxygen which repairs the gluten bonds being broken by over mixing, sorta like an endless loop. But on the other hand, high speed mixing, like when a VCM is used can easily turn an otherwise good dough into soup by over mixing, which might only take a couple of minutes.

Tom Lehmann/The Dough Doctor  
1800

**Dough Clinic / Re: Side crust color and dough handling**

Your pizza looks really good. :chef:

Tom Lehmann/The Dough Doctor  
1799

**Dough Clinic / Re: Pan Pizza**

Could you please provide the specific dough formula and dough management procedure you are planning to use.

Tom Lehmann/The Dough Doctor  
1798

**Dough Clinic / Re: AVPN recipe**

Here is a one day pizza dough formula that we used in our Woodstone wood fired oven.

Flour: 100%

Salt: 2.25%  
CY: 0.75%  
Water: 58%

Put water (75F) in bowl, reserve a small amount for the salt, add the CY and stir to suspend the yeast in the water. Add 1/2 of the flour and stir in. Allow to rest for 30-minutes, add the salt to the reserved water and add it to the dough along with the remainder of the flour. Mix until free of lumps and allow to ferment for 1-hour, turn out of the bowl onto a floured bench and knead until smooth (about 10-minutes). Scale into desired weight pieces, form into balls, wipe the dough balls lightly with oil and place into individual plastic bread bags, pull the bag snug to the dough ball and twist the open end to form a pony tail, tuck the pony tail under the dough ball as you place it into the fridge, allow to cold ferment for at least 6-hours but can go longer. To use, remove from fridge and allow to set at room temperature for 2 to 3-hours before turning the dough ball(s) out of the bag onto a floured surface, open by hand into skin for immediate use. Once you begin opening the dough balls they will remain good to use for about 2-hours.

To make this into a 2-day dough just reduce the yeast to 0.5%. Manage the dough in the same manner except hold it for 48-hours in the cooler before use. In my opinion, a 2-day dough is MUCH better than a 1-day dough.

Tom Lehmann/The Dough Doctor  
1797

### [\*\*Dough Clinic / Re: AVPN recipe\*\*](#)

CY is indeed the same animal as "fresh yeast" I used that as the yeast type since you were referencing the AVPN dough formulation which requires the use of only CY (compressed yeast)/fresh yeast/wet yeast. To use IDY (instant dry yeast) use 40% as much IDY as CY. This figures out to 0.3% IDY to replace 0.75% CY. As for your questions on the yeast levels the amounts you are referencing are for the AVPN type dough formulation, NOT the dough formulation that I provided for you. If you plan to use the supplied dough formulation used the yeast amounts cited in the dough formulation with the conversion to IDY if that's the type of yeast you wish to use.

Please note that there are two different yeast levels cited, one is for a same day dough while the other is for a 2-day (48-hour) dough.

Tom Lehmann/The Dough Doctor  
1796

### [\*\*Dough Clinic / Re: Pan Pizza\*\*](#)

While I'm not familiar with the dough formulation cited, in looking at it the procedure says it all, after mixing the dough (not actually kneading) remove it from the mixing bowl and pin it out to size, place it into the prepared 14" diameter pan (1/2-cup of oil seems like a lot of oil) and allow it to proof until the dough fills the pan, then cover and place in the refrigerator for 4 to 24-hours, remove from the fridge, dress and bake.

Here are my issues with the dough formula and procedure: The formula only contains 0.89% salt which is really not enough for optimum flavor, instead it should be between 1.75 and 2.25% for best crust flavor. The temperature of the water is not cited so I would recommend using 70F water but reserve 1/4 cup heated to 100F to activate the ADY in. Once activated, the ADY can be put into the colder water in the mixing bowl. You should be looking for a finished dough temperature of about 80F after mixing. I do not recommend proofing the dough to fill the entire pan because it will continue to proof in the fridge and you need to allow space in

the pan for the increase in dough volume, instead, only allow the dough to proof to filling about 1/2 of the pan, then cover and place in the fridge where it will continue to proof until the dough is sufficiently cooled to slow the rater of fermentation. Once stabilized in the fridge the dough should keep for about 24-hours without any problems. Many operators of pizzerias manage their deep-dish/pan style pizza dough in a similar manner. To use the dough just remove from the fridge, dress the fully proofed dough (be gentle) and bake.

The length of time needed to get the initial 1/2 proof will depend upon the kitchen temperature as well as the actual finished dough temperature, expect about 45 to 60-minutes if you hit the numbers cited. How long in the fridge? I'd go at least 12-hours with 24-being even better for flavor. Deep-dish pizzas are all about the flavor of the crust (because there's so much of it) it it isn't good you have to wallow through so much of it that it destroys the pizza experience. Experiment using butter instead of oil in the dough, or how about blending some ghee into the pan oil? Have fun experimenting! You'll be rewarded with a lot of great tasting pizza!  
:chef:

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

1795

### [\*\*Dough Clinic / Re: AVPN recipe\*\*](#)

No way! If, and that's a BIG "if" the yeast is fresh and hasn't been temperature abused in any way, expect something more like 3-weeks shelf life. With ADY you will get 6 to 12-months and with IDY up to 12-months, assuming proper handling. Where abouts in Northern MN? Close to Park Rapids or D.L.?

Tom Lehmann/The Dough Doctor

1794

### [\*\*Dough Clinic / Re: AVPN recipe\*\*](#)

Not really. you're kinda at the mercy of your supplier unless you can see a manufactured/packaged date on the package. If there is no packaging well?????. Old time bakers used to take an egg size piece of dough immediately after mixing and form it into a ball then toss it into a bucket of warm water, if it floats in a few minutes the yeast is still alive but quality still unknown. Outside of laboratory instrumentation, that's about the best you can hope for. By the way, color and aroma are not good indicators of quality either. The one thing that does indicate sub-par quality in C.Y. is a slimy appearance and feel to the C.Y. wet and/or sticky are OK but not slimy.

My son has a place on Boot Lake, about 20-miles east of Park Rapids.

Tom Lehmann/The Dough Doctor

1793

### [\*\*Dough Clinic / Re: Dough recipe for use in a roccbox?\*\*](#)

Before getting into the nuts and bolts of your request, you say you only have "granulated" yeast available to you. This is what us "Yanks" refer to as dry yeast. Can you tell me if it is ADY (active dry yeast), directions will call for it to be activated prior to addition to the dough, or is it IDY (instant dry yeast) not necessary to activate prior to addition to the dough. If in doubt, send a photo of the packaging and we should be able to tell.

Tom Lehmann/The Dough Doctor

1792

### [\*\*Dough Clinic / Re: Dough recipe for use in a roccbox?\*\*](#)

One other thing, will you be machine mixing or hand kneading the dough?

Tom Lehmann/The Dough Doctor

1791

### **Dough Clinic / Re: How to prepare many pizzas in advance before baking ?**

Your procedure is a sound one that others have successfully used, but worried about the expense of the olive oil that you're brushing on the edge of the skin? OMG! How much are you using? Seriously, I can't envision you using more than a few grams at most, far less costly than the other ingredients you are putting on the pizzas for your guests. However, if this is an issue for you why not just use any low cost vegetable oil? Or how about using a blended oil such as one made by blending 20% olive oil into 80% vegetable oil. This is commonly done in cases where economy is an important factor.

Depending upon the viscosity of the sauce that you are using, pre-saucing for as much as 20-minutes before baking can lead to moisture migration into the dough which will lead to creation of a gum line after baking, you probably don't want to hear the solution to this problem but it involves the application of a very thin layer of oil to the surface of the skin prior to saucing. This very thin layer of oil creates a barrier which helps to prevent the movement of moisture from the sauce (which is about 90% water) into the dough.

Another option to explore is to utilize the assistance of a helper in preparing the pizzas. You can have everything pre-portioned for each pizza so while one pizza is being baked the next one is being prepped.

If your dough is dry enough you might also try placing the skins on seasoned pizza screens, this would allow you to fully prep all of the pizzas ahead of time (no more than absolutely necessary), and place the pizza into the oven on the screen, after a very short baking time you will be able to lift the pizza off of the screen to finish baking right on the deck. This procedure has been discussed a number of time here in earlier posts, the procedure is referred to as "decking" the pizza.

It looks like you might want to do a little experimenting in preparation for your next pizza party. :pizza:

Tom Lehmann/The Dough Doctor

1790

### **Dough Clinic / Re: AVPN recipe**

If you are asking if you can suspend C.Y. in 75F water, the answer is yes. The temperature of the dough water is used to control the finished/mixed dough temperature.

Can you adjust the dough formulation so no refrigeration is required, yes you can. I'd start by adjusting the C.Y. level to about 0.15%, target a finished dough temperature of 80F (about 70F water temperature), scale and ball immediately after mixing and allow to ferment at ambient until the dough can easily be opened into skins. I can't say how long this will take as the time will vary with the strength of the flour as well as the ambient temperature. Time to roll up the sleeves and begin experimenting.

Tom Lehmann/The Dough Doctor

1789

### **Dough Clinic / Re: Proofing multiple batches**

That depends, what will the time difference be between the first dough off of the mixer and the last?

Tom Lehmann/The Dough Doctor

1788

## [\*\*Dough Clinic / Re: Proofing multiple batches\*\*](#)

If you are referring to bulk fermenting the dough (proofing is done after forming in some manner) and the time will be 24-hours or more you shouldn't have any issues with just tossing them all into a single appropriately sized container, loosely lidding/covering it and allowing it to ferment in that manner.

Tom Lehmann/The Dough Doctor  
1787

## [\*\*Dough Clinic / Re: adding diastatic malt powder to my flour to match all trumps malted\*\*](#)

That's an easy one to answer, use 0.083% based on the total flour weight.

Tom Lehmann/The Dough Doctor  
1786

## [\*\*Dough Clinic / Re: Proofing multiple batches\*\*](#)

I would suggest targeting a finished dough temperature of between 70 and 75F. A container that is tall, like a trash container (but approved for food contact) is better than a wide, open container since it will allow for the entrapment of carbon dioxide (heavier than air) over the dough (greenhouse effect) which will help to protect the dough from moisture loss as well as temperature changes in the room. The loose covering is only to prevent air movement in the room from disturbing this protective layer of carbon dioxide. This is how the "BIG BOYS" do it in commercial bakeries.

Tom Lehmann/The Dough Doctor  
1785

## [\*\*Dough Clinic / Re: adding diastatic malt powder to my flour to match all trumps malted\*\*](#)

That's the amount you would add to an non-malted flour to achieve the same malting as used by the flour miller in making malted flour. The exact amount will occasionally be varied by the flour miller depending upon the quality (sprouting damage) of the flour he/she is milling at the moment. The more sprouting damage the less malt or amylase enzyme they will add and the less sprouting damage the more malt/enzyme they will add. High quality flour always has little to no sprouting damage but in some years, especially those where there is significant rainfall during the harvesting period, sprouting damage cannot be avoided so the miller addresses it by adjusting the malt/amylase enzyme amount that is added to the flour at the time of milling.

Tom Lehmann/The Dough Doctor  
1784

## [\*\*New York Style / Re: Purposely undercooking crust\*\*](#)

When baking pizzas in "reel" type ovens it is all but impossible to achieve a very crispy crust characteristic unless the pizzas are par-baked, this is why true Chicago thin crust pizzas have the unique eating properties of something approaching cooked ravioli. Those ovens were never designed for baking pizza (they're bakery ovens) but in specific applications they serve the purpose quite well.

Tom Lehmann/The Dough Doctor  
1783

## [\*\*New York Style / Re: Purposely undercooking crust\*\*](#)

The Roto Flex ovens are a horse of a different color than the reel type ovens,

they're designed specifically for baking pizzas. Additionally, they rotate horizontally as opposed to vertically for the reel ovens.

Tom Lehmann/The Dough Doctor  
1782

### [\*\*Dough Clinic / Re: Why Does This puff Up So\*\*](#)

The idea is to bring the dough balls out of the cooler and allow them to warm (temper) to 50-55F at most pizzerias but at home we typically go up to 60-65F as we will only be working with a very limited number of dough balls. The dough has already been fully fermented when we remove it from the cooler and we really don't want it to ferment any more than necessary if at all possible after that. If a pizzeria were to allow the dough to come up to 75 or 80F they would need to use all of the dough within a very short period of time (well under 2-hours) or it would over proof resulting in an out of "spec." finished pizza. Additionally, the dough is extremely difficult to open when right out of the cooler and it will bubble profusely too when baked, by allowing the dough to temper as described above the dough opens much more easily and bubbling is minimized or eliminated completely. Depending upon one proficiency at opening the dough balls as well as the dough absorption, many home pizza makers find that a colder dough is easier to manage than a warmer one.

Tom Lehmann/The Dough Doctor  
1781

### [\*\*New York Style / Re: Purposely undercooking crust\*\*](#)

Peter;

Since the term is used so frequently in reference to reel type ovens I assumed, maybe incorrectly, that it was in reference to the reel oven, but then we all know about those who "assume". :D

Tom Lehmann/The Dough Doctor  
1780

### [\*\*New York Style / Re: First major success\*\*](#)

Good, open cell structure, strong bottom bake (I bet it's crispy!) and a very good top bake, (I like it that way) can't ask for much more than that! Great looking pizza! Fantastic, considering it's only your fourth attempt! :drool:

Tom Lehmann/The Dough Doctor  
1779

### [\*\*New York Style / Re: Purposely undercooking crust\*\*](#)

Norma;

Yes, a Fish brand oven is a reel type oven. I'm not familiar with the pizza referenced but it might be a thin crispy type crust (typically made with 40 to 45% absorption) or a cracker type crust made with 45 to 50% absorption but mixed only 45-seconds, or so, and handled much like a long flake pie dough or possibly a biscuit dough. Both of these pizza types generally turn out pretty crispy regardless of the type of oven used. They're also great for pizza buffets too, think Mr. Ghatti's or Incredible Pizza, Pizza Street, Pizza Ranch, etc.

Tom Lehmann/The Dough Doctor  
1778

### [\*\*Dough Clinic / Re: adding diastatic malt powder to my flour to match all trumps malted\*\*](#)

Foreplease;

There is no way of telling just how much malt has been added to the flour, even the Falling Number won't help since it only provides an indication of amount of total diastatic activity (natural in the flour + added malt), not just the malt that is added by the flour miller. If you have an unmalted flour made from good, sound wheat, the addition of 0.25% of a 20L diastatic malt powder should provide the flour with a FN value something under 300 (indicating a normally malted flour). The actual amount of malt added by the miller is totally immaterial and unless you have access to a FN instrument the best you can hope for is to get close to a normally malted flour. We determined the use level of 0.25% 20L diastatic malt powder using the Amylograph instrument (prior to the invention of the Falling Number which is much faster). If you want to replicate the exact malting of a flour you first need to get a FN value of the flour, then add whatever amount of diastatic malt or amylase enzyme is needed to give the flour a FN value in the 200 to 250-second range.

Tom Lehmann/The Dough Doctor  
1777

### **Dough Clinic / Re: Hydration Test**

Unless you are approaching the absorption carrying capacity of the flour, increasing the dough absorption will contribute to a firmer, more crispy crust, but as you aptly noted, it can also become more difficult to handle.

Tom Lehmann/The Dough Doctor  
1776

### **Dough Clinic / Re: Dissolving Instant Yeast**

QJ is spot-on, you actually run the risk of damaging the IDY by putting it into suspension prior to adding it to your dough. Just add it dry right on top of the flour and it'll be just fine. That's how it is designed to be added. There are only two times when the IDY really needs to be suspended in 95F water prior to addition, one is when mixing the dough entirely by hand and the other is when mixing the dough by machine but the total mixing time will be less than a total of 5-minutes.

Tom Lehmann/The Dough Doctor  
1775

### **Dough Clinic / Re: adding diastatic malt powder to my flour to match all trumps malted**

Like I said, we used 0.25% 20L malt powder to replicate typical malting done by the flour miller, 0.249 is close enough, I'm not going to argue over 0.001%

Tom Lehmann/The Dough Doctor  
1774

### **Dough Clinic / Re: Mack and Manco dough**

From the looks of the pizza I'm guessing that it might have been baked in a very hot oven. This would allow for a short bake time resulting in reduced color to the top of the pizza while still providing a darker bottom crust color. Short baking times are notorious for giving pizzas with a soft eating characteristic and little to no crispiness in as little as a minute after baking.

Tom Lehmann/The Dough Doctor  
1773

### **Dough Clinic / Re: Please describe the various types of thin crust pizza**

Danny;  
I sounds like a New York style crust is what you are looking for. I would suggest using a lower protein flour, possibly something in the 12% protein content range

(Pillsbury Bread Flour) to reduce the chewiness to what you are looking for.

Tom Lehmann/The Dough Doctor

1772

**Dough Clinic / Re: why after baking, the pizza dough is hard as rock? what mistakes am i doing?**

With your addition of more flour during the dough mixing (this is not recommended) it is impossible to determine just what is happening with your dough but I have a very strong suspicion that the dough "recipe" is all out of balance, because of this I'm suggesting that you start over again but this time following a known dough "recipe". After you have mastered the "recipe" we'll get you started on working with a dough "formula" which is based on ingredient weights rather than inaccurate volumetric portions. To see a dough "recipe" for home made pizza please go to the Pizza Marketing Quarterly web site at <[www.pmq.com](http://www.pmq.com)> and click on the RECIPE BANK option, once there use "home made pizza dough" for your search and you will find my home made dough recipe listed. We have used this "recipe" for many years and it works well for making both thin and thick crust pizzas. As a side note, I think you will find my dough "recipe" much easier to put together than what you have been working with.

Tom Lehmann/The Dough Doctor

1771

**Dough Clinic / Re: Dissolving Instant Yeast**

The "I" in IDY (instant dry yeast) stands for instant hydrating (it hydrates much faster than ADY (active dry yeast), this is why the manufacturers recommend that it be added to the flour, not to the water when making a dough. The flour will compete for the water and allow for a more controlled rate of water absorption by the IDY, if the IDY is placed into an environment where there is an abundance of water the yeast will absorb water faster than the fissures in the particles can seal closed which allows for a flushing effect upon the yeast cells as water freely enters and leaves the cells, this flushing effect removes glutathione (the amino acid contained within the yeast cell) which severely impairs the ability of the yeast to ferment as it should. This is why if you read the direction on a 1# bag of IDY it clearly states to mix the IDY with the flour. We did studies on this many years ago at AIB and found that yeast performance became quite variable when the IDY was suspended in 60F water (average dough water temperature). We didn't do tests on water colder than that but I'll put money on the table betting that the IDY won't fare any better (probably worse) since the colder water slows the sealing of the fissures. We did look at suspending IDY in warm water and found that 95F water was the best water temperature for suspending the IDY in. It is interesting to note that when the water temperature was at 90F we found a 5% loss of gassing power from the same IDY. At 100F the gassing power was essentially the same as when the IDY was suspended in 95F water so for this reason we (and I believe the manufacturers do too) that when necessary, the IDY be suspended in 95 to 100F water.

OK, I understand that this means little to making pizza dough at home where the standard deviation is measured in light years and a 5, 10 or 15% loss of yeast gassing power will most likely go unnoticed, even a slightly softer, more extensible dough (remember that glutathione is a reducing agent, think "dead yeast") will most likely go unnoticed, so take it as you may, the IDY is still being damaged, to what extent is a great unknown and as I used to tell my students "Consistency is the most important ingredient in making pizza or any other product", without it, what do you have?

Tom Lehmann/The Dough Doctor  
1770

**Dough Clinic / Re: Please describe the various types of thin crust pizza**

In Chicago, Ceresota brand flour is a very popular flour to use for thin crust pizzas, it comes in at around 11.8% protein content.

Tom Lehmann/The Dough Doctor  
1769

**Dough Clinic / Re: Sifting**

As it pertains to making yeast leavened doughs, it will remove insects and larvae (worms) from the flour, it will remove any non-flour material (paper, string, etc.), it will give you a little exercise (could be a good thing) but aside from that, no, sifting flour today serves no real useful purpose.

Tom Lehmann/The Dough Doctor  
1768

**Dough Clinic / Re: Sifting**

Peter;

Sifting doesn't impact the total flour absorption, it can, and I say that cautiously, allow the flour to hydrate more quickly as there can be a greater surface area exposed to the water, but the amount of water actually absorbed (total absorption) is not affected. Lumpy/clumpy flour is a result of exposure to high humidity or Indian Meal Moth infestation (their webbs result in clumping of the flour), both of which are good signs that the flour should probably be discarded. While flour may clump as a result of packaging, the clumps readily break-up so they really don't create a problem, even when mixing totally by hand. While nobody wants to talk about it the main reason for sifting flour goes back to when baking at home was not just a hobby, but part of everyday life, the flour was stored in a metal lined deep drawer, or metal lined box and it was too valuable to throw out (for any reason) as a result the flour became infested over time and sifting made it all good again (my, how times have changed). I was raised on home made bread, the store bought bread, which was bought when we went into town every two weeks, was a treat for us kids (because it was soft) but it was an act of kindness for the women who got a reprieve from needing to bake bread for a couple of days, did I mention that our kitchen cook stove was dual fuel? Yep, dual fuel, corn cobs or wood. Mostly corn cobs as we were a small dairy farm. Now think of this, an Illinois farm, summer, hot and humid, no air conditioning and no fans and baking bread with that cook stove three times a week (need I say more?) The house was heated by dual fuel too, either corn cobs or coal (both burned long and hot, but in the winter it was always coal at night as the huge pieces that we burned lasted through the night). The farm is now a subdivision and those who live there don't have a clue about what the land once was. Sorry to digress.

Tom Lehmann/The Dough Doctor  
1767

**Dough Clinic / Re: the dough underneath the sauce was still raw, what could it be ?**

I can't tell anything from your pictures as the slice is shown as cut from the top down. In order to tell if we are looking at a real gum line or just a false gum line I need to ask you to show a picture of the edge of the slice when cut from the bottom to the top. To do this just invert the slice and carefully cut through the crust using a VERY SHARP serrated knife or a razor knife. By cutting it in this manner you will

not drag sauce and cheese down into the crumb thus obscuring vision of the important crumb just under the sauce, with that I should be able to determine just what we have going on there.

Tom Lehmann/The Dough Doctor  
1766

### [\*\*Dough Clinic / Re: Dissolving Instant Yeast\*\*](#)

Craig;  
You thinking is spot-on, for those applications as well as those where the dough will not be machine mixed for at least 5-minutes suspending the IDY in a small amount of 95 to 100F water is the preferred way to go. You won't need to wait for it to activate, just add it to the water and stir or whisk until it is completely suspended and it's ready to add directly to the colder dough water.

Tom Lehmann/The Dough Doctor  
1765

### [\*\*New York Style / Re: Purposely undercooking crust\*\*](#)

Adding fat to the dough always helps to make for a softer, more tender eating crust. If you want to see first hand what fat will do just buy two packages of tortillas, one fat free the other one with normal amount of fat, you'll be surprised. Another thing to do is to add lecithin to the dough, lecithin is an emulsifier which will allow the fat to bind to the water for increased water retention.

Tom Lehmann/The Dough Doctor  
1764

### [\*\*Dough Clinic / Re: Dissolving Instant Yeast\*\*](#)

It's the temperature of the water that causes the fissures to close up so the faster you can wet the IDY the better off you'll be in the long run when the IDY is exposed to so much water all at one time.

Tom Lehmann/The Dough Doctor  
1763

### [\*\*Dough Clinic / Re: 80% hydration dough\*\*](#)

I agree with Rolls that for most home ovens with limited temperature capability a dough absorption in the 55 to 65% range works best. My personal "go to" absorption for most of my home pizza making is 62% absorption unless I'm trying to make something different/special like ciabatta, and even then it's only in the 70 to 75% range. You also learned a valuable lesson too, colder doughs are easier to open/handle than room temperature/ambient temperature doughs, this is why we seldom allow a refrigerated dough to warm fully back to room temperature for opening, instead we only allow the dough to warm to something in the 50 to 60F range (internal dough ball temperature) before opening it into a skin.

Tom Lehmann/The Dough Doctor  
1762

### [\*\*Dough Clinic / Re: Caputo flour rescue\*\*](#)

I was also thinking not more than 12-hours at room temperature or if you want to go to 24-hours use a cold fermentation procedure: Mix; scale; ball;cold ferment 24-hours; temper AT room temperature for 90-minutes, open dough balls into skins for immediate use.

Tom Lehmann/The Dough Doctor  
1761

## [\*\*Dough Clinic / Re: Blown dough?\*\*](#)

Your IDY is high at 0.55%. I suggest reducing it to 0.375%. One question, what is the temperature of your walk-in cooler, and what time of the day did you make the dough?

Tom Lehmann/The Dough Doctor  
1760

## [\*\*Dough Clinic / Re: Caputo 00 Pizzeria vs Americana\*\*](#)

Danny;

This very topic was just discussed the other day. 0.25% of 20L diastatic malt powder is the answer you're looking for.

Tom Lehmann/The Dough Doctor  
1759

## [\*\*Dough Clinic / Re: Blown dough?\*\*](#)

Good call Peter, I totally agree. Anything over 24-hours is a bit of a stretch for a dough made with 72% absorption to begin with.

Tom Lehmann/The Dough Doctor  
1758

## [\*\*Dough Clinic / Re: Blown dough?\*\*](#)

Walk-in coolers have significant in and out traffic during the hours the store is open and few, if any are actually operating at the set temperature, most are doing good to be operating at 50F truth be known. This would be especially so if the dough is placed anywhere near the door and the door opening isn't equipped with plastic strip curtains in addition to the regular door. We always made our dough at the end of the day when there was minimal traffic in and out of the cooler, and then there was no traffic during the night when the dough was cooling down.

Tom Lehmann/The Dough Doctor  
1757

## [\*\*Dough Clinic / Re: Dissolving Instant Yeast\*\*](#)

Either ADY or IDY will work equally as well in situations such as you have described, however, since ADY is designed to be pre-activated I might lean a little more towards using ADY for applications where the yeast must be suspended and activated prior to use. Why ADY over IDY in this specific application? Because, overall, IDY tends to be a little temperamental with regard to the temperature of the water it's suspended in so there exists a potential for damaging the yeast if one gets careless with the temperature of the water the yeast is put into. ADY while still responsive to water temperature is not as temperamental. In reality I'm probably "cutting hairs" since as I stated in another post recently any difference in yeast performance is going to be hard, if not impossible, to see under home baking conditions. On the other hand, if defense of IDY, it has better shelf life properties than ADY so if you do not use an entire package of ADY within a given period of time the IDY will most likely prove to provide more consistent results over a longer period of time. Like the grocer says, "six of one, half a dozen of the other", take your pick.

Tom Lehmann/The Dough Doctor  
1756

## [\*\*Dough Clinic / Re: Caputo 00 Pizzeria vs Americana\*\*](#)

Another thing to consider is the correct, and many time "legal" dosage for some of the more commonly encountered additive ingredients such as potassium bromate,

azodicarbonamide, ascorbic acid, and L-cysteine hydrochloride which is measured in ppm (parts per million) based on the flour weight.

Tom Lehmann/The Dough Doctor  
1755

### **Dough Clinic / Re: Crispy crust ?**

which "00" flour are you using?

Tom Lehmann/The Dough Doctor  
1754

### **Dough Clinic / Re: Desired Dough Temp & Fermentation Temp**

If you are asking if the finished dough temperature influences or is influenced by the temperature at which the dough will be fermented, the answer is yes, but regardless of at what temperature the dough will be fermented, 76 to 78F is still a good target finished dough temperature but do keep in mind that when you will be fermenting at elevated temperatures such as room temperature fermentation consistency in achieving the targeted finished dough temperature is more important than the actual finished dough temperature itself. Where long dough fermentation times are employed it is the common practice to develop a targeted finished dough temperature and then adjust the yeast level to accommodate the fermentation time, when doing this the temperature of the dough must be a constant so achieving the targeted temperature is critical.

Tom Lehmann/The Dough Doctor  
1753

### **Dough Clinic / Re: Dissolving Instant Yeast**

When mixing the dough by hand both types of yeast will perform very well but I tend to give the nod to the use of ADY in this application since it is designed specifically to be suspended and activated prior to use while the IDY could conceivably suffer some damage by being suspended in the water if the temperature isn't correct (it is more sensitive to the temperature of the water in which it is suspended than ADY), this is why I might give the nod to ADY over IDY in this specific application, on the other hand the IDY has better shelf life properties so if you are planning to open a large package and use from it over a period of time the IDY might provide more consistent performance over the long haul, six of one, half a dozen of the other, take your pick.

Tom Lehmann/The Dough Doctor  
1752

### **Pizza News / Re: King Arthur AP recall**

Welcome to the wonderful world of wheat flour. :)

Tom Lehmann/The Dough Doctor  
1751

### **Dough Clinic / Re: Crispy crust ?**

Without know which flour you are using I can only say:

Use a dough absorption of about 60%.

Cold ferment the dough for 12 to 24-hours.

Make sure you have at least 2% sugar in the dough formula or 0.25% of a 20L diastatic malt.

Tom Lehmann/The Dough Doctor  
1750

## Dough Clinic / Re: Crust Color Differences between Sauced and Unsauced Pizzas

Maybe you have a very thin white sauce?  
Tom Lehmann/The Dough Doctor  
1749

### Dough Ingredients / Re: Different yeast

Compressed Yeast: C.Y./fresh yeast/wet yeast/brick yeast/block yeast.  
About 70% moisture content.  
Must be stored under constant refrigeration, should not be frozen in a static freezer.  
Highly perishable.  
Shelf life about 3-weeks.  
Can be suspended in the dough water (any reasonable temperature) but usually just crumbled and added on top of the flour when machine mixing.

Active Dry Yeast: ADY/dry yeast.  
About 8% moisture content.  
Unopened shelf life of 6 to 12-months.  
Opened shelf life of about 3-months.  
Must be suspended and activated in 100 to 105F water prior to use.  
Once activated it can be added directly to any reasonable temperature dough water.

Instant Dry Yeast: IDY/instant yeast.  
About 3% moisture content.  
Unopened shelf life 12 to 24-months.  
Opened shelf life: 3 to 6-months.  
Is usually added dry to the flour when machine mixing but should be suspended in 95F water when mixing doughs by hand or employing machine mixing times of less than 5-minutes.  
Once the IDY is suspended in 95F water it can safely be added to the dough water at any reasonable temperature.  
IDY when suspended in 95F water is to allow for hydration of the yeast, it is not to activate it as is done with ADY.  
NOTE: The word "instant" in this case refers to the hydrating properties of the yeast, not the activation of the yeast.  
IDY is extremely sensitive to the temperature of the water it is suspended in, even a 5F variance can/will impact yeast performance to some extent.  
IDY can be used in the making of "goodie bags" whereas ADY cannot.  
When an autolyse is used in making the dough the IDY can be sprinkled on top of the autolysed dough and machine mixed. Note that a minimum 5-minute mixing time is necessary.

Conversions:  
CY: 16-ounces  
ADY: 8-ounces  
IDY: 6-ounces

Tom Lehmann/The Dough Doctor  
1748

## [\*\*Dough Ingredients / Re: Different yeast\*\*](#)

That's not the question you asked, but you your "wondering" question is included in my response as I have indicated how they are used/added to the dough.

Kinda reminds me of a Little Suzie an Joke. Little Suzie comes home from school one day and asks her mother "where did I come from?" Her mother proceeds to explain the "facts of life" to her in full detail, then she asks Suzie why she asked about it, little Suzie responds "Well, my friend Johnny said he was from Pennsylvania and I was just wondering where I came from" :-D

Tom Lehmann/The Dough Doctor

1747

## [\*\*Dough Ingredients / Re: Different yeast\*\*](#)

I'd say that was a fair statement. Most pizza makers, both home and pizzeria, use IDY for its ease of use, greater consistency and long shelf life.

Tom Lehmann/The Dough Doctor

1746

## [\*\*Dough Clinic / Re: Dissolving Instant Yeast\*\*](#)

In a dough the water is pretty well taken up already by the flour and other ingredients, the 5-minutes mixing allows for a slow/controlled rate of yeast hydration while also at the same time ensuring thorough distribution of the yeast throughout the dough. When you put the IDY into 95F water there is no other competition for the water aside from the yeast so it hydrates much faster but as I've said numerous times before, this is also a problem in that you will get some glutathione being leached out of the yeast cells, yes, even with 95F water but the damage will be minimized.

Tom Lehmann/The Dough Doctor

1745

## [\*\*Sauce Ingredients / Re: Is "Savory" really an ingredient?\*\*](#)

Rather than going into a detailed explanation, if you Google it you will find a definition of the spice "savory".

Tom Lehmann/The Dough Doctor

1744

## [\*\*Dough Clinic / Re: Dissolving Instant Yeast\*\*](#)

NO.

Tom Lehmann/The Dough Doctor

1743

## [\*\*Dough Ingredients / Re: King Arthur Flour's "Pizza Flour Blend": problems\*\*](#)

While it was difficult to read the bag label it does not appear to indicate that the flour has been malted. If your dough formulation does not already contain at least 2% sugar you might try it again with at least 2% sugar included in your dough formulation. The cake like texture is a direct result of the baking powder contained in the flour "cocktail" as I like to call it. To improve the crumb structure increase the amount of yeast you're using. You are including yeast in the dough formulation as opposed to just adding water to the "cocktail" , aren't you? If you are not doing do what you are making is reminiscent of the old Chef Boy Ardee pizza kit, but even that has some sugar in the dough formula but in this case since there is no yeast the sugar HAS TO BE dextrose/corn sugar.

Tom Lehmann/The Dough Doctor

1742

## [\*\*Dough Clinic / Re: 73% hydration dough\*\*](#)

If it was collapsing when touched it was most likely over proofed.

What was the finished dough temperature?

How much of what kind of yeast was used?

Did you leave the container open for a couple of hours after you placed it in the fridge?

A little dusting flour or oil on your hands will go a long ways in helping you handle a soft/sticky dough.

Tom Lehmann/The Dough Doctor

1741

## [\*\*Dough Clinic / Re: 73% hydration dough\*\*](#)

Amen to that!

A little dusting flour or oil on your hands doesn't hurt a thing, adding more flour is a totally different thing which is what you were probably told not to do.

Tom Lehmann/The Dough Doctor

1740

## [\*\*Dough Clinic / Re: Help with recipe conversion from standard measurement to percentages\*\*](#)

We have discussed this many time here, maybe Peter can dive back into the archived and reference some of the posts for you.

When changing a "recipe" based on volumetric portions into bakers percent it is recommended that you portion out the ingredients three times and weigh the sum on each ingredient then divide the sum by three which will give you the average ingredient weight. With all of the average ingredient weights written down we can begin changing your recipe into a dough formula based on bakers percent. Assign 100% to the flour weight as it is ALWAYS 100% regardless of the weight. Now, using your calculator, divide each ingredient weight by the weight of the flour and multiply by 100, this will give you the bakers percent for each ingredient.

Example:

Flour weight: 650-grams.

Ingredient weight: 17-grams.

Divide 17 by 650 X 100 = 2.61%

To use bakers percent:

Decide how much flour you want to use.

Tip: If you want to double the dough size just double the amount of flour. If your dough makes 3 dough balls and you want to increase the dough size to make 4 dough balls just use 1/3 more flour weight.

To calculate ingredient weights:

Put 100% next to your new flour weight, remember flour is ALWAYS 100%.

Using your calculator, enter the flour weight then press X and enter the percent of the ingredient you want the weight for then press % and read the weight of the ingredient in the display.

Example:

Your new flour weight if 975-grams.

The ingredient percent is 2.61%

975 X 2.61 (press the "%" key) and read the ingredient weight in the display.

If you are "math challenged" there are several spread sheets out there that I'm sure anyone here can direct you to that will do all the work for you, all you will

need to do is plug in the flour weight, can't get much easier than that.

Tom Lehmann/The Dough Doctor  
1739

**General Pizza Making / Re: Help with pizza sticking to pan**

One thing that will usually help in cases like this is to blend at least 25% Crisco or some other plastic shortening into the oil. For example, if you make a blend of 3-ounces of oil and 1-ounce of Crisco and heat in the microwave to melt the Crisco into the oil then use this blend for your pan oil. This is a trick I learned when I was working in a bakery to prevent bread loaves from sticking in the pan.

Also, I know not what type of oil you are using but be aware that sometimes a change in the type of oil being used will also help. Peanut oil is what has been used commercially for a good many years.

Tom Lehmann/The Dough Doctor  
1738

**General Pizza Making / Re: Prebaking a shell and preventing burnt crust**

Par-bake crusts can easily be stored for up to a total of 4-days at room temperature. Not knowing the time of the year or the relative humidity of the room in which the crusts are being stored I suggest wrapping the cooled crusts in stretch wrap (not tightly) to prevent further moisture loss. Don't worry about staling, that is not an issue with pizza crusts but mold is, this is what we recommend not storing for more than 4-days since mold will usually begin colonizing on the 5th day.

If you go back in the archives here you will find more posts on par-baking pizza crusts.

Tom Lehmann/The Dough Doctor  
1737

**Dough Clinic / Re: Newbie Questions regarding Dough Recipe**

If you are making a N.Y style pizza you really need to be using a high protein content flour, something in the 12.8% to 14.2% protein content will work best for this application. In New York All Trumps flour is very popular, it has a protein content of 14.2%. An easy to find flour is Pillsbury Bread Flour aka Pillsbury Breadmaker Flour which has a protein content of about 12.2% and is available in most supermarkets.

Tom Lehmann/The Dough Doctor  
1736

**General Pizza Making / Re: Help with pizza sticking to pan**

Just use clarified butter/ghee as regular butter will burn.

Tom Lehmann/The Dough Doctor  
1735

**Neapolitan Style / Re: Dough problem after bake**

George;

Your salt level is really very low at just over 1% which can result in an inconsistent fermentation rate. The next time you bake you might want to increase the salt level to 25 to 30-grams which is a more realistic level for pizza dough and as a side benefit it will improve the flavor of the baked crust. I'm guessing right now your crust has a slightly "starchy" like taste, the increased salt level will effectively address this. Additionally, how long do you pre-heat your oven prior to baking?

Tom Lehmann/The Dough Doctor  
1734

**Chitchat / Re: Types of fire/heat?**

Dry wood and gas bake pretty similarly at the same temperatures, both release moisture into the oven as a result of combustion (assuming a direct fired oven which most home ovens are), electric ovens on the other hand create a very dry heat which conducts heat rather poorly so products baked in an electric oven typically require a longer baking time which can be as much as 20% longer than that required in a wood or gas fired oven baking at the same temperature. With wood it is also possible to have a variable in the amount of moisture in the wood being burned which can affect the way products bake. With all of this said, I've never heard of anyone adjusting the dough absorption due to the fuel being burned in the oven. However, as a rule, most wood fired ovens are operated at a higher temperature than gas ovens which allows the operator to increase the dough absorption to achieve specific finished crust characteristics not otherwise achievable when baking at lower temperatures. In this case I'm referencing baking at temperatures in the 800 to 1,000F range.

Tom Lehmann/The Dough Doctor  
1733

**Shop Talk / Re: Keeping pizza hot and not soggy when transporting to customers**

Delivery no, customer pick-up yes. It took a bit for customers to get used to the concept but they're on board now. No customer complaints that the pizza was delivered later than promised, no complaints that the pizza was stuck to the top of the box, seldom ever a complaint, and no headaches associated with delivery. Like Walter said, if you really want a great pizza, come in and enjoy one!

Tom Lehmann/The Dough Doctor  
1732

**General Pizza Making / Re: How to get multiple rises with yeast ratio**

- 1) Define a "rise". I know what a "full" rise is, by definition it is when the dough rises and then begins to recede on its own, this is also typically considered to be about 80% of the full fermentation time the flour can handle.
- 2) Finished dough temperature is what drives the rate of fermentation, the warmer the dough (within reason) the faster it will ferment.
- 3) Yeast needs some nutrient to sustain vigorous fermentation, this can be in the form of malted flour or added sugar.
- 4) Flour strength also plays a significant part in fermentation, the stronger the flour or the greater its tolerance to fermentation the greater the time needed to reach the first "full" rise as described above.

Dough absorption and water carrying capacity of the flour can impact the rate of fermentation too and it will also significantly impact the way the dough looks at any stage of fermentation. With high dough absorption the dough can look to be well fermented but in reality still be under fermented.

Tom Lehmann/The Dough Doctor  
1731

**Neapolitan Style / Re: Dough problem after bake**

George;  
That certainly might be, there is a reason why the manufacturers put an expiration date on their products, not that the product will fail after that date but they know,

through their own testing, that they cannot ensure satisfactory product performance after that date. To further cloud the issue if the yeast packets, at any time since they were packaged, were subjected to less than ideal storage conditions the shelf life would be compromised so the yeast performance would be even poorer than expected after the expiration date.

Tom Lehmann/The Dough Doctor  
1730

### [\*\*Dough Clinic / Re: Flour suggestions for NY Thin Style dough\*\*](#)

You're on the right track, however, I might suggest that you begin your experimenting using what would be termed a strong bread type flour (12.2 to 12.8% average protein content). Make your doughs sufficiently large so as to get at least three dough balls from each dough, make a pizza from each dough ball at 48, 72 and 96-hour intervals. Always make the same pizza and photograph your results as well as entering your comments into a log book.

Have fun doing it. We look forward to hearing about your results.

Tom Lehmann/The Dough Doctor  
1729

### [\*\*Chitchat / Re: Types of fire/heat?\*\*](#)

Good news and bad news about burning wood with a higher moisture content.  
The Good News: It will potentially give a very slight increase in the moisture content/humidity within the oven which can result in better heat transfer to the pizza and possibly shorten the baking time by a few seconds.

The Bad News: High moisture content wood does not burn as hot as dry wood thus effectively negating the good news.

Note: DO NOT confuse this with adding low pressure steam to an oven, in that case you're flooding the oven with steam which condenses on the product thus cooling it and delaying setting of the crust structure and enabling the product to be baked longer.

Tom Lehmann/The Dough Doctor  
1728

### [\*\*Chitchat / Re: Types of fire/heat?\*\*](#)

Nick57;

It potentially could. That's how we bake pound cakes and fruit cakes in retail bakeries where we want to bake longer without overly drying out the product or developing an overly thick, heavy crust on the product. In many cases you can get the same effect by simply spraying water on the pizza or just the rim immediately before placing it in the oven.

Tom Lehmann/The Dough Doctor  
1727

### [\*\*Dough Clinic / Re: Time in balls vs extensibility\*\*](#)

Once the dough is balled it is typically allowed to cold ferment anything from 18 to 96-hours or more, it is then removed from the fridge and allowed to warm to 50 to 60F before opening.

If you use a different dough management procedure where the dough is fermented for a period of time prior to scaling and balling you only need to allow the dough balls sufficient rest time to relax sufficiently for ease of opening.

Tom Lehmann/The Dough Doctor  
1726

## [\*\*Dough Clinic / Re: Wondra Flour for Pizza Crust Recipe?\*\*](#)

When we had an electric deck oven and it was failing it took close to 15-minutes to bake our thin crust pizzas. We replaced it with a Marsal gas deck oven and our baking times went down by approximately 50%. Additionally, there are a good number of deck ovens in use for making pizzas that are not actually designed for making pizza, they were designed to bake bread so they will always have a steel deck and a burner BTU capacity of around 85,000 BTU. Not exactly the oven you would want to have for a high volume shop.

Tom Lehmann/The Dough Doctor  
1725

## [\*\*Dough Clinic / Re: Two different flours, same hydration question\*\*](#)

Every flour is different and unique in its own way, or said another way, no two flours are alike. Each and every flour will exhibit its own absorption and mixing properties, some flours exhibit sticky or slightly sticky dough characteristics which can be inherent in the flour and for all practical purposes, impossible to correct while others demonstrating the same characteristics can be addressed by changes to the dough absorption or mixing time.

Typically, a dough that is made using an autolyse (I think that's what you were referring to) will be less sticky and easier to handle than a dough made without using an autolyse.

If you are faced with a sticky dough make sure you are not adding diastatic malt in combination with a malted flour or that you are not using it in excess as too much malt will create a sticky dough condition that cannot be addressed.

Tom Lehmann/The Dough Doctor  
1724

## [\*\*Dough Clinic / Re: Time in balls vs extensibility\*\*](#)

JPB;

It is true that increasing the dough absorption plays a part in how well the dough opens but not as much as fermentation or relaxation time.

Tom Lehmann/The Dough Doctor  
1723

## [\*\*Dough Clinic / Re: Two different flours, same hydration question\*\*](#)

Damaged starch is usually limited to something between 6 and 12% in most flours (we've discussed the impact of damaged starch when it's at a high level before, very high dough absorption but the damaged starch is the first to be hydrolyzed so it quickly releases its water turning the dough into soup). On average, gluten forming protein (VWG) has an absorption of 2 to 2.5 times its weight. The remainder of the water that we add (which isn't absorbed primarily by the protein and damaged starch) is used to adjust the viscosity of the dough.

Tom Lehmann/The Dough Doctor  
1722

## [\*\*Dough Clinic / Re: How much oil is enough\*\*](#)

You will need to use about 5% oil to see a significant softening effect but if you mean creating a more tender eating crust 2% is a good starting point.

Tom Lehmann/The Dough Doctor  
1721

## [\*\*Dough Clinic / Re: Understanding dough ball structure\*\*](#)

There are a whole lot of other things at play here which can cause flattening of the dough ball.

- 1) Some gluten development is needed to retain leavening gas but in pizza production it isn't as important as it is in bread production.
- 2) Flour strength will play a significant role in determining how well the dough ball retains shape during fermentation.
- 3) How tight the dough is rounded will impact how well the dough ball retains its shape.
- 4) The dough absorption also affects how well the dough ball retains its shape.
- 5) The amount of salt used also plays a role.
- 6) The amount of yeast used will have an impact.
- 7) The finished dough temperature will play a role.
- 8) The use of oil in the dough will also impact how the dough ball looks after fermentation.
- 9) Failure to cross-stack is a major contributor to dough ball collapse.
- 10) Improper (warm) cooler/fridge temperature.

Any one or combination of these factors can/will affect how the dough ball looks/perform after the fermentation period. It is impossible to say that any one factor has caused a dough ball to flatten or collapse without knowing the dough formulation, flour strength characteristics and dough management procedure in great detail.

Tom Lehmann/The Dough Doctor  
1720

### **Dough Clinic / Re: How much oil is enough**

Equal parts fat and flour/100% fat = a roux, great for thickening a gravy.  
Even a pie crust with 35 to 50% fat will have some water in it to form some gluten as a binder.

From a practical standpoint 15 to 25% fat will be about the maximum amount used in making pizza crusts. A number of years ago croissant pizza crusts were popular. These were made with roughly 20 to 25% fat or which 5% was incorporated into the dough with the remainder added as hard fat flakes and incorporated into the dough at the end of the mixing stage. You saw the same dough being used by Burger King in making their breakfast sandwiches.

Tom Lehmann/The Dough Doctor  
1719

### **Dough Clinic / Re: Wondra Flour for Pizza Crust Recipe?**

It would get up to full operating temperature, eventually. With the elements not generating full heat potential the oven would cool when opening the door, like you never need to do that when using a deck oven! Multiple bakes were impossible unless we waited about 15-minutes before loading the oven again as the deck was sooo ssslllooowww to recover.

What a breath of fresh air when we got the Marsal gas oven! :chef:

Tom Lehmann/The Dough Doctor  
1718

### **Prep Equipment / Re: What is your favorite pizza cutter for high traffic events?**

If you are planning to sell whole pizzas a rocker knife is fast and easy to use.  
Tom Lehmann/The Dough Doctor  
1717

## [\*\*Dough Clinic / Re: What am I doing wrong??.....\*\*](#)

Before I can really help you I've got to ask you to put your dough "recipe" into a dough "formula" based either in weight measures or bakers percent, that will help tremendously with the diagnostics allowing us to give you some meaningful direction, also it will go a long ways in helping you produce a more consistent product.

Tom Lehmann/The Dough Doctor  
1716

## [\*\*New Forum Members / Re: New here! Opening a new place soon!\*\*](#)

We recently had quite a bit of discussion here on DELCO pizza which might be of interest to you.

Tom Lehmann/The Dough Doctor  
1715

## [\*\*Dough Clinic / Re: Salt/Yeast direct contact\*\*](#)

Before answering your question I would like to know if you are machine mixing (assuming you are) and more importantly, what type of yeast are you using?

Tom Lehmann/The Dough Doctor  
1714

## [\*\*Dough Clinic / Re: Salt/Yeast direct contact\*\*](#)

When hand mixing we found it best to put the salt (and sugar if used) into the bulk of the dough water then suspend the yeast (regardless of the type used) in a small portion of 95 to 100F water for ADY (ADY will need a 10-minute activation period) or IDY (IDY requires no activation period), but you can just dip a small amount of the dough water out of the bowl (before adding the salt/sugar) to suspend the CY in as it is not temperature sensitive, add the suspended yeast to the dough water containing the salt/sugar and immediately add flour and begin mixing.

When mixing by machine put the dough water in the bowl and add the salt/sugar, then add all of the flour and add the CY or IDY on top of the flour and begin mixing. If using ADY you will need to suspend it in a small portion of 95 to 100F water to hydrate/activate it, then after 10-minutes activation add it on top of the flour and begin mixing.

A sourdough can be added to the dough water when hand mixing just as the yeast suspensions are added, but when machine mixing it is better to add it on top of the flour just prior to starting the mixer.

Hopefully you're considering one of the spiral dough mixers for mixing your doughs.

Tom Lehmann/The Dough Doctor  
1713

## [\*\*Sicilian Style / Re: AP vs. Bread Flour for Sicilian-style pies\*\*](#)

One of the biggest problems with any AP flour is that there is no real standard for it ("all purpose" just what is that flour intended for?) it can be milled from soft wheat varieties (think cake and pastry flours) or it can be milled from hard wheat varieties like bread flours are. This can pose a problem when changing brands of AP flour too. I've seen protein levels for AP flour from a low of something in the 9% range to as high as 11.5%, this is why some swear by AP flour while others swear at AP flours. It is also why I don't ever recommend using an AP flour. Bread flours, on the other hand, are designed for baking bread and bread like products (pizza included) and as such they are much better defined as to the type of wheat they are

milled from as well as the protein content falling within a usable range for making pizza.

Tom Lehmann/The Dough Doctor  
1712

### **Dough Clinic / Re: Diastatic malt vs sugar in home oven**

The crust color developed through the addition of malt tends to be of a slightly redder hue than that developed through the addition of sucrose.

Most people would not see the difference.

Tom Lehmann/The Dough Doctor  
1711

### **Dough Clinic / Re: Immediate balling vs bulk**

It sure wasn't me you were listening to. I always advocate getting the ENTIRE dough scaled and balled WITHIN 20 minutes of stopping the mixer. The reason for this is to get the dough balled and in the cooler before the dough begins to ferment and change in density (become less dense) which effectively makes the dough more difficult to efficiently cool for optimum shelf life properties. Before I can answer any question on bulk fermentation I need to know the size/weight of the dough that is being bulk fermented. If the dough weight is less than about 1.5-pounds you're kidding yourself with bulk fermentation as you are just fermenting a slightly larger dough ball, if you are talking about bulk fermenting 5-pounds of dough or more, that's a different story, not you can bulk ferment.

So, what's your total dough weight that you're bulk fermenting?

As for removing the dough from the fridge prior to use, you only want to leave it out long enough to reach 50 to 60F internal temperature which is usually around 2-hours, or so.

With a 70% absorption dough the autolyse is probably going to reduce the mixing time a little and possibly give you a little drier dough to work with during scaling and balling.

Tom Lehmann/The Dough Doctor  
1710

### **Dough Clinic / Re: Salt/Yeast direct contact**

Salt and sugar seldom ever do good things for a starter, ditto for yeast in a concentrated medium. Could you add the yeast and/or starter to the water with the salt/sugar? Sure you can, but Murphy's Law dictates that one day you will get distracted and leave them together in the bowl too long and impair the fermenting properties of the yeast or starter which will leave you scratching your head for a day or more trying to figure out what went wrong. Make it a good habit to keep the starter/yeast and the salt/sugar separated and avoid disappointment. Think of it like looking both ways before crossing a road, 99% of the time you can get away without doing it but then there is that one time when you should have.

I suggested a spiral mixer only because they are about as "bullet proof"/trouble free as a mixer can get. Don't just take my word for it, poll others here to see what they think about spiral dough mixers.

No need to slurry a starter, it will be worked in just fine by the normal mixing action of any mechanical mixer. When I make a starter it's pretty loose to begin with (actually it's pourable), but even a plastic starter, like a sponge will be incorporated just fine.

Tom Lehmann/The Dough Doctor  
1709

## [\*\*Dough Ingredients / Re: How long do you let your dough rest?\*\*](#)

I allow my doughs to cold ferment for a minimum of 24-hours but I like to leave it ferment for 48-hours whenever possible. Occasionally I'll leave it go for 72 to 96-hours. The reason for the long fermentation time is primarily to develop flavor in the finished crust. If you will read through some of the archived posts here you will find a lot of good discussion on fermentation time. When fermenting the dough you have options of cold fermentation or room temperature/ambient fermentation. Doughs that are managed at ambient temperature will provide a crust flavor that is slightly different from one that has been cold fermented, ambient temperature fermented doughs may also be more difficult to manage, especially for a beginner, as they are more temperature sensitive and can be more inconsistent in performance if not managed properly.

Tom Lehmann/The Dough Doctor  
1708

## [\*\*Starters/Sponges / Re: dough with 80% starter\*\*](#)

I would also suggest getting some litmus paper strips to monitor the pH as you go through the process.

Tom Lehmann/The Dough Doctor  
1707

## [\*\*Dough Clinic / Re: Thank You Tom\*\*](#)

And you didn't invite me to share that great looking pizza with you :'(  
You're off to a great start! :chef:

Tom Lehmann/The Dough Doctor  
1706

## [\*\*Off-Topic Foods / Re: Best cookie I've eaten\*\*](#)

Speaking just for myself, I've noticed that there is a decided difference between a really, really really good cookie and a really, really, really bad cookie: It takes me just a little longer to eat all of the really, really, really bad cookies. :-D :-D :-D

Tom Lehmann/The Dough Doctor  
1705

## [\*\*Dough Clinic / Re: Found NY style Pizza in Vegas. But, how to make dough without NYC water/flour?\*\*](#)

While on the island of St. Thomas I came across a pizzeria called Pizza Amore they make a great N.Y. style pizza. Water source: Since the island has no fresh water all of their potable water is processed from rain water (collected locally of course). The flour being used was General Mills All Trumps (non-bromated).

I've written articles on the topic and I'm on record as saying that there is nothing special about New York City water when it comes to making a N.Y. style pizza. There is nothing magical about All Trumps flour either (bromated or non-bromated), as just about any quality high protein (13.8 or 14.2%) wheat flour will work just fine.

This is not to say that water doesn't affect the quality of a pizza dough and resulting crust (indirectly) it can and does, just read up on discussions on hard and soft water to learn more. Sulfur water is also deemed to be potable we will want to exclude that but just about anything else will work fine.

Tom Lehmann/The Dough Doctor  
1704

## [\*\*General Pizza Making / Re: Dough Doh!\*\*](#)

And because you are making a suspension (not dissolving the yeast), you will want to keep agitating the suspension (stirring or otherwise) right up to the point where you are ready to weigh out the amount of the suspension that you want to use.  
Tom Lehmann/The Dough Doctor  
1703

### [\*\*Dough Clinic / Re: Immediate balling vs bulk\*\*](#)

With 15+ pounds of dough weight you can achieve a true bulk fermentation of the dough as it is large enough to not be influenced by the surrounding air temperature and it will also generate and retain the heat being generated by the yeast as it ferments (heat of metabolism). The key step to effectively managing a bulk dough like this is in consistently achieving the targeted finished dough temperature, even missing it by a few degrees can/will impact the fermentation rate of the dough.

Tom Lehmann/The Dough Doctor  
1702

### [\*\*New Forum Members / Re: Introduction - Potential Owner\*\*](#)

This may seem silly, but my first question is: Do any of you have any experience operating a pizzeria?

Tom Lehmann/The Dough Doctor  
1701

### [\*\*Chitchat / Re: Types of fire/heat?\*\*](#)

Higher absorption doughs tend to experience better bake-out during the baking process which is also why they also tend to give the crispiest pizzas. Lower absorption doughs resist oven spring and are more dense so they do not bake-out as well which results in a potentially less crispy and softer crust feel which is usually somewhat more chewy too.

Tom Lehmann/The Dough Doctor  
1700

### [\*\*Dough Ingredients / Re: Mixing Flours\*\*](#)

- 1) Bought Caputo and didn't like it and trying to use it up by blending with another flour.
- 2) Trying to achieve a certain protein level and can't buy that flour or don't have it on hand.

I can't come up with another good excuse for blending flours. My approach has always been to find an appropriate flour for the task at hand and work with a single flour whenever possible. Blending the Caputo kinda defeats the reason why it was purchased in the first place, which might take us back to #1.

Tom Lehmann/The Dough Doctor  
1699

### [\*\*Dough Clinic / Re: Cracker Crust Rise\*\*](#)

Kelly:

First, the thermal death point for yeast is 140F so 170F is definitely out of the question. The purpose of the fermentation time (9-hours) is to allow for hydration of the flour resulting in a cohesive dough. Yes, the dough is very tough and difficult to roll out but that comes with the territory of making a cracker type crust.

Additionally, it is the effect of the rolling process that brings the dough together and further helps to make it cohesive, you really don't need a cutter pan, you can roll the dough out and drape it over a screen of desired diameter and cut the

excess off using a DULL table knife or bench scraper, then transfer the dough to another baking platform or a baking stone/steel. The one change I would suggest making to the dough formula is to increase the salt level to 2% for improved crust flavor.

Tom Lehmann/The Dough Doctor  
1698

**Dough Clinic / Re: How should the dough after bulk look like ?**

Roberto;

A bulk fermented dough will look gassy if fermented for an extended period of time, that's what fermentation does.

Why bulk ferment? It's just another method of dough management used in making pizza dough, plus it provides a slightly different crust flavor than the cold fermented dough management procedure. As compared to a cold fermented dough it can be more difficult to manage as the dough can be exposed to a greater range of variables including finished dough temperature as well as ambient temperature. As for mixing the dough, the "window pane" test is for making bread, not pizza, so all you need to do is to mix/knead the dough JUST until it comes smooth, more mixing than that is not needed or desirable unless you wish to have a bread like crumb structure in the finished crust.

You say you leave the dough balls come up to room temperature, what is room temperature? The fact is that 18C is roughly 64F which is already about the ideal temperature for opening the dough into skins. (ideal temperature range for opening dough balls into skins is 50 to 60F/9.9 to 15.5C).

Tom Lehmann/The Dough Doctor  
1697

**Dough Clinic / Re: What is my flour doing to my starter and IDY, and why?**

I can't answer your question without knowing how you were making the SF starter and I'm not sure I understand your question regarding the IDY.

Tom Lehmann/The Dough Doctor  
1696

**Dough Clinic / Re: What is my flour doing to my starter and IDY, and why?**

What dough absorption are you using and how does the dough feel as compared to using one of the other flours that is working better for you? There is a possibility that the flour has oxidized which would cause it to perform normally at first but become tight and bucky during fermentation, tight/bucky doughs resist expansion and typically produce lower than expected volume bread with a tight/dense crumb structure.

Can you provide any pictures of product made with the flour?

Tom Lehmann/The Dough Doctor  
1695

**Dough Clinic / Re: What is my flour doing to my starter and IDY, and why?**

Their "Bread Flour" comes in at 12 to 12.2% protein content. Their commercial equivalents would be any of the following:

Harvest King  
Ben Hur  
Rex Royal (slightly higher at 12.4%)  
Washburn's (slightly higher at 12.4%)  
Full Strength and Superlative would also be close at 12.6% protein.  
Tom Lehmann/The Dough Doctor

1694

**Dough Clinic / Re: How should the dough after bulk look like ?**

That is strictly a personal preference. For me, my personal preference is for cold fermented dough. My entire 50+ year career in dough research has centered around bread and pizza (with cookies, pies, pastries, cakes, etc. tossed in for good measure) so I'm very familiar with the fermentation flavor in bread (room temperature/ambient) fermentation (which is the way most commercial breads here are made) so when I eat pizza I like to have a different flavor in the crust which is why I lean towards CF (cold fermentation) doughs. Over the years I've heard many people say their crust tastes "bready" which comes from the fact that most all Americans have consumed a substantial amount of commercially made bread in their lifetimes so they are, knowingly or unknowingly, familiar with that type of fermentation flavor and are looking for something different in their pizza crusts. Additionally, CF doughs are a lot easier to manage over an extended period of time as evidenced by the fact that most U.S. major pizza chains and pizzerias use some type of CF dough management procedure. In the end though it all boils down to personal preference, what you like and what works best for you is what you will want to use.

Tom Lehmann/The Dough Doctor

1693

**Neapolitan Style / Re: Dough testing and procedure from Austria ;)**

Your dough ball looks great, I might suggest putting just a "wipe" of oil in the bowl before placing the dough ball in it, this will allow for an easier release (removal) of the dough from the bowl, in some cases you might be able to just invert the bowl for a few seconds or give it a tap on the counter top and the dough ball will fall out on its own giving you a nice symmetrical dough piece to open.

Tom Lehmann/The Dough Doctor

1692

**Shop Talk / Re: Marsal Oven**

Have used them for many years, great performance, great price, just don't buy into the claims that you don't need to rotate/spin the pizzas during baking. Not much not to like about the ovens.

Tom Lehmann/The Dough Doctor

1691

**Neapolitan Style / Re: Dough testing and procedure from Austria ;)**

Roberto;

Did the shape of the pizza affect the way it tasted? If not, don't sweat it! Free form pizzas are a popular item.

Your finished pizza looks just fine, and I bet it tastes as good as it looks too. :drool:

Tom Lehmann/The Dough Doctor

1690

**Dough Clinic / Re: Found NY style Pizza in Vegas. But, how to make dough without NYC water/flour?**

N.Y. style pizza is made with the highest protein flour commercially available because it provides the desired finished crust characteristics, namely chew and foldability which allows the slice to be folded for consumption on the run. Soft water is easily addressed by the addition of 0.25% calcium sulfate to the dough, or you can "bite the bullet" and just reduce the dough absorption slightly to

compensate for the slightly softer dough resulting from the use of soft water as compared to hard water. This has been discussed here at great length and I've also written a published article on the topic.

Tom Lehmann/The Dough Doctor  
1689

**[Dough Clinic / Re: Found NY style Pizza in Vegas. But, how to make dough without NYC water/flour?](#)**

It's just added as you would any other dry ingredient, I've always added it right on top of the flour.

Tom Lehmann/The Dough Doctor  
1688

**[Dough Clinic / Re: How should the dough after bulk look like ?](#)**

When the dough is bulk fermented prior to CF there is no way I can say how long you will need to CF the dough balls as I have no idea of how much fermentation the bulk dough has already received.

We just recently discussed bulk fermentation and ball fermentation, for many home pizza makers there isn't any difference if you bulk ferment or ball ferment because of the minor difference in dough size. Due to the higher ambient temperature room temperature/ambient fermented dough formulas will contain less yeast than CF dough formulas.

With regard to allowing your dough balls ferment at room temperature (25C/77F) the answer is: only until they can be easily opened into skins.

With regard to allowing the dough balls ferment at 18C/64F) the answer is the same.

Tom Lehmann/The Dough Doctor  
1687

**[Dough Clinic / Re: Mixing Time](#)**

In one word: ABSOLUTELY. There are just so many variables at play when it comes to mixing time that providing an approximate mixing time is like trying to predict the weather. The mixing attachment type and speed, the type of mixer, size of the bowl, size of the dough, dough absorption, flour characteristics, dough formulation, even the surface texture of the bowl comes into play. Don't worry about the time, instead mix the dough JUST until it takes on a smooth appearance and then adjust the water temperature to give you the targeted finished dough temperature

Tom Lehmann/The Dough Doctor  
1686

**[Dough Clinic / Re: What am I doing wrong???.....](#)**

Additionally, I'm betting that your finished dough temperature is too hot (as indicated by the use of "lukewarm water" as opposed to cool/cold water) A dough that is too hot will experience excessive fermentation (further compounded by the use of 1.7% ADY which is way too high, a better level would be 0.5%) which will result in the yeast consuming all of the available sugars with little or nothing left for browning plus a byproduct of fermentation is acid which will also inhibit crust color development so the excessive fermentation is serving you a double whammy. With only 1.3% salt I'm also betting that the finished crust leaves a bit to be desired in the flavor department, the crust might even taste "starchy" which is an indication of insufficient salt. Since salt also regulates the fermentation rate it is further compounding the excessive fermentation issue cited above, sometimes ya feel like you just cant win.

I can't comment on the malt powder that you're using as I don't know the L (Lintner) value of it. I always use a 20L malt powder at 0.25% when I'm working with an unmalted flour. As for mixing the dough, just mix it until it takes on a smooth appearance. Use just a small amount of the water at 100F to suspend and activate the ADY in and adjust the temperature of the remainder of the water to 60F. Be sure to add the cold water and the yeast suspension to the bowl first, then add the flour, malt powder and salt and sugar if you are using it last, then begin mixing. Mix just long enough to achieve a smooth dough appearance. Measure the finished dough temperature, you are looking for a temperature in the 70 to 75F range. Immediately scale and ball the dough, wipe the dough balls with a little oil and place into individual plastic bread bags (not ZIP-LOCK), twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge to ferment overnight. When you're ready to use the dough on the following day remove the dough balls from the fridge about 90-minutes before you plan on opening them into skins, once opened, dress and bake immediately.

I think this will get you started to making a much better pizza. Keep us posted on your results.

Tom Lehmann/The Dough Doctor  
1685

**[New Forum Members / Re: New home pizza maker with too much to learn](#)**

All commercial wheat varieties, world wide, in use today are hybrid varieties, so much so that they are not even named anymore (not since the 1970's) they are just designated by number sequences. If you want to play with a certified pure variety search for Turkey Red wheat, it is still grown, mostly in N.W. Kansas, and available on a limited basis. You might be able to find some on the Internet. Once you find it you will need to mill it into flour. I'm not aware of anyone selling Turkey Red flour. If you want to make the crust more digestible, think fermentation.

Tom Lehmann/The Dough Doctor  
1684

**[Off-Topic Foods / Re: Type of flour for scones?](#)**

Absolutely correct, the milk will provide lactose sugar which readily browns during baking (the sucrose will not brown during baking unless yeast is present to invert it into reducing sugars). Eggs will also contribute to the browning process, but if you want more color just add some dextrose/corn sugar and you will get all the crust color you want.

Tom Lehmann/The Dough Doctor  
1683

**[Dough Clinic / Re: Mixing Time](#)**

Rolls;

You are correct, we developed that test when we had our AIB Pizza Seminars and it works very well, but there is one problem with it, it is almost impossible to accurately describe how to do it much less interpret the results as your thumbs are pulling apart. I'm planning to do a new pizza video series with PMQ later next month and that is going to be one of the things that I'll be demonstrating, once seen it is easy to understand and do.

Tom Lehmann/The Dough Doctor  
1682

**[Dough Clinic / Re: What am I doing wrong???.....](#)**

Sure, you will need to make an emergency dough.

Double the amount of yeast.

Replace 2% of the water with vinegar.

Reduce the amount of sugar in the dough by 50%.

Adjust the dough water temperature to give you a finished dough temperature of 85 to 90F. (about 80F water temperature +/-)

From that point on process as directed but do not CF, instead just bag the dough balls and place on the counter top to ferment for 2-hours, then turn out of the bag onto a flour dusted surface, and open into a skin for immediate use. Don't go expecting much in terms of flavor or "digestibility" and you won't be disappointed.

If you want to learn more about Emergency Doughs go back in the archives as we've had quite a bit of discussion on the topic.

Tom Lehmann/The Dough Doctor

1681

### **Neapolitan Style / Re: Dough ball, which side is the bottom?**

I always orient the dough ball so the top of the dough ball becomes the bottom of the skin.

Tom Lehmann/The Dough Doctor

1680

### **Starters/Sponges / Re: bulk retard vs ball retard**

We just recently quite a bit of discussion on this very topic, if you check back a week or two you should be able to find it.

Pizzerias (box chains) use a refrigerated dough ball method of dough management because it allows them to use the dough over a several day period and it provides much better consistency than and of the room temperature/ambient fermented doughs. As a home pizza maker you will most likely be using all of the dough that you make at one time so room temperature/ambient temperature dough management is a viable way to manage the dough, however you will need to modify the dough formula by using less yeast and paying special attention to the finished dough temperature (70 to 75F) failure to do so can end up resulting in over fermented dough. Oven spring will be about the same for both methods of dough management, as for flavor, it's hard to describe as it's pretty subtle, but room temperature/ambient fermentation provides a finished flavor similar to that of white pan bread (U.S. and U.K.) while cold fermentation provides a more complex flavor without the acidity common to crusts made from temperature/ambient temperature managed doughs.

Tom Lehmann/The Dough Doctor

1679

### **Neapolitan Style / Re: Dough ball, which side is the bottom?**

It also helps to reduce the amount of dusting flour picked up by the dough during the opening process, and because I open my dough by bench stretching the dough slides much easier on the bench top when the top (smooth) side is placed down.

Tom Lehmann/The Dough Doctor

1678

### **Dough Clinic / Re: Water**

Yes it does, hard, potable, tap water is the best just do long as it isn't sulfur water. Distilled and soft water are not recommended as they result in a softer, slightly weaker dough condition.

Tom Lehmann/The Dough Doctor

1677

## [\*\*New York Style / Re: What we have here...\*\*](#)

Your starter is comprised of various yeast and bacteria strains, refrigerated temperatures will dramatically slow but not stop the growth rate of both, however some bacteria are more adaptive than others and will adapt to the cooler temperature and thrive thus taking over the medium and becoming the dominant strain (this is how sours are "lost").

Tom Lehmann/The Dough Doctor  
1676

## [\*\*Starters/Sponges / Re: bulk retard vs ball retard\*\*](#)

Being a home pizza maker I will "assume" you are working with smaller size doughs, less than 1Kg. in total weight? Please confirm or tell me what your total dough weight is.

Tom Lehmann/The Dough Doctor  
1675

## [\*\*Starters/Sponges / Re: bulk retard vs ball retard\*\*](#)

It really doesn't work that way, pick one, cold fermentation or room temperature fermentation and go with it. After the dough has cold fermented it will be significantly less dense making it a better insulator and more resistant to temperature change so it will be just all that much more difficult to manage, even in ball form. Another question is, how does your sourdough starter perform under refrigerated conditions? Some starters go all but dormant at refrigerated temperatures so placing the dough in the fridge would be an exercise in futility as not much will happen. Additionally, my comments on a dough made using refrigerated dough management v/s room temperature dough management was based on the use of yeast, not a sourdough starter. The use of a sourdough starter will essentially wipe out any perception of flavor change as it will dominate the flavor profile.

Tom Lehmann/The Dough Doctor  
1674

## [\*\*Dough Clinic / Re: Mixing Time\*\*](#)

Mixing time is the same regardless of how long you plan to CF the dough. Mix the dough JUST until it takes on a smooth appearance, more than that is not necessary or desirable.

Tom Lehmann/The Dough Doctor  
1673

## [\*\*Dough Clinic / Re: What can I add to dough for good browning of pie\*\*](#)

You can add sugar to the dough formula about 3% should be right. You can also replace 50% (1/2) of the water with whole milk. Be sure to scald the milk first, then allow it to cool in the fridge for a few hours before using it. Either of these should improve the color of your finished crust.

Tom Lehmann/The Dough Doctor  
1672

## [\*\*Resources / Re: Flour Source in Eastern MA\*\*](#)

Try these:

[www.Fourstarfarms.com](http://www.Fourstarfarms.com)

[www.maineatlas.com](http://www.maineatlas.com)

Tom Lehmann/The Dough Doctor

1671

### **Dough Clinic / Re: Too much leoparding but very white crust**

Additionally, I think it's the increase in acidity of the dough that is preventing the crust from developing more color. If you make a pizza from the dough at 24-hours and the crust develops better color this would give validity to that premise.

Tom Lehmann/The Dough Doctor  
1670

### **Prep Equipment / Re: Hobart A 200 restauration**

Maybe it's just the angle of the picture but it looks more like an A-120 (12-quart) mixer. In any case you will want to replace the useless "J" hook and get a reverse spiral dough arm for your mixer, you'll be glad you did after trying to mix your first dough. That was a really great find, you've got most of the attachments (all of the most commonly used ones) with it too. Good Deal!

Be sure to bolt it down to the table you mount it on, we've had more than one take a walk off of the bench at AIB (not a pretty sight). If the bowl is rusted you can have it tin plated to restore it to "like new".

If there are any dents in the bowl, pretty common) let me know and I'll ll let you know how to remove them (do NOT go beating away at them with a hammer!). When you get a reverse spiral dough arm you will want to check and probably reset the clearance between the bottom of the dough arm and the bowl, it makes a big difference in how the doughs mix.

Tom Lehmann/The Dough Doctor  
1669

### **Starters/Sponges / Re: bulk retard vs ball retard**

Sallam;

Less dense = lighter in weight for a given volume.

Better insulator = resists temperature change.

Resistant to temperature change = more difficult to change the temperature.

In all probability, room temperature fermentation is going to be the best when using a sourdough starter.

Tom Lehmann/The Dough Doctor  
1668

### **New Forum Members / Re: Introduction - Stiff starter**

I don't have a "recipe" but I do have a dough "formula" in bakers percent.

Sponge:

Flour: 60%

Water: 50% (based on the weight of the sponge flour)

Yeast: 0.25% (based on the weight of the sponge flour)

Set Temperature: 70F/21C

Allow to ferment 18 to 24-hours at room temperature.

Dough:

Flour: 40%

Salt: 2%

Sugar: 2% (optional/don't know what type of pizza you are wanting to make)

Water: 60% +/- (based on TOTAL flour minus what was added to the sponge)

Note: Yeast percentage is based on CY (compressed yeast).

Tom Lehmann/The Dough Doctor  
1667

### **Prep Equipment / Re: Hobart A 200 restauration**

Here is how you remove those dents from the bowl.

Materials needed:

A bag or two of fine sand

Make a square wood frame about 5 to 6-inches high and about 18-inches square.

What to do:

Pour the sand into the wood frame.

Wet the sand (to about the consistence needed as if you were building a sand castle.

Place the bowl into the sand so the dent you are removing is at the 6 o-clock position.

Push the bowl down firmly to nestle the bowl into the sand.

Using an auto body hammer with a convex face carefully begin working the dent out starting at the edges of the dent and going around it working towards the center. If you don't have or can't borrow an auto body hammer use a carpenter's claw hammer (it has a convex face). Go slow, use many taps from the hammer and the dent will be worked out. The reason for using the wet sand is because it provides support for the surrounding metal so all that is worked out is the dent. Repeat this for each dent. I used to repair dented bowls for our A-200 mixers at AIB this way and they came out just fine.

NOTE: DO NOT USE A BALL PEEN HAMMER.

After you get the bowl "de-dented" let me know if you need help adjusting the bowl clearance.

Tom Lehmann/The Dough Doctor  
1666

### **Dough Clinic / Re: Too much leoparding but very white crust**

To address your question regarding acidity and crust color development, during fermentation three main acids are produced, acetic, lactic and propionic, this is why the pH of the dough and also the finished crust is decreased with longer fermentation times or conditions resulting in a greater amount of fermentation. It is well recognized that lower pH environments have an inhibiting effect upon crust color development, this explains why sourdough breads have such a light crust color. Conversely, a higher pH will promote more crust color development, but before you run off and start thinking about adding soda to the dough remember that yeast is an acid loving micro organism so it fares much better in an acidic environment than it would in an alkali environment (this is why yeast fermentation produces acids as a byproduct, to improve its environment for its own survival), all micro organisms pretty well operate this way, producing byproducts conducive only to their own survival. If you were to add soda to the dough to enhance crust color the yeast would ferment very sluggishly, if at all, depending upon the amount of soda added, and the finished crust flavor would not be something you would be drooling over.

Tom Lehmann/The Dough Doctor  
1665

### **Neapolitan Style / Re: Browning "white" neapolitan pizza**

Are you following the current posts on this very topic?

Tom Lehmann/The Dough Doctor

1664

**[Starters/Sponges / Re: bulk retard vs ball retard](#)**

When we reference "ambient" temperature as it pertains to dough storage we are typically referring to temperatures in the 70 to 85F range. But when asking what is the ambient room temperature? It is what it is.

Tom Lehmann/The Dough Doctor

1663

**[Cracker Style / Re: 48 hour room temperature proof...bad or not?](#)**

Just don't over work it when you're rolling it out, I think it'll be fine.

Let us know how it turns out.

Tom Lehmann/The Dough Doctor

1662

**[Dough Clinic / Re: What can I add to dough for good browning of pie](#)**

If it's just the outer crust/rim that you want more color on egg wash will work as will milk wash or even just painting it with olive oil.

Tom Lehmann/The Dough Doctor

1661

**[Dough Clinic / Re: Napoletana Pizza Dough with a Poolish](#)**

It's just a matter of preference as to whether one uses a poolish or not but if one is mixing their dough by hand a poolish makes the mixing process a bit easier.

Tom Lehmann/The Dough Doctor

1660

**[General Pizza Making / Re: How to make dough more relaxed](#)**

Jr07;

If you tell us what type of pizza you are making and provide a copy of your dough formula and dough management procedure we might be able to provide you with some helpful suggestions.

Tom Lehmann/The Dough Doctor

1659

**[Pizza Ovens / Re: Baking pizza at high altitude](#)**

I've baked pizzas at elevations from San Diego, California to Quito, Ecuador and everything in between, including Denver, Colorado. The fact that the water will boil off sooner at high elevations only results in a drier finished product. To prevent this we typically bake at a higher temperature providing a shorter bake time thus conserving moisture in the product. The reduced atmospheric pressure at the higher elevations will increase oven spring and bake volume (sometimes rather significantly depending upon altitude) which helps with getting a thorough bake with the reduced bake time. This is easily addressed by adjusting the yeast level to give the same volume as achieved at sea level (if that's what we're looking for). Just out of curiosity, have you checked the color of the gas flame to make sure you have sufficient oxygen? I've seen this problem at high altitude a number of times over the years and if the gas fuel mixture is not correctly balanced the oven will still operate but not as efficiently.

Tom Lehmann/The Dough Doctor

1658

**[Dough Clinic / Re: Getting closer !!!](#)**

From the looks of your first pictures it looks like there is a lot of residual dusting flour on the baked crust which might explain the dry mouthfeel. Two minutes probably isn't sufficient mixing, which would result in a tacky dough requiring more dusting flour and the dusting flour is more likely to adhere to the tacky dough, try going for 6-minutes on your next dough, then go for 8-minutes, go directly from mixer to bench for scaling and balling, then lightly oil the dough balls, and plastic bag them (don't use Zip-Lock bags), hopefully the 0.9% yeast is CY, but if by chance it's IDY reduce the amount to 0.4% or if ADY use 0.5%. Allow the dough to cold ferment for 48-hours, then remove from the fridge and allow to warm to 50 to 60F before opening it into a skin for immediate use.

Tom Lehmann/The Dough Doctor  
1657

### [\*\*Dough Clinic / Re: Oven Parts\*\*](#)

When it comes to air impingement ovens Lincoln, XLT, and all others except Middleby Marshall you can buy most of the electronics from the industrial supplier McMaster Carr.

Tom Lehmann/The Dough Doctor  
1656

### [\*\*Pizza Ovens / Re: Baking pizza at high altitude\*\*](#)

Harvest King like "00" flour? No way! They are two entirely different flours milled from very different types of wheat.

Tom Lehmann/The Dough Doctor  
1655

### [\*\*Neapolitan Style / Re: Hydration on very humid days\*\*](#)

The thing that you do want to watch is the finished dough temperature which can change (increase) on warmer days unless you're in an air conditioned environment, but then you wouldn't be concerned over the humidity. As a general rule, 70 to 75F is a good targeted finished dough temperature but your specific method of dough management might call for something different, point is, just strive to keep it constant by adjusting the water temperature as necessary.

Tom Lehmann/The Dough Doctor  
1654

### [\*\*Dough Clinic / Re: First Pizza\*\*](#)

Without knowing your dough formula and management procedure I can't comment on the dough absorption, but if you're having difficulty handling the dough you might want to back the absorption down by 5% and as you become more proficient then begin increasing the absorption gradually, remember, ever dough has its own sweet spot when it comes to absorption, it is not one of those "one size fits all" type of things and when you add in the proficiency factor you add a whole different dimension to the dough absorption.

Tom Lehmann/The Dough Doctor  
1653

### [\*\*Newbie Topics / Re: "Gooey" dough issue \(after baking\)\*\*](#)

OMG! I agree with the others on the malt, 4% is WAY TOO MUCH for any kind of diastatic malt, and add an extra "WAY" if the flour you're using is already malted. Your dough fermentation rate must be crazy fast too with 1% IDY and only 1% salt. I would suggest reducing the amount of IDY to not more than 0.5% (half of the amount you're presently using) and increasing the salt to something in the 1.75 to

2.5% range. At 1% salt the crust will typically have what is referred to as a "starchy" taste.

Note: A typical characteristic to excessive diastatic malt is an excessively soft, sticky, gummy crumb structure, when you bite into the crust it will stick to your teeth, sound familiar?

Tom Lehmann/The Dough Doctor  
1652

### [\*\*Dough Ingredients / Re: Rogers nothing added flour for Canadians\*\*](#)

Brent;

That's ascorbic acid, not citric acid. The AA is most likely encapsulated to provide a slower reaction as AA uncoated reacts in the mixing bowl. The enzymes which would be appropriate for use in a bread improver are most likely oxidative enzymes which function in a similar manner to low levels of potassium bromate. The rest appears to be nothing more than enriched wheat flour used as a filler/diluent. In short, it appears that you may have taken the nothing added flour and turned it into a regular bread type flour by adding the improver.

Tom Lehmann/The Dough Doctor  
1651

### [\*\*Newbie Topics / Re: "Gooey" dough issue \(after baking\)\*\*](#)

While softened water does contain some sodium it is not sufficient to impact the dough with regards to salt level, additionally, soft water tends to make for a softer dough with slightly less absorption capacity. The best water to use when making dough is just plain old hard water. We have discussed the effects of hard and soft water in previous posts.

Tom Lehmann/The Dough Doctor  
1650

### [\*\*Newbie Topics / Re: "Gooey" dough issue \(after baking\)\*\*](#)

Ditch the Zip-Lock bags and plate, instead go with plastic Food Bags, or in a pinch plastic shopping bags will work OK, lightly oil the dough ball and drop it into the bag, pull the bag down around the dough ball and twist it to close, tuck the twisted pony tail under the dough ball as you place it into the fridge, to use the dough ball just remove from the fridge about 90-minutes prior to the time you want to use it (you are looking for an internal dough ball temperature between 50 and 60F when you open it), turn the dough ball out of the bag onto a floured surface, make sure the entire dough ball is well floured and you're ready to begin opening it into a skin.

My advice is to forget about using the beer for now until you've mastered your first few pizzas, then begin by replacing 50% of the water with a lager beer, master that and increase to your liking.

By the way, adding oil to the dough will not do much for the crust color, you need to add sugar, milk or eggs for that, use sugar for now.

Tom Lehmann/The Dough Doctor  
1649

### [\*\*Newbie Topics / Re: Help me with making dough\*\*](#)

Note:

In the excellent post by Rolls he recommended a pizza screen in his equipment list, just make sure you season the pizza screen before using it or the screen and pizza will be "as one" after baking. To season the screen just wipe it down with oil and place it into an oven at not over 400F for about 20-minutes, remove it from the

oven and repeat the process again. The screen has now been seasoned and is ready for baking. DO NOT wash your screens, instead, just wipe them down with a clean towel, if you get crud on it just allow it to bake off. As you continue to use the screen the seasoning will continue to darken to a black color, this is normal and desirable. Note that once a screen has been properly seasoned it does not need to be oiled for any future use.

Tom Lehmann/The Dough Doctor  
1648

### [\*\*Cracker Style / Re: Thin Style Pizza\*\*](#)

No need to tie a knot in the bag to close it, just twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge.

Tom Lehmann/The Dough Doctor  
1647

### [\*\*Newbie Topics / Re: "Gooey" dough issue \(after baking\)\*\*](#)

I think with a little more practice at opening the dough balls into skins you will be very happy with the results. Try this to see if it will work for you, use a rolling pin or pastry pin to open the dough ball to about 2 to 3-inches smaller than the desired finished diameter, then finish opening the dough by hand to the full diameter. We used this method to train those who were challenged in ability to open the dough into a skin. By partially opening the dough using a pin you get as much more uniform thickness across the entire diameter, once you get the hang of it you will gravitate away from the pin altogether.

Tom Lehmann/The Dough Doctor  
1646

### [\*\*Sauce Ingredients / Re: Vinegar or lemon in sauce\*\*](#)

Tomatoes are an acid fruit to begin with, if they are commercially canned citric acid is added to further acidify them to help retain their color and as a food safety measure. Unless it's strictly a flavor thing for some varieties of low acid tomatoes, I don't know why cider vinegar or lemon juice (citric acid) would be added to the sauce. At least with the tomato varieties we work with here in the U.S. (both canned and fresh) if there is a frequent complaint about the sauce it might be that it is too acid, so aside from a flavor thing I'm at a loss as to why additional acid would be added (assuming the sauce is not going to be canned).

Tom Lehmann/The Dough Doctor  
1645

### [\*\*Newbie Topics / Re: Help me with making dough\*\*](#)

How thick are they?  
Tom Lehmann/The Dough Doctor  
1644

### [\*\*Newbie Topics / Re: Individual proofing boxes from Ikea\*\*](#)

When using individual containers like this just remember to lightly oil the dough balls and leave the lids off of the containers until the dough reaches an internal temperature in the 45 to 50F/7.2 to 9.9C range. If you lid the containers right away you will get significant condensation forming in the containers. There have been some recent posts on this very topic. If you don't want to go to the trouble of lidding the dough balls sometime after they have been put into the fridge you can use individual plastic bags for storing the dough balls, with this method all you need to do is to lightly oil the dough ball, drop it into a bag (like a bread bag), twist

the open end into a pony tail to close and tuck it under the dough ball as you place it into the fridge, no need to come back to it until you are getting ready to make your pizzas. To use the dough ball just remove from the fridge about 90-minutes prior to opening (exact time is determined by the length of time needed for the dough ball to warm to 50 to 60F/9.9 to 15.5C, then just roll the bag down around the dough ball and invert the bag allowing the dough ball to fall from the bag onto a floured surface, flour the dough ball and begin opening it into a skin by your preferred method. The bags can be reused several times if desired. A number of posters here use this method as do I. It works very well for all but the very high absorption doughs.

Tom Lehmann/The Dough Doctor  
1643

### [\*\*Newbie Topics / Re: Help me with making dough\*\*](#)

At 14mm I think the steel will give better results than the unglazed tile.  
Tom Lehmann/The Dough Doctor  
1642

### [\*\*Newbie Topics / Re: Help me with making dough\*\*](#)

To be honest with you, there is absolutely nothing wrong with using a 12%/12%+ protein content flour to make your pizzas. My go to flour has, on average, 12.2% protein content and I use it to make most of my pizzas.

Tom Lehmann/The Dough Doctor  
1641

### [\*\*Dough Clinic / Re: Dough,Dough, Dough\*\*](#)

I can't say that I've ever made a "trash" pizza for practice. Instead, I've always tried to make a decent pizza, with whatever I've had on hand. This way it becomes an effective learning process. You can use the house brand tomatoes as well as the house brand mozzarella cheese but always strive to make the best pizza you can, even if you're just practicing opening the dough ball into a pizza skin, make the best you can, you will be rewarded for it as your other skills will improve at the same time and you will expand your horizons for making pizza with different ingredients and learning how to cope with different quality ingredients, you might be surprised at how good a pizza you can make using "no name" canned tomatoes and "no name" mozzarella cheese. Just about anybody good pizza maker can make a decent pizza using the "best" ingredients (whatever those might be) but it takes a master to do it using common, no name ingredients.

Just the opinion of someone who's been there and done that.  
Tom Lehmann/The Dough Doctor  
1640

### [\*\*General Pizza Making / Re: Final proof time for pan pizzas \(working on Roman al taglio\)\*\*](#)

The length of proof time will depend on a number of things such as dough temperature, amount of yeast used in the dough, amount of salt used in the dough, room temperature, dough absorption and to some extent the use of fat in the dough as well as the total dough absorption and flour strength. My advice has always been to proof the dough in the pan sufficiently to give you the desired volume/height and crumb structure characteristics that you are looking for. In most cases this time will fall somewhere between 45 and 75-minutes, but in some pizzerias where the dough will be placed in the cooler for storage for use later in the day the final proofing time can be as short as 20 or 30-minutes outside of the

cooler, but keep in mind that the dough will continue to proof, to a more limited extent, in the cooler to in reality the final proof time is longer than 20 or 30-minutes.

1639

### **Dough Ingredients / Re: Having trouble with the bottom of the crust**

Where is the stone positioned in the oven and what is the thickness of the stone?

Tom Lehmann/The Dough Doctor

1638

### **Newbie Topics / Re: Help me with making dough**

Either one works OK, the carbon dioxide generated by the yeast as it ferments will help to provide a protective blanket over the surface of the dough to further prevent drying. However, "loosely" is a pretty subjective term, my definition could be defined as a piece of foil placed over the container with the overlapping edges pulled down but not crimped or fastened to the fermentation vessel/container. In this case you will still need to allow the container to remain uncovered for 2-hours or more before applying the loose fitting lid, if not you will find condensation forming on the underside of the lid.

Tom Lehmann/The Dough Doctor

1637

### **Dough Ingredients / Re: Having trouble with the bottom of the crust**

If your oven heats from the bottom move the stone to a lower rack position, if it has a broiler you can also turn on the broiler while moving the stone to a lower rack position, my guess is that your stone isn't retaining sufficient latent heat so it needs to be closer to the bottom heat source. The other option is to get a thicker stone.

Tom Lehmann/The Dough Doctor

1636

### **Prep Equipment / Re: First batch of dough with the NutriMill**

If I might offer a suggestion; reduce the amounts of olive oil and ADY by 50% which will bring them more into line with what is typically used for the dough management procedure it appears that you are using. Also, adjust the water temperature to give you a finished dough temperature in the 75 to 80F range which means you will most likely want to start with 65F water and make further adjustments with following doughs if necessary.

Tom Lehmann/The Dough Doctor

1635

### **Neapolitan Style / Re: Hydration - How low can I go?**

It sounds a lot like a high starch damage flour. Try making a dough, immediately scaling and balling after mixing and open the dough after 60-minutes, let me know if the dough handles OK, allow another dough ball to ferment for 2.5-hours to see if it goes all slimy on you.

Tom Lehmann/The Dough Doctor

1634

### **Newbie Topics / Re: "Gooey" dough issue (after baking)**

You may call me anything you want, just don't call me late for dinner, especially if pizza is being served. :-D

The only thing you need to do is to pull the twisted end tighter under the dough ball, you want to have the bag nice and snug around the dough ball.

Tom Lehmann/The Dough Doctor  
1633

### [\*\*Dough Clinic / Re: Volume vs Fermentation\*\*](#)

JPB;

It's simple math, each yeast cell metabolizes sugars during the process which we call "fermentation" as a byproduct each cell produces acids, alcohol, and carbon dioxide plus a small amount of heat resulting from the heat of metabolism. It is primarily the carbon dioxide that is responsible for the increase in volume/decrease in density of the dough during the fermentation period so the more yeast cells you have doing this the more carbon dioxide is being produced within any given period of time and the dough becomes greater in volume. Because commercial yeast is somewhat standardized, meaning if you add "X" amount of yeast, within a given period of time you will get a specific amount of fermentation taking place and if you add "2X" amount of yeast you will (with fairly good predictability) get twice the amount of fermentation taking place (assuming there is sufficient nutrient to feed all of the yeast). With a sourdough you have a bacterial culture which can exhibit a different growth rate than yeast and add to that you have no idea of the concentration so it's no wonder that you will see a different change in dough volume, you're sorta comparing apples and watermelons from a microbiology point of view.

All things equal, less yeast means less fermentation (less effects of fermentation on the dough and flour) so a dough made with less yeast will show more signs of under fermentation than a dough made with more yeast at any given point of time. This is not to say that doughs made with smaller yeast levels will always show signs of under fermentation, they will just need more time to ferment the dough to the same magnitude that a greater yeast level did in a shorter time. The characteristics of the finished crust will reflect the amount of fermentation the dough received.

Tom Lehmann/The Dough Doctor  
1632

### [\*\*Neapolitan Style / Re: Hydration - How low can I go?\*\*](#)

The issue is not protease enzymes but instead amylase enzymes which convert starches into sugars. Flours with unusually high levels of damaged starch will exhibit a fairly high initial absorption since damaged starch readily absorbs water (native/intact starch does not readily absorb water), then as the dough begins to ferment the enzymes contained with the yeast hydrolyze the damaged starch very fast, releasing the water it absorbed in the process, hence a "gooey" dough. This could potentially be compounded if the wheat from which the flour was milled had a low Falling Number value (under 200).

There are some countries where the flour is milled on purpose to achieve a higher than normal level of damaged starch as it allows for the addition of more water to the dough BUT it also limits total fermentation time to something like 60 to 75-minutes.

Tom Lehmann/The Dough Doctor  
1631

### [\*\*General Pizza Making / Re: Final proof time for pan pizzas \(working on Roman al taglio\)\*\*](#)

By allowing the dough to proof for a longer time in the pan immediately prior to baking will impart a more open, porous crumb structure to the finished crust.

Tom Lehmann/The Dough Doctor  
1630

## **Newbie Topics / Re: Help me with making dough**

Your dough looks to be extremely under mixed. This could be the result of a "J" hook on your mixer as opposed to a reverse spiral dough arm, can you show a picture of your dough mixing attachment? Then too it might be due to mixing a very small dough size where the mixing action is quite poor. It can also result from mixing at too low of a speed, generally 1st/low speed just doesn't cut it as you need to do the bulk of mixing at a higher speed. A correctly mixed dough should come out of the mixing bowl looking smooth. If you go to my web site

<[www.doughdoctor.com](http://www.doughdoctor.com)> I have a series of videos posted and in one of those videos I show how to stage the ingredients in the mixing bowl and mix the dough to the proper consistency. While the video is made using a commercial size mixer you can achieve the same characteristics using a smaller size mixer too.

Tom Lehmann/The Dough Doctor  
1629

## **Dough Clinic / Re: Volume vs Fermentation**

No, it just takes more time to achieve the same level of fermentation when using a smaller amount of yeast. This is why we use a higher yeast percentage when making a no-time/emergency dough than we do when making a 5-day cold fermented dough.

Tom Lehmann/The Dough Doctor  
1628

## **Newbie Topics / Re: Help me with making dough**

Your mixing attachment, looks like it should do the job, just watch the dough during mixing, you do not want to see the dough grabbing onto the attachment and going for a ride around the inside of the mixing bowl, if it does you will need to mix at a higher/faster speed. If the mixer complains when you do that you will need to down size your dough so as not to over load the mixer.

Tom Lehmann/The Dough Doctor  
1627

## **Dough Clinic / Re: Volume vs Fermentation**

2% IDY with extended room temperature fermentation time would be considered outrageous. That amount of yeast would probably metabolize all available sugar in 6 to 10-hours.

Tom Lehmann/The Dough Doctor  
1626

## **Dough Clinic / Re: Bread question for Tom**

QJ;

That's an easy one to answer, Assuming you're removing the loaves from the pan immediately upon removal from the oven and the loaves are sufficiently baked (at least 20-minutes for a 1-pound loaf) insufficient dough fermentation is the answer. I've seen it happen hundreds, if not thousands of times over my years in running the Baking Research Lab at AIB.

Tom Lehmann/The Dough Doctor  
1625

## **Dough Clinic / Re: Bread question for Tom**

QJ;

By the way, the official name for that fault is "keyholing", if you cut a slice from the

loaf it will look like an old fashion keyhole.

Tom Lehmann/The Dough Doctor

1624

### [\*\*Dough Clinic / Re: Bread question for Tom\*\*](#)

If I understand you correctly you make the "dough" in the afternoon, divide into 30.8-ounce pieces and cold ferment the dough pieces overnight, in the morning you remove it from the fridge at 6:00 a.m. and allow the dough to rise (no sure how much it's going to rise as it just came out of the fridge) and then at 7:45 a.m. you mould and pan the dough, allow it to final proof for 75-minutes, then bake at 350F for 35 to 40-minutes. If this is correct the dough does not receive sufficient fermentation time (typically 3 to 5-hours at room temperature for pan style loaf breads). Pan breads react very differently to yeast level than pizza doughs, as you can almost walk the volume/height of the bread up or down using adjustments in the yeast level. An increase in yeast level will only result in more dough expansion (oven spring) which will only further exacerbate the problem. Instead, try increasing the finished dough temperature which will allow the dough to ferment longer and faster in the fridge. I would suggest going up in 5F increments. Let's see if that will effectively address the problem. One other thing, just to confirm, your pans ARE dark colored, right? I also suggest looking for a finished internal loaf temperature of a little over 200F (193F is really not sufficient for what you are doing). I don't know your dough formula but the loaves look to be a bit light in color (camera or actuality?), you can develop a stronger side wall on your loaves by using sufficient sugar in the formula to achieve a nice brown/mahogany colored top and side wall.

Tom Lehmann/The Dough Doctor

1623

### [\*\*Dough Clinic / Re: Bread question for Tom\*\*](#)

QJ;

Your "funny thing" observation might be giving us some insight into the problem, as the dough is warmer with the molasses/oatmeal bread and you don't have the keyholing problem this would lend credence to the fact that we are probably on the right track with increasing the finished dough temperature. This just underscores why it is important to always monitor finished dough temperature and in the case of bread making, target the same finished dough temperature, regardless of the type of bread being made.

Tom Lehmann/The Dough Doctor

1622

### [\*\*Chitchat / Re: I just exploded a stick of butter in the microwave\*\*](#)

After cleaning out your skivvies the real fun begins with cleaning the mess outta the microwave. :-D

Tom Lehmann/The Dough Doctor

1621

### [\*\*Dough Clinic / Re: Pizza dough, fridge bulk ferment\*\*](#)

Probably not as there will probably not be sufficient time for the dough balls to sufficiently relax for opening into skins, a much better approach would be to mix the dough, take immediately to the bench for scaling and balling, lightly oil each dough ball and place into individual plastic bags, twist the open end of the bag into a pony tail and tuck in under the dough ball as you place it into the fridge. To use the dough ball(s) remove from fridge about 90-minutes prior to the time when you

want to open them into skins, roll the bag down around the dough ball and invert over a floured surface allowing the dough ball to fall from the bag into the flour, flour both sides of the dough ball and open into a skin in your normal manner.  
Tom Lehmann/The Dough Doctor  
1620

### **Dough Clinic / Re: Pizza dough, fridge bulk ferment**

Probably at least 4-hours.  
Tom Lehmann/The Dough Doctor  
1619

### **Dough Clinic / Re: Dough Storage**

Breaking the dough down into the smallest size pieces possible will be the best way to handle the dough, this means scaling it into desired weight pieces, and form into balls, lightly oil each dough ball and place into individual plastic food bags (like bread bags) DO NOT use Zip-Lock bags. Pull the bag snug to the dough ball, twist the open end into a pony tail and tuck the pony tail under the dough ball as you place it into the fridge. To use the dough you will need to remove it from the fridge about 90-minutes prior to use, roll the bag down around the dough ball and invert it over a floured surface, flour the entire dough ball and begin opening into a skin by your preferred method.

Tom Lehmann/The Dough Doctor  
1618

### **Dough Ingredients / Re: how to get the ash content from self milled flour?**

May I ask why you want to measure the ash content of your flour? The ash content has little, if any, impact on flour performance. It does impact the color of the finished crumb (not a big deal with pizza), it is used mostly to provide some measure of flour extraction as well as a quasi measure of flour quality as it relates to protein content. By this I mean that you can have two flours with the same protein content but different ash contents, as a rule the flour with the lower ash content will be the stronger of the two, that's about where the usefulness of ash content ends. In the U.S. a typical patent grade flour made with a 78% extraction will have about 0.54% ash content while whole wheat flour will go about 1% or a bit more.

If you want to accurately measure the ash content of the flour Google "AACC Approved Methods" and you will find the approved method for determining the ash content of flour.

Tom Lehmann/The Dough Doctor  
1617

### **Dough Ingredients / Re: Rogers nothing added flour for Canadians**

It sounds like the dough just needs more fermentation when it's made with that specific flour. If that's out of the question you can also increase the finished dough temperature to something in the 84 to 86F range, that will provide more fermentation to the dough within the same time period.

Tom Lehmann/The Dough Doctor  
1616

### **Dough Ingredients / Re: how to get the ash content from self milled flour?**

Huh? I just Googled it again and it gave me the entire process step by step including temperatures, no I'm not a member either.  
Google: AACC ash measurement procedure for flour.

Tom Lehmann/The Dough Doctor  
1615

**[Dough Clinic / Re: Dough wet and sticky after 24 hour cold ferment](#)**

Richard;

I think your problems stem from two issues, one is due to the fact that you are tightly lidding the fermentation container right away upon placing it in the fridge, instead do this, lightly oil the dough ball when you place it into the container, then leave it UNCOVERED for at least 2-hours before applying the lid. If you use a snap on lid be sure to make a couple pressure release cuts/holes in the lid, a much better option is to use a loosely fitting cover, like a piece of aluminum foil.

Secondly, I don't think you're mixing your dough long enough, it needs to be mixed just until the dough takes on a smooth, satiny appearance. What is the finished dough temperature? You should be looking for something in the 75 to 80F range.

Tom Lehmann/The Dough Doctor  
1614

**[Dough Clinic / Re: Dough balls cold ferment](#)**

Here's a list of things that will help:

Finished dough temperature: 75 to 80F (favoring 75F).

Tightly round/ball the dough.

Lightly oil the dough balls, not the inside of the box. Best is to place dough balls into unoiled box and then lightly wipe the top of the do balls with oil. This will prevent the dough balls from skating around in the box.

Leave the dough box uncovered for at least 2-hours (preferably until the internal dough ball temperature reaches 45F) then apply the lid.

These simple steps should effectively address the problem you're experiencing.

Tom Lehmann/The Dough Doctor  
1613

**[Dough Clinic / Re: Dough balls cold ferment](#)**

Yes, if it's placed in the fridge right after mixing, scaling and balling.

Tom Lehmann/The Dough Doctor  
1612

**[Dough Clinic / Re: At what temperature should I be doing a cold ferment?](#)**

RETURN IT! 40F is the absolute HIGHEST temperature that you should be holding any refrigerated food at and once you open the door or put anything into it 40F is just a passing memory.

Tom Lehmann/The Dough Doctor  
1611

**[Dough Clinic / Re: Inconsistencies in hydration between sacks of flour](#)**

No two lots of flour are made from the same grist (blend of wheats) so it is up to the flour miller to do his/her magic to produce a finished product with the consistency we have come to expect. This is why so much testing is done on wheat and flour as it provides the tools/information needed by the flour miller to develop a grist to meet the specific needs of the flour being milled. Even with all of the data available and "magic" performed, things still go awry once in a while, and if that's not enough, with imported flour the conditions under which the flour is held during shipment may not always be the most conducive to maintaining the quality of the flour. Even domestic flour is highly subject to unfavorable storage conditions during distribution, so despite the best efforts, flour is still possibly the single most

variable ingredient we work with. This is why in commercial applications the bulk flour delivery is always accompanied with a Farinograph report of the flour which shows flour absorption, mixing time, and strength characteristics for that specific lot/shipment of flour, using the Farinograph report the production facility will then make the necessary changes to their processing of the dough to maintain a consistent quality dough.

Flour is variable, especially when it comes to absorption, you may not always see it at home but it is still there, sometimes though it is more evident than at other times for any number of reasons.

Tom Lehmann/The Dough Doctor  
1610

**Dough Clinic / Re: At what temperature should I be doing a cold ferment?**

36 to 38F is an excellent temperature to operate a walk-in, reach-in or home refrigerator at.

Tom Lehmann/The Dough Doctor  
1609

**Dessert Pizza / Re: Apple Pizza Desert I serve in my restaurant**

Looks great!

Try brushing the skin with melted butter (edge to edge) then sprinkling with a cinnamon-sugar mixture before adding the apple, this turns the crust into something more like a pastry than a pizza crust. I do this with my dessert pizzas and it adds a whole different dimension to the flavor.

Tom Lehmann/The Dough Doctor  
1608

**Dough Clinic / Re: Reballing..is it hopeless..or am I just doing it wrong?**

When dough is fermented prior to being placed in the fridge two things happen, (1) the dough becomes less dense and a much better insulator which allows the dough to continue fermenting for a significantly longer period of time at a faster rate, this is exacerbated by the development of heat in the dough through heat of metabolism which is continually warming the dough to some extent. (2) The acids and enzymes will continue to work on the gluten to further weaken it during that extended CF period. Why not reverse your order? CF first, then RT ferment? This will help to reduce the acid development so the protein/gluten isn't exposed to the acids for such a long time. Remember, fermentation is much like marinating a tough piece of meat, the right amount is beneficial but too much will give the meat all of the fine mastication properties of a piece of liver.

With this said, I have no way of knowing if you are exceeding the fermentation tolerance of your flour or not. Not all flours will tolerate that kind of fermentation, so you may need to experiment with different fermentation times to find out what is right for your specific flour.

Tom Lehmann/The Dough Doctor  
1607

**Dough Clinic / Re: At what temperature should I be doing a cold ferment?**

I think a better solution might be to experiment with finished dough temperature. Begin incrementally reducing the finished dough temperature to see if you can get improved results. I'm guessing if you can get it down to something in the 60 to 65F range you might get away with it. That still doesn't address a sub-par refrigerator though, but it might allow you to use it for dough storage only.

Desperate times call for desperate measures.

When I was in Quito, Ecuador our cold room (can't call it a cooler or refrigerator) was nothing more than an insulated room packed with frozen meat and seafood for use by the hotel restaurants. No electricity, no nothing! The only way we could hold dough in that room was to make dough as cold as possible, which was right at 60F, using ice and ice water. The longest time we could get from the dough was 48-hours so we were able to make it work for us.

Tom Lehmann/The Dough Doctor  
1606

**[Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature](#)**

Lower absorption doughs are slower to expand (oven spring) in a very hot oven so they tend to retain more moisture than higher absorption doughs which expand more freely and as a result exhibit better bake-out resulting in a crispier finished crust, now, if the crust will RETAIN that crispiness is a totally different matter, one which depends more upon baking time/temperature than dough absorption.

Tom Lehmann/The Dough Doctor  
1605

**[Newbie Topics / Re: High hydration balling](#)**

Without knowing your dough formula and how you're managing it I can't say very much except to maybe try to knead in more flour, then give the dough some bulk fermentation (2-hours?) which will allow time for the newly incorporated flour to hydrate, then ball and allow the dough balls to rest until they can be opened.

Tom Lehmann/The Dough Doctor  
1604

**[Dough Clinic / Re: Hydration Percentage, Baking Time, and Oven Temperature](#)**

66 to 68% will probably give you the best results at those temps, don't know your dough formula but there should not be any sugar, eggs or milk in it if you are looking for optimum crispiness.

Tom Lehmann/The Dough Doctor  
1603

**[Dough Clinic / Re: Dough balls cold ferment](#)**

Things that may cause a dough ball to flatten during the fermentation period:

- 1) Dough absorption (higher = flatter)
- 2) Amount of gluten development during mixing (more = less flat). To a point, then it's reversed.
- 3) How tightly the dough ball is rounded (tighter = less flat)
- 4) Use of additional enzymes = flatter.
- 5) Finished dough temperature (higher = flatter)
- 6) Temperature of room or fridge (higher = flatter)
- 7) Flour strength (stronger = less flat)
- 8) Failure to cross-stack = flatter.

Those are the high points.

Tom Lehmann/The Dough Doctor  
1602

**[Dough Ingredients / Re: Flour Particle size distribution very interessing :\)](#)**

To the best of my knowledge the two main ways to measure flour particle size

distribution is either by super sieving or by Micro-Trac Particle Size Analyzer. I worked with the Micro-Trac back in the late 1970's looking at a whole range of flours to see if particle size distribution varied much between the different mills and if particle size distribution had a significant impact upon flour performance characteristics. Surprisingly, we found very little variation in particle size distribution (this is amazing and a testament to the knowledge of the flour millers) between different mills and milling companies for like flour types and when we experimentally milled flours with different particle size ranges the only impact we saw was on both total flour absorption as well as the rate of hydration once water was added to the dough.

I think this is why we usually don't see much research done on particle size.

Tom Lehmann/The Dough Doctor  
1601

### **Dough Clinic / Re: Bleached vs unbleached?**

Bleaching is done only to remove the beta carotene (yellow) pigments from the flour, it is 100% purely a cosmetic treatment.

As to why the new flour is performing differently I cannot say. You are dealing with two different milling lots and don't forget that we have had very high temperatures lately and there is no way of telling under what conditions the flour has been exposed to or for how long.

Tom Lehmann/The Dough Doctor  
1600

### **Dough Clinic / Re: Cold then warm then cold?**

Matt;

The only problem that I see is that you don't have a clue as to how much actual fermentation the dough is really getting so inconsistency is going to be the name of the game over time.

Tom Lehmann/The Dough Doctor  
1599

### **Dough Clinic / Re: Dough help, still not quite right**

Try this instead, immediately after mixing (targeted finished dough temperature 75 to 80F) scal and ball the dough, lightly oil the dough balls then straight into the fridge (uncovered for at least 2-hours, then cover) and allow to cold ferment for 48-hours, remove from fridge, allow to warm AT room temperature until the dough balls reach an internal temperature of 50 to 60F, then open into skins, dress to the order and bake, this should address the dough memory issue and improve the crispiness of the finished pizza at the same time.

Tom Lehmann/ The Dough Doctor  
1598

### **Shop Talk / Re: Advice please**

Assuming you mean you are going to bake pizzas for 200 to 250 people. Individual pizzas or large pizzas which will be sliced? In so how large? Is your oven a single or a double stack? Over how long of a period of time will you be making the pizzas? Keep in mind that you will only be able to bake 5 to 6 pizzas at a time (depending upon size) with an average baking time of 7 to 8-minutes (at best), so probably figure on about 35 pizzas per hour per deck (that might even be a bit optimistic). If you do a 16-inch pizza (5 per deck) and cut it into four slices you will get about 50-square inches per slice or about the same as a 8-inch individual pizza which should be sufficient for one person. 250 divided by 4 = 63, 16-inch pizzas will be needed.

63 divided by 5 = 12.6 (13) full oven bakes. Assuming an 8-minute bake (?) this means 104-minutes for a single deck or about 52-minutes of baking time for two decks (call it an hour).

Take this with a grain of salt as it's based on a lot of assumptions. Guessing you will need a total of 3 possibly four people to do this.

Tom Lehmann/The Dough Doctor

1597

### [\*\*Prep Equipment / Re: Upgraded Dough Boxes\*\*](#)

I can't tell from the pictures what the dimensions are but also keep in mind that you don't want the boxed to be too big/tall with regard to the size of the dough balls. This is why commercial boxes are made in two basic heights to accommodate large or small dough balls. A box that is too high/tall will have excessive head space which is conducive to drying of the dough balls. Since cross-stacking is desirable when using dough boxes the dough balls are usually lightly oiled after being placed into the box to prevent drying during the cross-stack period so drying of the dough balls is usually not an issue even with a partially filled box.

Tom Lehmann/The Dough Doctor

1596

### [\*\*Prep Equipment / Re: DIY Pizza workbench\*\*](#)

Beautiful AND Fantastic!

Tom Lehmann/The Dough Doctor

1595

### [\*\*Prep Equipment / Re: Upgraded Dough Boxes\*\*](#)

That's a good height for the boxes. Try using white mineral oil to treat the wood. We use it here in the U.S. all the time to treat out wood bench tops. If you can't find it on line or through a local distributor try asking for it as a local pharmacy, if they don't have it they should be able to get it for you. A pint will go a long ways.

Tom Lehmann/The Dough Doctor

1594

### [\*\*Dough Clinic / Re: Cold then warm then cold?\*\*](#)

Matt;

The implication is indeed correct.

Tom Lehmann/The Dough Doctor

1593

### [\*\*Sauce Ingredients / Re: Wowzer! Stanislaus 7-11 Tomatoes...\*\*](#)

The 7/11 Ground Tomatoes with skin is my favorite also, I use it just as it is right from the can or I add fresh basil and garlic to the skin at the time of saucing.

Tom Lehmann/The Dough Doctor

1592

### [\*\*New Forum Members / Re: Two Failed Attempts and Looking to Get Better!\*\*](#)

Maesh;

You came to the right place. Tell us what you have been doing and we'll see what we can do to get you on track to making some great pizzas.

Tom Lehmann/The Dough Doctor

1591

### [\*\*Dough Clinic / Re: Is it good practice to jar \(canning\) smaller quantities of\*\*](#)

## [7/11 tomatoes?](#)

Most everything you like about the flavor of the 7/11 product will be compromised by traditional canning methods so in my opinion, freezing is the lesser of two evils.  
Tom Lehmann/The Dough Doctor  
1590

## [Neapolitan Style / Re: Help on modifying the level of browning on a Neapolitan pizza bottom](#)

Maybe a New Haven style pizza? Think of it ad a crispy New York style pizza.  
Tom Lehmann/The Dough Doctor  
1589

## [Prep Equipment / Re: sufficient humidity for dough retarder/proofer?](#)

A good RH to shoot for is 80 to 82%. If you get much above this you will get condensation forming with and opening or closing of the door or on anything placed in it that is not at the operating temperature of the box.

Tom Lehmann/The Dough Doctor  
1588

## [Neapolitan Style / Re: Help on modifying the level of browning on a Neapolitan pizza bottom](#)

The characteristics you're looking for are achieved at very different baking temperatures. You might try baking at 900F+/- to achieve the leaping and Neapolitan characteristics, then remove the pizza from the oven to cool for a few minutes, place it back into the oven for a second bake (directly on the deck) and hope this will brown the bottom and provide additional crisp without significant adverse impact upon the top of the pizza. This is similar to the way a store bought frozen pizza is made and handled, have you ever baked one that wasn't crispy? Another approach might be to experiment using a par-baked crust. For this you will want to bake the crust at not more than 450F, cool it, then dress it and give it a final bake at about 650F. Some experimenting will be needed but either method holds some promise.

Tom Lehmann/The Dough Doctor  
1587

## [Prep Equipment / Re: sufficient humidity for dough retarder/proofer?](#)

You will experience drying of the dough at anything less than 80% R.H. Constant 80% is what you want.

Tom Lehmann/The Dough Doctor  
1586

## [Neapolitan Style / Re: Help on modifying the level of browning on a Neapolitan pizza bottom](#)

What we're talking about here is one way slice operators reconstitute their slices for sale. Heated/humidity controlled box straight to a deck oven for about 1-minute then handed off to the customer. It'll be crispy and have the visuals but it will not have the overall flavor since so many of those flavors are highly volatile and are lost soon after baking, much less cooling.

Tom Lehmann/The Dough Doctor  
1585

## [Dough Clinic / Re: Could I let proof my focaccia dough directly on the pan ?](#)

Why not just put the dough balls into a suitably sized plastic bowl? You are going to

need to remove the fermented dough balls from the pan anyhow to oil/grease the pan. If you grease the pan you can place the dough balls directly onto the pan to ferment then press the dough into the pan by hand. We do something similar to this with deep-dish pizzas and it works well. If you are planning to oil the pan this won't work as the dough will absorb the oil during the fermentation time. You're still going to need to cover the pan to prevent the dough from drying out and forming a crust during the fermentation period.

Tom Lehmann/The Dough Doctor

1584

### **Dough Clinic / Re: Could I let proof my focaccia dough directly on the pan ?**

In that case, wouldn't it just be a lot easier to grease the pan and place the dough ball(s) onto the pan to ferment? When making focaccia I normally weigh out the dough so I'm working with a single dough ball per focaccia sheet. After about an hour to hour and a half use a tolling pin or pastry pin to partially open the dough ball to somewhat the shape of the pan, cover again and allow to finish fermenting, then hand fit the dough the rest of the way to fit the pan, set aside and allow to proof for 45-minutes, re-stretch the dough to fit the pan if necessary and allow to continue proofing to desired height, dress the focaccia as desired and bake.

Remove focaccia from the baking pan immediately after baking and allow to cool on a wire rack. After cooling they can be placed back into the pan if desired. If you don't remove them from the pan immediately after baking the bottom will become soggy due to condensation.

Tom Lehmann/The Dough Doctor

1583

### **Prep Equipment / Re: sufficient humidity for dough retarder/proofer?**

The easiest way to find R.H. is to use two dial/stem type thermometers, using two Styrofoam cups, push on thermometer stem through the sides of one cup and place into the box, the other thermometer is pushed into the other cup (about an inch from the top) so the tip is just touching but not penetrating the opposite side. Wrap a piece of paper towel or absorbent cloth around the stem portion inside the cup, fill the cup with water (to about an inch BELOW the thermometer stem) at the same temperature that the other thermometer is reading.

The thermometer w/o water is the dry bulb and the one with water will be the wet bulb. Begin monitoring after 30-minutes in the box. A 4 to 5F difference in temperature will be indicative of approximately 80% Relative Humidity/R.H. If you go on-line you can down load a relative humidity chart showing the the temperature differential between wet and dry bulb measurements for any desired R.H. at any dry bulb temperature.

Tom Lehmann/The Dough Doctor

1582

### **Stones/tiles/steel, Pans & Accessories / Re: Are these quarry stones ok to use at home?**

Use only the unglazed, not the porcelain. When I got mine the size was 14 X 14, 6 X 6 is pretty small. I got mine from an independently owned local tile and carpet store though I recently saw some at our local Habitat for Humanity Restore for next to nothing.

Tom Lehmann/The Dough Doctor

1581

### **Dough Clinic / Re: hard dough that tears when kneading**

Without knowing how you're making your dough and more about the flour you're using I can only speculate.

1) Your dough needs more water (higher absorption).

2) Your flour is too strong.

3) Your scaling is off. You indicate 80-ml, not 80-grams, of water, perhaps that's your problem? Questionable but maybe.

Why are you not weighing the salt? It should be about 2.5-grams which is more than the ADY which you are weighing.

4) The ADY should be about 0.625-grams.

5) I don't see any mention of activating the ADY prior to addition to the dough, perhaps that is contributing to the problem.

6) What is the water temperature and what is the finished dough temperature? Much of what you've described is indicative of an under absorbed and under fermented dough, there is nothing sacred about 64% absorption so don't hesitate to increase the dough absorption, all flours are different, some will require a higher absorption than others.

7) Are you using dusting flour to help with kneading the dough? If so it is highly possible that the dough is picking up sufficient dusting flour to really upset your dough absorption. Remember, with such a small dough size just 10-grams of dusting flour can through off your dough absorption by as much as 6% or more. I know this isn't much help but maybe it'll give you some insight into what the cause might be.

Tom Lehmann/The Dough Doctor  
1580

**[Stones/tiles/steel, Pans & Accessories / Re: Are these quarry stones ok to use at home?](#)**

Ceramic just means that it has been hardened by application of heat (in a kiln).

Tom Lehmann/The Dough Doctor  
1579

**[Dough Clinic / Re: Work with pizza balls](#)**

Adjust the water temperature used in making your dough to give you a finished dough temperature of 70 to 75F (favoring 70F). Ball the dough IMMEDIATELY after mixing, lightly oil the dough balls and place into individual plastic bags, twist the open end to form a pony tail and tuck it under the dough ball as you place it into the fridge (34 to 38F), allow the dough balls to ferment in the fridge for at least 24-hours (48-is better) before using. To use, remove from fridge, allow to warm to 60F, roll the bag down around the dough ball, invert the bag and dough ball allowing the dough ball to fall free from the bag onto a floured surface, open into a skin by your preferred manner, dress and bake.

This should eliminate the need to re-ball and give you an overall, better and more consistent product.

Following this procedure the temperature of your kitchen will have minimal impact upon the dough.

Tom Lehmann/The Dough Doctor  
1578

**[Dough Clinic / Re: hard dough that tears when kneading](#)**

My reference to ml v/s grams is that "ml" is still a volumetric portion and subject to a certain amount of potential variation (especially when considering the small amount of flour being used), the difference would be small so I added the "Questionable but maybe". When I ran the bake labs at AIB we always used the

smallest graduated cylinder possible when working in milliliters. The larger the cylinder the greater the potential for error either by eyeballing or due to residual water in the cylinder after pouring the water out. Working with such small amounts of flour is always difficult as you almost need an analytical scale. Whenever possible we always weighed the water, yes there was residual water in the weigh container but at least it was a constant error which we could cope with.

Tom Lehmann/The Dough Doctor  
1577

**Dough Clinic / Re: Hybrid Dough - Delivery**

I totally agree, Neo. pizzas are probably the all time worst selection for a DELCO pizza. Their acceptable life is measured in single digit minutes.

Tom Lehmann/The Dough Doctor  
1576

**Stones/tiles/steel, Pans & Accessories / Re: What can opener do you use to open your #10 cans?**

Ditto that opener for me too. I got mine at a sale many years ago. Never fails. I do suggest cleaning the top of each can prior to opening for sanitary reasons.

Tom Lehmann/The Dough Doctor  
1575

**Dough Ingredients / Re: Soybean oil: Healthy or Harmful**

As a baking fat (one that is included in the dough formulation) soy bean oil at typical levels (2% and less) really isn't all that bad when pizza is consumed as a part of a healthy and varied diet, but when it's used as a frying fat the complexion changes significantly, in fact, frying doesn't help the nutritional profile of any fat or the food fried in it. This is not to say that we should avoid all fried foods, but we might want to think of them in moderation as part of a healthy diet. I'm in total agreement with what Peter said but I'd like to add that when you look at the animal diets from which conclusions are made the diets are always "HIGH" in whatever they are testing, for years we have always said that this is not realistic and at best it supports potential or trends not absolutes as many try to interpret the results of these studies. Again, let me state, moderation and variety are essential to a healthy diet. If there is anything that does worry me it is sprouts and spinach, two of my favorites, and baby spinach has just been involved in another recall again. :(

Tom Lehmann/The Dough Doctor  
1574

**Neapolitan Style / Re: Follow up on Pluviometer readings**

I always thought it was an instrument used to measure precipitation/rainfall? In the baking industry we have used graduated cylinders into which we put a measured amount of dough at 85F and tamped it flat, then placed it into a temperature controlled cabinet (90F) with a piece of foil over the top to prevent drying. The test was used to measure/compare the activity of yeast over a 3-hour period of time. Since all flours are different I'm trying to figure out how this would relate to assessing/determining the correct fermentation for any given flour. What am I missing?

Tom Lehmann/The Dough Doctor  
1573

**Stones/tiles/steel, Pans & Accessories / Re: What can opener do you use to open your #10 cans?**

Works out in the field but in the kitchen?

Tom Lehmann/The Dough Doctor

1572

**[Dough Clinic / Re: Any good recipes/techniques with these ingredients?](#)**

From the picture, the dough appears as if it might be somewhat under absorbed. Add to that the small amount of yeast called for suggests the possibility that maybe there isn't sufficient yeast in the dough (the % is correct but is the actual amount added to the dough correct?). Remember, as you knead the dough you are developing the gluten so the dough is becoming increasingly tenacious (rubbery), this is normal especially for a low absorption dough which it appears you might be working with. The first thing I would do is to increase the dough absorption by 5% to see if that provides for an easier to knead dough, you might need to further fine tune the absorption if you see some improvement at 5%. Even if the dough is a little tacky (not sticky) that's fine as it'll improve as the dough is developed and as it ferments. Let us know how this works and send a picture of the dough.

Tom Lehmann/The Dough Doctor

1571

**[Newbie Topics / Re: ok- last question for a bit! Salt in the flour??](#)**

First things first, it's important to know how you are mixing your dough, by hand or machine, it makes a difference.

Tom Lehmann/The Dough Doctor

1570

**[Prep Equipment / Re: Hobart A 200 restauration](#)**

Just be sure to wet the sand or it won't serve the intended purpose.

Tom Lehmann/The Dough Doctor

1569

**[Dough Clinic / Re: Soapy taste, leftover pizza?](#)**

Food contact but probably not reheating. They're entirely different functions.

Tom Lehmann/The Dough Doctor

1568

**[Dough Clinic / Re: Any "downsides" to a higher hydration dough??](#)**

The biggest down side to high absorption doughs is that it's really difficult to make a decent cracker type crust using high absorption values. :-D Aside from that, as you keep increasing the absorption the dough will eventually become too sticky to handle without using excessive amounts of dusting flour and all the collateral damage resulting from the excessive dusting flour, then too the dough will over expand during oven spring resulting in potential collapse. At some point you will see an impact upon bake time and temperature but more so than that will be a higher than normal, or desired, residual crumb moisture content resulting in a pizza that retains its crispiness for a time period measured in seconds. This is one reason why when we bake at very high temperatures crispiness takes a back seat. By the way, as moisture content goes up (especially over 68%) we need to bake at ever increasingly higher temperatures which means a shorter bake time and a less crispy crust or at least a crust which doesn't retain its crispy nature, then at some point we just can't bake out all the moisture and that's where the real fun begins.

Tom Lehmann/The Dough Doctor

1567

[\*\*Stones/tiles/steel, Pans & Accessories / Re: What can opener do you use to open your #10 cans?\*\*](#)

Correct, Norma and I spoke about this some time ago. They're about twice as big and a lot easier to use than the P-38 version.

Tom Lehmann/The Dough Doctor  
1566

[\*\*Dough Clinic / Re: Which kind of dough should we use with a pizza screen ?\*\*](#)

To answer your screen question, screens can be used with any dough that will not flow into the screen openings either due to high absorption, or the need to proof the dough on the screen (especially when combined with high dough absorption). As a general rule, 66 to 68% absorption is about the highest dough absorption you will want to use with a screen, this is assuming a fully dressed pizza. If you are making par-baked crusts you can get away using a higher absorption as there isn't the weight of the toppings pressing the dough down into the screen openings both prior to and during baking. Just make sure you season your screens well before using them, failure to do so can result in the dough welding itself to the screen during baking, and NEVER soak a seasoned screen in water, just wipe it clean and you're good to go.

As for your IDY question, DO NOT hydrate IDY in cold water, use only 95 to 100F/35 to 37.7C, water, failure to do so will leach out glutathione from the yeast cells resulting in poor yeast activity and inconsistently soft doughs. If you search back through the archives you will find significant discussion on both screens and their care and use as well as IDY. The only time you really need to pre-hydrate IDY is when mixing dough by hand or if machine mixing for less than 5-minutes, otherwise just add the IDY right on top of the flour and begin mixing.

Tom Lehmann/The Dough Doctor  
1565

[\*\*Prep Equipment / Re: sufficient humidity for dough retarder/proofer?\*\*](#)

You will want to wipe it down/sanitize it between different applications. Before worrying about relative humidity you're going to need to figure out a way to stabilize the temperature. At 80% R.H. you're close enough to the dew point that any loss of temperature will result in condensation forming (you already know that). The problem with small boxes like wine coolers is that even once you get everything dialed in your dough box and dough will be cooler than the ambient in the box so you're going to get condensation forming on the dough and dough box surfaces, and if it cools the temperature in the wine cooler you'll get condensation forming on the inside surfaces. This is why, for the most part, the baking industry has moved away from using temperature & humidity controlled rooms for fermentation, instead they just control the temperature, prevent any drafts and lightly cover/drape the dough container (dough trough) to help capture the carbon dioxide formed during fermentation which will blanket the dough (green house effect) thus preventing moisture loss, also, keep in mind that the environment inside of the wine cooler will be HIGHLY caustic due to the acids formed during fermentation, it has a nasty habit of getting behind panels and into places where it will corrode anything that isn't high grade stainless steel.

Tom Lehmann/The Dough Doctor  
1564

[\*\*Dough Clinic / Re: Best way to prepare for multiple pizzas\*\*](#)

I can't answer your question on yeast amount as I don't know what type or how much you are presently using, but there is a lot more to over fermentation of the

dough than too much yeast such as how you're managing the dough as well as the finished dough temperature.

All of that aside, here is what I'd do;

Use 65F water temperature (looking for a finished dough temperature in the 75 to 80F range).

Immediately after mixing scale and ball the dough.

Lightly oil each dough ball and place into individual plastic Food Saver bags (NOT ZipLock).

Twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge.

Cold ferment for desired time.

To use, remove from the fridge and allow to warm to 50 to 60F internal temperature.

Roll the bag down around the dough ball and invert over a floured surface allowing the dough ball to fall free from the bag onto the floured surface.

Open the dough balls into skins by your preferred method.

Dress to the order.

Bake.

Note: The dough balls will remain good to use over a 2 to 3-hour period of time once they reach 50 to 60F.

Tom Lehmann/The Dough Doctor

1563

### **Dough Clinic / Re: Which kind of dough should we use with a pizza screen ?**

Screens are not a problem at high baking temperatures IF there is a pizza on it.

The pizza will absorb heat thus protecting the screen, but an empty screen in a wood fired oven can be a disaster. In the baking industry we have a similar problem with tin plated pans, tin melts at about 450F and we do a lot of baking in the 465 to 475F range so it's important to have dough in each and every loaf pan on the strap (in our case there were 5 loaf pans to a strap). If one of the pans went into the oven empty the tin would melt off of the empty pan destroying not just the pan but the entire strap of pans which was quite expensive.

Tom Lehmann/The Dough Doctor

1562

### **Prep Equipment / Re: sufficient humidity for dough retarder/proofer?**

Ditch the ZipLock bags, instead go with Food Saver bags. They're a LOT cheaper and they will work much better in this application.

Tom Lehmann/The Dough Doctor

1561

### **Dough Clinic / Re: Best way to prepare for multiple pizzas**

Joel;

0.6% IDY is a bit on the high side and could certainly contribute to over fermented/blown dough. I suggest reducing it to something in the 0.3 to 0.4% range.

Wow! You're right in my back yard!

Send me an e-mail with your contact information and I'll try to get down to see you (35-miles away).

Tom Lehmann/The Dough Doctor

<thedoughdoctor@hotmail.com>

1560

## [\*\*Dough Clinic / Re: How should I go about this?\*\*](#)

If it were me, I'd round the flour weight off to 50-pounds then calculate the ingredient weights from the percentages that you have listed. Note: When based on 50# of flour the water at 63% calculates out at 31.5-pounds divided by 2.2 = 14.3 L. (less than your 14.9 L.). But still using the original 49.97-pounds of flour weight 49.97 X 63 (press the "%" key) and read 31.48-pounds in the display. 31.48 divided by 2.2 (pounds in a liter) = 14.3 L.

Tom Lehmann/The Dough Doctor  
1559

## [\*\*Dough Clinic / Re: Which kind of dough should we use with a pizza screen ?\*\*](#)

Yup, once the ADY has been hydrated and activated it can be safely added into the cold water without any problems.

Tom Lehmann/The Dough Doctor  
1558

## [\*\*Dough Ingredients / Re: Breadcrumbs\*\*](#)

There is a commercial product that some pizzerias and large wholesale manufacturers use that looks a lot like bread crumbs, it's called Pizza Crisp.

Tom Lehmann/The Dough Doctor  
1557

## [\*\*Dough Clinic / Re: How should I go about this?\*\*](#)

I used to tell my students that the ingredients are like bricks and mortar and you're the brick mason. Depending upon how they are assembled you can make a privy or a castle. It ain't the ingredients that makes for a great pizza, it's how they are put together and managed that makes the difference. To answer your question though, the dough formula that we used for over 35-years as our "base" dough formula for making both thin and thick crust pizzas with a refrigerated dough ball life of 3 to 4-days is as follows:

Flour (12 to 12.8% protein content) 100%  
Salt: 1.75%  
Sugar: 2%  
Oil: 2%  
IDY: 0.375%  
Water: 62%

We used the delayed oil addition mixing method as well as my dough management procedure for refrigerated dough. Pizzas were baked in a variety of different ovens, B.P Deck, Marsal Deck, Lincoln Air impingement, XLT Air impingement, WoodStone Wood Fired, a TurboChef and an Air Deck to name but a few.

1556

## [\*\*Dough Clinic / Re: Best way to prepare for multiple pizzas\*\*](#)

Joel;  
I've been retired from AIB for 5-years now. I put in just shy of 50.  
Tom Lehmann/The Dough Doctor  
1555

## [\*\*Off-Topic Foods / Re: The End of Meat ?\*\*](#)

When vegetables become our main source of protein the world will be at the whims of Mother Nature in a big time way, specific crop types will become dominant and more widely grown thus lowering resistance to insects, fungus and a host of other

insidious attacks suffered by plant species, when this happens we will have a much larger audience competing for a smaller "piece of the pie", and that ain't going to paint a pretty picture. We saw some of this very thing happen just a few years ago when there was a world wide shortage of wheat, remember that time? If not let me remind you, flour (when/if available) was selling for nearly \$50.00 a bag! The flour that was available was flour by name only, not the best by any stretch of the imagination, but it was "flour". Much of Asia has transitioned from rice to wheat since the 1960's so the "audience" was size able to say the least. There was an essentially catastrophic wheat crop failure in the U.S., poor planting and growing conditions in Canada, Drought in Australia and poor harvest conditions in Mexico and much of Latin America. Even Russia suffered the same failed crop conditions! What many people don't realize is that the world wheat surplus, which is usually measured in weeks or months was down to being measured in days and finally in hours. There was fear of civil unrest due to food shortages world wide. Yes, there were other crops available for consumption but their prices had sky rocketed and they were not being grown in sufficient quantity to off-set the wheat shortage, plus don't forget the gluten equation, there are a lot of foods that need gluten. So why not just use gums to replace gluten? Great idea, only one problem, since everyone else thought of that too the cost of ALL types of gums/binders had become cost prohibitive and non-available, we like to refer to this as the domino effect. My point is, if it can happen to wheat it can happen to any other plant. A lost plant crop can be easily converted to animal feed to grow live stock a a source of food, but eating corn/wheat/ milo/bean crop failure is not my idea of fine dining, I'd rather it be fed to the live stock first and then eat the live stock. Just my humble opinion.

Tom Lehmann/The Dough Doctor

1554

### **Dough Clinic / Re: Bleached vs unbleached?**

Bleaching and oxidation of flour are two entirely different processes. Chemical ageing of the flour is accomplished using Maturox aka ADA (azodicarbonamide) while bleaching is done using benzoyl peroxide and sometimes chlorine gas. The flour is milled the same whether it is bleached or not.

Tom Lehmann/The Dough Doctor

1553

### **Dough Clinic / Re: Which kind of dough should we use with a pizza screen ?**

I've done this two ways, maybe one of them will work for you.

This is for a small oven.

Using your metal oven peel, remove the entire pizza from the oven, immediately slip the peel under the pizza removing it from the screen and transfer it back into the oven.

The other method involves the use of long handle tongs, slide one side under the screen (you may need to flatten one side using a hammer) grasping the screen, then pull the screen out from under the pizza leaving the pizza on the oven deck. If the oven is sufficiently large you can simply use a spinning peel to lift the pizza off of the screen and place it onto the oven deck then remove the empty screen.

Tom Lehmann/The Dough Doctor

1552

### **Dough Clinic / Re: How to get pizza into oven?**

Fine corn meal works well as does semolina flour or even rice flour all make for a good peel dust.

Tom Lehmann/The Dough Doctor

1551

**Dough Clinic / Re: Bleached vs unbleached?**

Not wrong, just differently. It may not be just one thing but instead an accumulation of several little things/differences that is responsible for the difference. Mixers, water, temperature are but a few things that can add up to make a difference.

Tom Lehmann/The Dough Doctor

1550

**Dough Clinic / Re: Autolyse**

Three questions which I have are:

- 1) What was the finished dough temperature?
- 2) How did you make the poolish? Possibly 20% is too much.
- 3) What was the total dough fermentation time between mixing and use of the dough?

Tom Lehmann/The Dough Doctor

1549

**Dough Clinic / Re: Starter is not dissolving in water**

It appears that you might be washing the gluten from the flour in your starter. When I make a starter I always use at least 75% absorption in the starter and then add it to the dough as an ingredient without trying to suspend it in the water.

Tom Lehmann/The Dough Doctor

1548

**Dough Clinic / Re: Bleached vs unbleached?**

Craig;

Bread type flours will typically use a combination of benzoyl peroxide for bleaching and ADA for chemical oxidation/maturing of the flour. ADA is too slow acting for use as a bleaching agent. Chlorine gas is more typically used in some pastry flours but mostly in high-ratio cake flours where it plays a VERY significant roll in functionality of the flour in making high-ratio cakes.

Tom Lehmann/The Dough Doctor

1547

**Dough Clinic / Re: Starter is not dissolving in water**

One of the characteristics of salt is that it tightens the dough, if you omit the salt from the dough formula you will always get a softer, more slack dough consistency than if the salt were present at normal levels.

Tom Lehmann/The Dough Doctor

1546

**Cracker Style / Re: What Hydration Makes it "Cracker"?**

Cracker type crusts are typically made using a dough absorption somewhat less than 50% and a mixing time of 2-minutes or less. The dough is handled much like a long flake pie crust and has to be formed using a dough sheeter/roller as it's too tough to open any other way. When the dough is mixed longer to form a homogeneous dough mass the end result will be a thin crispy crust as opposed to a cracker type crust. We have had previous discussion on making cracker type crusts. If you have ever visited Incredible Pizza you have had their cracker type crust. It holds up really well on a buffet line.

Tom Lehmann/The Dough Doctor

1545

**Dough Clinic / Re: Autolyse**

Are you pre-activating/hydrating the ADY prior to addition or just adding it dry?

Tom Lehmann/The Dough Doctor

1544

**Cracker Style / Re: What Hydration Makes it "Cracker"?**

Thin crispy dtyle crusts are indeed sheeted as are cracker style crusts but the absorption is a bit higher, usually around 45% along with a longer mixing time as previously noted. Thin crispy crusts tend to be more dense than cracker style too. We use to say that you know when you're eating a pizza made on a cracker crust when you have crumbs in your lap. A number of years ago we saw commercial attempts at this type of crust, Schwan's probably had the most visible as it was called their Italian Pastry Crust Pizza. While the crust appeared to be laminated it really wasn't, instead it was made using hard fat flakes mixed into the dough to give it a laminated and cracker like appearance. So, what does a real cracker crust look like? It looks like a saltine cracker and it eats somewhat like one too. For those who are old enough to remember, this is the type of crust that put Pizza Hut on the map, it's the original thin crust that they had back in the early 60's, what they have now is more of a thin crispy style. A good example of thin crispy is that made by the Pizza Shoppe (Kansas City) as well as any number of pizza buffets our local Pizza Ranch has a fair to middlin' version of a thin crispy crust.

The only place that I can think of off hand that might still make a cracker type crust (they use to at least) is Incredible Pizza (Springfield, MO.)

Tom Lehmann/The Dough Doctor

1543

**Dough Clinic / Re: Autolyse**

ADY should be activated in 100 to 105F water to prevent glutathion from leaching out.

Tom Lehmann/The Dough Doctor

1542

**Dough Clinic / Re: Soapy taste, leftover pizza?**

One of the characteristics of bread staling is loss of flavor. Are you sure this is not what you are picking up on? Bread staling takes place most rapidly at temperatures between 20 and 50F which is why we don't store bread in the fridge (home freezers are not much better either), if you want to make croutons just slice the bread and store in the fridge overnight and you'll have nice firm bread on the following day.

Tom Lehmann/The Dough Doctor

1541

**Cracker Style / Re: What Hydration Makes it "Cracker"?**

Peter;

I think too many people are too wrapped up in dough formulation as a distinguishing feature between thin crispy and cracker. We found that not to be the case at all, you can make a very good cracker type crust using 2% total fat if you are willing to go the lamination route as you can get with 4 to 8% fat by mixing a shaggy dough (about 45-75-seconds). When we did the development work back in the 70's we found that a plastic shortening worked much better than an oil in this application as it did not soak into the flour thus destroying any ability to create

crispiness. When we did the development work we looked at how saltine crackers are made (under mixed using a spindle type mixer) and then also looked at how a long to medium flake pie crust is made (has a lot of the characteristics of a cracker type crust) and used that as the basis for our development work. More lately, in the 90's we were looking at the use of hard fat flakes in very under mixed (shaggy) doughs to achieve this. While the results were pretty good we thought the crust was more like that of a laminated croissant than what we were looking for. In my archives I've got the entire procedure using the hard fat flakes captured on a DVD. We ended up using this approach when we were asked to develop a dough for use in making pizza cones where it worked beautifully with just a little modification to allow it to be pressed into the desired cone shape while still retaining the desired flaky characteristics in the finished crust/cone.

1540

**[Prep Equipment / Re: Kitchenaid Mixer has burnt out - What can I use for Neapolitan pizza dough?](#)**

If you are going to be mixing doughs on a regular basis, my advice is to "bite the bullet" and buy a spiral mixer. It will most likely be the last mixer you'll ever need to buy (unless you need a larger mixer). Google (Eurodib dough mixers) and take a look at the Eurodib Model LM20T. It's priced at just under \$1,000.00 but as an investment it will be cheaper than several smaller mixers that you may burn-out over the years. This mixer also has the added feature of an 8-Kg. dough capacity while mixing smaller doughs like a "walk in the park".

Tom Lehmann/The Dough Doctor

1539

**[Cracker Style / Re: What Hydration Makes it "Cracker"?](#)**

John/Pete-zza;

Sorry, I don't see any "pin holes" I only see a laminated cell structure with some very classical "fish mouthing". Maybe what you are calling "pin holes" is what I'm seeing?

Your dough looks very much like the dough that we make using hard fat flakes. When it comes to mixing a cracker type crust we have had our best success using a planetary type mixer with a pastry knife attachment. With this attachment the mixing time is significantly longer than with a regular dough mixing attachment but it does a great job of blending the ingredients into a homogeneous mass while distributing the fat evenly throughout the dough. This is the preferred attachment for making pie dough too so it's no wonder that it works well in this application. The least effective mixer for making the cracker type dough is the spiral mixer, they were never designed for cutting and blending which is what is required for making a cracker type dough.

Tom Lehmann/The Dough Doctor

1538

**[Dough Clinic / Re: Autolyse](#)**

Yes, you only activate the ADY in approximately five times its weight of water, never all of the dough water as you are indicating. Once the ADY has been hydrated and activated it can safely be added directly to ice water if necessary.

Tom Lehmann/The Dough Doctor

1537

**[Dough Clinic / Re: FRESH MOZZARELLA ON ROMAN PIZZA: WATERY BASE???](#)**

Cut thin and place between towels to drain as best you can or peel it like an orange (that's how I do it) and place the pieces on top of the pizza as the last ingredient. In some cases with home-made cheese we find it necessary to apply the cheese about half way through the bake.

Tom Lehmann/The Dough Doctor  
1536

**[Dough Clinic / Re: FRESH MOZZARELLA ON ROMAN PIZZA: WATERY BASE???](#)**

It all depends upon the application and type of pizza I'm making. If it's more of an artisan (I'm using that term loosely) I prefer to use the fresh, ditto for New York and Neapolitan, but if it's for most others as well as DELCO I usually opt for a shredded low moisture mozzarella.

Tom Lehmann/The Dough Doctor  
1535

**[Stones/tiles/steel, Pans & Accessories / Re: Fabricating your own baking steel](#)**

A trip over to the local metal salvage yard can turn up some real treasures on a good day.

Tom Lehmann/The Dough Doctor  
1534

**[Cracker Style / Re: What Hydration Makes it "Cracker"?](#)**

I'm still seeing the same thing. Typical to what we get when using hard fat flakes. Where the fat flakes melt out a void is developed which forms the oval shaped void called a "fish mouth" where there are no fat flakes to melt out the crumb structure consists of smaller round shaped cells. I think we're looking at the same thing just calling them by different names.

Tom Lehmann/The Dough Doctor  
1533

**[Dough Clinic / Re: When to degas the dough?](#)**

I agree with Jeff. In my world dough that has been properly managed for cold fermentation really doesn't need to be degassed or re-balled, but room temperature fermented dough can be a totally different story. Dough that has been bulk fermented at room temperature should be "punched" when it reaches its maximum height and just begins to recede a little. Otherwise, the dough will be naturally degassed when you scale and ball it. Dough balls that are fermented at room temperature and become over fermented, for whatever reason, are usually re-balled at the soonest opportunity, this re-balling significantly tightens the dough ball necessitating the need to ferment the dough balls for additional time to allow them to loosen up for ease of opening and reduce dough memory (snap back) of the opened skin.

Note:

In bread production, when a bulk dough (regardless of the temperature at which it is fermented at) reaches its "first full rise" (this is where the dough ferments to its maximum height and then begins to recede on its own as described above) it is deemed to have received 2/3 of its optimum fermentation so after being punched, the dough is given the final 1/3 additional fermentation time before it is scaled and balled. Since pizza doesn't abide by the same rules as bread you have a lot more latitude in fermenting the dough with regard to time and temperature BUT if you venture into the over fermented dough territory, when you go to open the dough

balls into skins you will find the dough balls tough and bucky and impossible to open by any means.

Tom Lehmann/The Dough Doctor  
1532

**Dough Clinic / Re: FRESH MOZZARELLA ON ROMAN PIZZA: WATERY BASE???**

I've never tried them, but don't let that stop you from giving them a try. When I'm working with fresh mozzarella I slice and layer between clean bar towels for about an hour prior to use. You're over thinking this, it'll give you a headache. :)

Tom Lehmann/The Dough Doctor  
1531

**Cracker Style / Re: What Hydration Makes it "Cracker"?**

Your intuition is correct as there just isn't any significant call for it outside of the commercial market. With that said, you can make a fair to middlin' version of it very easily. Just use and U.S. household butter, freeze it and shave it into strands/ribbons like you would a hard cheese or chocolate. Immediately put the shaved butter back into the freezer for at least an hour, remove from freezer and place between two pieces of waxed paper, tap with the handle of a table knife to break the frozen butter into pieces 3/16 to 1/4-inch in size. Immediately place back into the freezer until ready to use. Use a dough absorption of about 56 to 58%, mix until the dough just begins to smooth out, then add the frozen butter chips and mix JUST until they are fairly well incorporated (better to error on under mixing than over mixing). Remove dough from mixing bowl, roll out to about 1/2 to 3/4-inch thickness, give a 3-fold and place into the fridge to rest about an hour, or until the dough can be sheeted again the same way. Rest the dough in the fridge after the second 3-fold for 4-hours, then scale into desired weight pieces (I an inverted coffee can to cut circles), pin out the cut circles of dough to full diameter, the skins can be rested for holding in the fridge or used immediately if the temperature of the dough is at 50 to 55F which it usually is after pinning it out to full diameter. If you store the full size skins in the fridge you will need to allow them to warm to 50 to 55F before use, it won't take very long.

By the way, if you want to read up on how the bakers did this before the advent of hard fat flakes study up on the "Blitz" method of making laminated pastry.

Tom Lerhmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
1530

**Prep Equipment / Re: Kitchenaid Mixer has burnt out - What can I use for Neapolitan pizza dough?**

Because I'm familiar with the Eurobib as they are at Pizza Expo, but when it comes to spiral mixers, buy whatever you're comfortable with, I've yet to see or hear of a bad one, with that said, take heed if someone takes issue and complains that they have actually used a bad one, you will have narrowed the field of selection down by at least one.

Tom Lehmann/The Dough Doctor  
1529

**Dough Clinic / Re: Question for the Dough Doctor**

Where on earth did you get the idea to allow the dough to warm to room temperature before using it? I always say to allow the dough to warm AT room temperature until it reaches 50 to 55F (50F for use in a pizzeria). Doing this will

not create a gassy dough ball and it will give you about a 2.5 to 3-hour window of time to use the dough balls from the time they reach an internal temperature of 50F. If when doing this you still have a gassy dough we will need to look at your finished dough temperature. Your room temperature of 25C/77F is pretty typical for a pizzeria so it's not a problem at all.

Tom Lehmann/The Dough Doctor  
1528

**Newbie Topics / Re: I don't like my pizza's.**

From the looks of your pizza you're struggling to open the dough. Please provide details on your finished dough temperature and dough management procedure, this is where the flavor and texture of the finished crust are largely developed and the dough is conditioned for opening without dough memory/snap-back.

Tom Lehmann/The Dough Doctor  
1527

**Dough Clinic / Re: FRESH MOZZARELLA ON ROMAN PIZZA: WATERY BASE???**

Actually, putting the torn/peeled mozzarella on this way presents the side with the greater surface area to the heat so the moisture has a greater surface area from which to evaporate. Physics #101.

Tom Lehmann/The Dough Doctor  
1526

**Neapolitan Style / Re: Longer fermentation in room temp**

I think Amolapizza's suggestion to just keep the dough in bulk longer is an excellent one. When you scale and ball a bulk dough it has a similar effect to re-ballng a dough (tightens it up and re-strengthens it). If your flour has the strength to tolerate the additional fermentation this approach might be your best bet. If you should find that the dough is too soft and sticky this would be an indication that you have exceeded the fermentation tolerance of the flour, if that's the case your best bet might be to further reduce the finished dough temperature by utilizing some or all ice water in the dough formulation.

Tom Lehmann/The Dough Doctor  
1525

**Dough Clinic / Re: Rise Time**

You're not going to get the same flavor or textural properties with a 6-hour dough that you would get with a 20-hour cold fermented dough. So now that you have the "ingredient", make your dough and give it the usual 20-hours cold fermentation.

Tom Lehmann/The Dough Doctor  
1524

**Dough Clinic / Re: gooey dough**

In addition to reducing the dough absorption you will also want to NOT lid the containers right away. Instead, lightly oil the dough ball(s) and leave them UNCOVERED for at least 2-hours after placing them into the fridge, this will allow the dough balls to cool without the formation of condensation in the container which I am sure is contributing to the sticky dough condition. After the 2-hour period (uncovered) apply the lids BUT make sure there is a small hole in each lid to vent off any gas formation inside the container. You could also just place a piece of aluminum foil over each container and LOOSELY crimp the foil to the container.

Tom Lehmann/The Dough Doctor

**[General Pizza Making / Re: First time with diastatic malt](#)**

Huh? First time I've ever heard that about malt syrup. Malt, whether dry or in syrup form comes in two flavors, diastatic (enzyme active) and non-diastatic (non-enzyme active). Non-diastatic malt is used in the same way that sugar is used with one significant difference, it can provide a flavor other than sweet. At low use levels the flavor is said to be slightly "nutty" while at higher levels (above 3%) the flavor imparted is more like that of malted milk balls (candy). Diastatic malt (usually in the dry, powder form) is used at much lower levels, typically from 0.25 to as much as 0.5% depending upon the Lintner value so it is never used at levels high enough to contribute a flavor. The diastatic malt is a source of alpha amylase enzyme which converts wheat starch into sugars which can be metabolized by bakers yeast. Since this action takes place over time it is commonly used to support long dough fermentation times. It can also contribute to crust color development too as the residual sugars produced will contribute to the browning reaction during baking. Since the starch component of the flour is implicated with the staling process, many commercial bakeries will add diastatic malt to their dough formulations to help with reducing the amount of starch present (it's hydrolyzed into sugars) which in turn helps to provide for a softer, slower to stale finished bread. When an excess amount of diastatic malt is added to the dough formula the dough will become more and more sticky over time which can make the dough especially difficult to handle during the dough forming stage. This stickiness is impossibly to address and has been known to gum-up bread and bagel forming equipment.

I've never heard of any form of malt being associated with making stronger doughs or affecting the dough texture aside from stickiness, but at high levels it could easily hydrolyze sufficient starch (starch carries only a small amount of the water prior to baking) which will release the water being carried by the starch to provide for a slightly softer dough, maybe that's what you are seeing? But at levels like this you would also be experiencing significant stickiness in the dough at the same time.

Tom Lehmann/The Dough Doctor

1522

**[Newbie Topics / Re: I don't like my pizza's.](#)**

Michiel;

These are my suggestions;

Reduce the salt to 2% (this will allow for slightly more fermentation within your 24-hour period of time.)

Eliminate the semolina flour and replace with your regular white flour. (semolina flour tends to make for a tougher, more elastic dough).

When you're getting ready to open the dough balls into skins you want to allow the dough balls to warm to 55 to 60F before opening the balls into skins. Allowing them to get too warm can result in the dough becoming too bucky/elastic.

Let us know how this works for you. One other thing: Try to target a finished dough temperature in the 70 to 75F/21.1 to 23.9C range.

Tom Lehmann/The Dough Doctor

1521

**[Dough Clinic / Re: Basic questions](#)**

My suggestion is to use 0.5% ADY which should be hydrated/activated in about 5 times its weight of water at 100 to 105F.

Adjust the temperature of the remainder of the water to give you a finished dough temperature in the 75 to 80F range (favoring 75F).

To address your peel dust issue please provide your complete dough management procedure.

Tom Lehmann/The Dough Doctor  
1520

**Dough Clinic / Re: gooey dough**

Yes, it's a good idea as it will prevent the lid from being blown off due to pressure build-up in the container.

Tom Lehmann/The Dough Doctor  
1519

**Dough Clinic / Re: Basic questions**

It's a lot easier to open the skin and place it onto a wood prep-peel, then dress it as desired and peel it into the oven. Fine corn meal, semolina flour or rice flour are all good for use as a peel dust.

Tom Lehmann/The Dough Doctor  
1518

**Newbie Topics / Re: I don't like my pizza's.**

Michiel;

A good temperature to begin opening the dough balls into skins is 60F when making pizzas at home. What kind of yeast are you using ADY, IDY or CY? In any case, when mixing the dough by hand as you are the yeast should be suspended in the dough water. A good procedure is to add water to the bowl, add the yeast (if ADY or IDY it will need to be hydrated/activated in 100 to 105F water first), CY can be added directly to the cold dough water. Then add the salt and IMMEDIATELY add the flour, mix until the flour is hydrated then add the oil and following your normal mixing procedure from there.

Tom Lehmann/The Dough Doctor  
1517

**Dough Clinic / Re: Basic questions**

All of my peels are from <MrPeel.com> They WILL ALWAYS warp if NOT handled properly.

I also have a peel from <portionpeels.com> which I like a lot as it has lazarus burned circles on the top side to help size and keep your pizzas round. I believe their peels are also from Mr. Peel.

1) Wipe the new peel with mineral oil over ALL surfaces. This will help to seal the wood.

2) NEVER/NEVER/EVER wash your peel. Wipe it with a slightly damp towel if it needs cleaning.

3) Over time your peel may develop rough spots, these are easily removed by LIGHTLY sanding with a 220 or finer grit sand paper, and then resealing.

4) Periodically wipe your peel down with a little mineral oil.

5) Remember, wood peels are prep peels, they are not meant to remove pizzas from the oven.

Tom Lehmann/The Dough Doctor  
1516

**Neapolitan Style / Re: Longer fermentation in room temp**

I might add that your dough ball count per box appears to be a bit high for the size

of dough box you're using. There should be a minimum of a 1" space around each dough ball.

Tom Lehmann/The Dough Doctor  
1515

### **Dough Ingredients / Re: Cake yeast ?**

Let's see;

Compressed Yeast/Fresh Yeast/Block or Brick Yeast/Wet Yeast/CY

Disadvantages:

- 1) It must be kept refrigerated at all times.
- 2) It has a very limited shelf life, and you may not know how it was stored or how old it is when you buy it.
- 3) The amount that you use one week will likely be different from the amount needed the following week due to normal deterioration of activity.
- 4) Must be kept separate from salt and/or sugar.

Advantages:

- 1) Like Craig said "It sounds cool".
- 2) Can be added directly into cold water without issue.
- 3) Can be added to a machine mixed dough just as it is.
- 4) Lower cost if you are buying it by the pallet load and you are reasonably close to the point of manufacture.

Sorry, I really can't come up with many good reasons for using CY over IDY for most applications.

Tom Lehmann/The Dough Doctor  
1514

### **Stones/tiles/steel, Pans & Accessories / Re: pizza cutting boards?**

Compared to your cutting boards it must look like I'm cutting my pizzas on a rock! Great idea with the long one, the pizzas should remain hot a little longer on the wood board than on a serving tray when multiple pizzas are the order of the day. Now, the multi-colored one, my personal opinion, is that it's GEORGEOUS! :drool: :drool: Makes my plain maple board look like a stone!

Well done!

Tom Lehmann/The Dough Doctor  
1513

### **Dough Ingredients / Re: Cake yeast ?**

Yael;

I've worked in China (Chengdu) and know what you are talking about, in a case like that what I did was to simply add the IDY directly to the dough after it had been mixed to a point where it had just come together in a mass. All it needs after that is at least 5-minutes of mixing and it's good to go.

Tom Lehmann/The Dough Doctor  
1512

### **Stones/tiles/steel, Pans & Accessories / Re: pizza cutting boards?**

Moose;

Are you using "exotic" hardwoods? From the picture it looks like maybe blood wood, tiger wood, maple and possibly ebony? In any case BEAUTIFUL!

Tom Lehmann/The Dough Doctor  
1511

### **Dough Clinic / Re: Same dough and yet, hmmp?**

It's reaqly hard to say what the issue might have been but it might indeed have been the difference in oven temperature or how the pizzas were actually baked between on the screen and on the deck. When on the deck even just a few seconds can/will make a significant difference. I've got a hunch that that's where the issue was at.

Tom Lehmann/The Dough Doctor  
1510

### [\*\*Dough Ingredients / Re: Cake yeast ?\*\*](#)

Yael;

I hope there ain't any shakin' going on while you're there.  
Got a little shaky when I was there last.

Tom Lehmann/The Dough Doctor  
1509

### [\*\*Dough Clinic / Re: Not NY Style dough formula please\*\*](#)

If you will provide us with your present dough formula and procedure I will be glad to change it up to produce more of the characteristics which you are looking for.

Tom Lehmann/The Dough Doctor  
1508

### [\*\*Neapolitan Style / Re: World record for fastest bake\*\*](#)

When was the last time you saw prime rib advertised as being fast baked/roasted? Baking develops flavor, just try a pizza before and after baking to prove this to yourself. A longer/slower bake for the type of pizza being made will always have more flavor than one that is baked as fast as possible. Sometimes it's only a matter of a few seconds more bake that makes the difference between a good pizza and a great pizza. Case in point, one of the major box pizza chains has an OK pizza but if they would bake it 30-seconds longer it would be a much better pizza all around, I guess corporate feels that they would loose too much business if they baked their pizzas for 30-seconds longer, you can only wonder if they ever looked at the other side of the coin?

Tom Lehmann/The Dough Doctor  
1507

### [\*\*Neapolitan Style / Re: Manage floor temp w many bakes\*\*](#)

Some commercial wood fired ovens will have decks 6 to 8-inches thick which hold a LOT of latent heat. The downside is that ours took 3-days to reach full operating temperature from a cold oven which is a real pain. The one thing that I got out of it is an appreciation for a dual fuel (wood and gas) oven. The gas is used to maintain an idle temperature during the night and on any days that the store might be closed while the wood does the work during business hours. Back when all of our ovens were either wood or coal/anthracite fired there was good reason to live above the shop if you were a baker or pizzeria operator.

Tom Lehmann/The Dough Doctor  
1506

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: Dough trays - cheaper alternatives?\*\*](#)

Plastic Food Saver bags! They work better than dough boxes, a lot cheaper too. If you will search back in the archives (not very long ago) we had quite a bit of discussion on this very topic.

Tom Lehmann/The Dough Doctor

1505

[\*\*Newbie Topics / Re: Yeast %\*\*](#)

Are you sure about those dough weights? They seem pretty light to me for those sizes. I've never been able to open one pound of dough to much more than 30-inches and at that it was too thin for making a decent pizza in my opinion. For a 40-inch pizza I would be using something closer to 6# of dough as opposed to a little over one pound. Am I missing something?

Tom Lehmann/The Dough Doctor

1504

[\*\*Newbie Topics / Re: Yeast %\*\*](#)

That would make a lot more sense :-D

Tom Lehmann/The Dough Doctor

1503

[\*\*Dough Clinic / Re: Cross Stack and Seal\*\*](#)

One trick that will work well in high volume situations is to use aluminum sheet pans. Place the dough balls onto the sheet pans and lightly oil the top of each dough ball, then slip a food contact approved plastic bag over the entire sheet pan, pull the bottom of the bag up over the first row of dough balls then pull the top down and tuck it under the pan. This works quite well and is commonly used in commercial pizzeria applications. The plastic bags can be reused a number of times too. Just be sure to use a plastic scraper to lift the dough balls off of the pan as a metal scraper will gouge the aluminum sheet pan. The best way to store the sheet pans is in a rolling vertical rack with a 5-inch shelf spacing.

Tom Lehmann/The Dough Doctor

1502

[\*\*Dough Clinic / Re: What temp and time?\*\*](#)

If your oven is of one of the newer generation air impingement ovens (less than 10-years old) it may bake pan pizzas at the same time and temperature as your thin crust pizzas. If your oven is one of the older designs start at 435F for 7.5-minutes and bench make from there.

There are just too many different designs of air impingement ovens as well as finger profiles to be more specific.

Tom Lehmann/The Dough Doctor

1501

[\*\*Dough Clinic / Re: Cross Stack and Seal\*\*](#)

Q.J.:

Spot-on! There is also less head-space for the condensation to collect in. At the end of the day the sheet pans are also faster and easier to clean, not to mention the fact that they are significantly cheaper to purchase too.

Tom Lehmann/The Dough Doctor

1500

[\*\*Dough Clinic / Re: Flour Experimentation\*\*](#)

Jared;

I'm confused over exactly what flour/flour blend you used. Was it whole wheat flour, was it rye flour, a blend of rye flour and whole wheat flour or a blend of "00" plus whole wheat and rye flour?

To answer your basic question, both whole wheat and rye flour have a significantly

higher absorption than "00" flour and unless this higher absorption rate is accounted for either/both will result in a dry, stiff dough. By the way, both rye and whole wheat flour will have a shorter fermentation requirement than "00" flour.  
Tom Lehmann/The Dough Doctor  
1499

### [\*\*Dough Clinic / Re: Cross Stack and Seal\*\*](#)

It's not a case of "could it be the problem", it is the problem. Cold dough right out of the cooler will always bubble unless the dough has been specifically formulated for use in this manner. Why don't you just pre-open the skins, place them on pizza screens and store in a wire tree rack (covered with a food contact approved plastic bag) in the cooler? This way all you need to do to fill an order is to remove a skin, turn it off of the screen and manually clean it up a little (hand/table stretch) then dress it to the order and it's ready for the oven. Because of the greater surface area and reduced cross section the skin will have warmed sufficiently so as to reduce or eliminate the bubbling by the time you're finished dressing the skin, and if you want to go the "belt and suspenders" route, just dock the skin immediately before beginning to dress it.

Tom Lehmann/The Dough Doctor  
1498

### [\*\*Newbie Topics / Re: Water Temp for NY Style\*\*](#)

Steven;  
I will assume your room temperature is 70F. which is pretty normal, so you will need to use water at about 65F to achieve a targeted finished dough temperature on the 80 to 85F range. The easiest way to find the desired water temperature for a targeted finished dough temperature in the 80 to 85F range is to subtract the flour temperature from 145 which will give you the approximate desired water temperature.

Tom Lehmann/The Dough Doctor  
1497

### [\*\*Newbie Topics / Re: Tom Lehmanns Dough Management\*\*](#)

The dough management procedure is the same whether the dough is mixed by hand or machine.

Tom Lehmann/The Dough Doctor  
1496

### [\*\*Dough Clinic / Re: Flour Experimentation\*\*](#)

No "rule" but there is a procedure.

- 1) Calculate the absorption for the amount (weight) of "00" flour.
- 2) Calculate the absorption for the amount (weight) of rye or whole wheat flour. For rye flour and whole wheat flour use 75%.
- 3) Add the two absorptions and this will be the total amount of water to add to the dough. Note: The actual, final absorption may need to be adjusted slightly, but this will get you close enough to make pizza on your first "go around".

When expressing the dough absorption in bakers percent divide the weight of water added by the total/combined weight of the "00" and rye or whole wheat flours and multiply by 100.

Tom Lehmann/The Dough Doctor  
1495

### [\*\*Pizza News / Re: Fast Casual Chain & Pizza\*\*](#)

Looks a lot like the old P.H Big Foot pizza.

Tom Lehmann/The Dough Doctor

1494

**Prep Equipment / Re: Grease commercial mixer**

I had one of the old M-800 Hobart mixers back in the 60's and early 70's. If I remember correctly there is a

n oil fill cup located on top of the planetary mechanism. Also, be sure to lubricate the bowl lift mechanism and adjust the agitator to bowl clearance (use a nickel) to set the clearance. You might be able to get a schematic on it directly from Hobart Corporation in Troy, Ohio.

Tom Lehmann/The Dough Doctor

1493

**Dough Ingredients / Re: Bakingbusiness.com Article: Emulsifiers**

If you're looking for a way to make your bread softer and maybe extend the shelf life by a day or so the oldest trick used by bakers to create a softer bread with improved shelf life characteristics is the use of mashed potatoes/potato flakes in the dough. Typically, 5 to 10% dehydrated potato flakes is all that's needed (remember that potato flakes will require an increase in dough absorption equal to about 2.5 times the weight of potato flakes being added. We use 2.5% dehydrated potato flakes in pizza dough that was developed for use in Japan where they wanted a soft eating finished crust. A couple of things to keep in mind, the addition of potato flakes to the dough will increase crust color development and be sure to use non-sulfited potato flakes as the sulfites (added to prevent the potatoes from oxidizing to a brown/gray color) will also adversely impact the yeast activity.

Overall, we have found very little real application for "emulsifiers" in pizza dough.

The two main ones being used are SSL (sodium straeoyl lactylate) and DATEM (diacetyl tar taric acid esters of mono glycerides). Both of these act in a similar manner in both bread and pizza doughs as dough strengtheners

(prevents/minimizes dough collapse as it is mechanically transferred to the oven for baking) and most importantly, in pizza dough it enhances oven spring by about 15%, but consider this, in bread that's 15% of a dough that has a height of about 115-mm while for a pizza crust that 15% of 2 to 3-mm for a thin crust or maybe 15 to 20-mm for a thick crust.....in pizza that equates to a 0.3 to 0.45-mm height enhancement for thin crust or a 2.25 to 3-mm height enhancement for a thick crust. The standard deviation in height for both types of crusts exceeds those enhancements! So why are they use? The answer is to ensure that the dough doesn't suffer total collapse at the hands of the consumer.

In my early years at AIB I did much of the applications work on the use of emulsifiers in different dough systems. By the way, try to stay away from using a high ratio cake shortening in any pizza dough, these specialized shortenings contain poly-sorbates aka "Tween" to enhance batter aeration of the batter, the insidious thing about the poly-sorbates is that water can be mixed into water in their presence, without physical agitation, this means that if used in the dough, the water released from the sauce/toppings can/will migrate directly into the dough to create a wet, pasta like gum line under the sauce thus destroying the textural properties of the finished crust.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

1492

**New York Style / Re: Cooked Sauce yuk!**

The sauce gets cooked on the pizza during the normal baking process so there is no need to cook the sauce prior to application on the dough skin. Some like to "bloom" their herbs, if that's the case just put the herbs in a little oil and lightly heat then add to the sauce and stir in. If you like the aroma of the sauce when it's being cooked just remember that those aromas are lost forever and will never be enjoyed as part of your pizza flavor profile. Plus cooking the sauce prior to use leaves the door open for something to go wrong during the cooking process, like scorching the sauce, when this happens it doesn't take much to ruin the sauce.

Tom Lehmann/The Dough Doctor  
1491

### [\*\*Dough Clinic / Re: What can cause dough to be too stretchy?\*\*](#)

I didn't see any mention of finished dough temperature which has a very high probability of being another variable, and one which has a significant impact upon the amount of fermentation the dough will receive in any given period of time. If the dough was warmer it could account for the difference, additionally, the 3-hours warming period after CF could also be a contributor. As for the differences in yeast, if the CY was fresh and used at the correct substitution level I wouldn't expect any issues, but if the CY was not properly stored or old, or used at the incorrect substitution level for ADY it could be a contributor. By the way, the correct substitution of CY for ADY is twice as much CY as ADY.

Tom Lehmann/The Dough Doctor  
1490

### [\*\*Dough Clinic / Re: Sauce bleed -through\*\*](#)

?????? ??  
Tom Lehmann/The Dough Doctor  
1489

### [\*\*Dough Clinic / Re: Oil in dough\*\*](#)

You should be fine with 1 to 2% oil. It will promote improved/greater oven spring and flavor in the finished crust.

Tom Lehmann/The Dough Doctor  
1488

### [\*\*Dough Clinic / Re: Pizza dough - 2 and 3 days cold ferment\*\*](#)

Just make sure you ball the dough immediately after mixing (finished dough temperature 70 to 75F), and leave the containers OPEN for at least two hours after placing them into the fridge, then lid. It is suggested that you lightly oil the top of each dough ball after placing in the fermentation container as this will prevent the dough from drying out during the time its uncovered. When you remove the dough from the fridge for final use allow the dough balls to warm to an internal temperature in the 55 to 60F/12.7 to 15.5C range before beginning to open them into skins. Once the dough balls have reached the target temperature range they should remain good to use for a period of 2 to 3-hours. Just remember to keep them covered to prevent drying after you remove them from the fridge.

Tom Lehmann/The Dough Doctor  
1487

### [\*\*Neapolitan Style / Re: thin spot in my dough when stretching\*\*](#)

Agreed, more information would be useful, but also keep in mind that this is a common problem if the dough is not being opened correctly. Be sure to stretch the edges of the dough as well as the center section, failure to do so usually results in

an overly thin center section. I have some video footage of how to open a dough ball shown on my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> that may be helpful.

Tom Lehmann/The Dough Doctor  
1486

### **Dough Clinic / Re: Sauce bleed -through**

JPB;

Bleed through can be a problem if you are stretching the dough very thin and not applying a light film of oil to the skin before saucing. It can be a problem resulting in a gum line on just about any type of skin/crust if you allow the dough to set for an extended period of time after saucing (again lightly oiling the dough helps here too). My dough weights for a 12-inch pizza go as low as 9.5-ounces and I've never had an issue with bleed through even when the pizzas are staged for a few minutes prior to going into the oven (this is with a decent sauce that isn't separating), and when I'm using fresh tomato slices as I typically do at this time of the year I ALWAYS lightly oil the dough skins prior to application of the tomato slices.

NOTE: Bleed through tends to be more of a problem with doughs that do not contain any oil/fat that with doughs that contain 1 or 2% oil/fat, this is because the oil in the dough helps to prevent the migration of moisture from the sauce/toppings into the dough before, during and after baking.

Tom Lehmann/The Dough Doctor  
1485

### **Dough Clinic / Re: What can cause dough to be too stretchy?**

Forget the "window pane" test unless you're planning to make bread. If the dough is too sticky for you to easily handle just lightly oil your hands. You only need to mix the dough until the lumps are worked out of it, bio-chemical gluten development will take care of the rest for you.

After mixing the dough the temperature should be in the 70 to 75F range (achieve this by adjusting the water temperature). After mixing, immediately scale and ball, place the dough balls in your fermentation containers or lightly oil the dough balls and place in individual Food

Saver plastic bags (like bread bags) DO NOT use Zip-Lock bags. We have discussed how to use the plastic bags many time here so a quick search will give you full details on how to do it if you wish to go that route.

Be sure to lightly oil the top of each dough ball after placing it in the container and leave it uncovered for at least 2-hours, then apply the lid for the remainder of the time in the fridge.

When ready to usd the dough remove from the fridge at least 2-hours prior to use time. You want the dough to warm to an internal temperature in the 55 to 60F range before opening, once the dough has reached this temperature it will remain good to use for a period of 2 to 3-hours depending upon temperature.

Tom Lehmann/The Dough Doctor  
1484

### **Pizza News / Re: GM Unbleached AP Recall**

There's a reason why it is highly suggested that flour not be consumed raw. It's a miracle that this doesn't happen more than it actually does when you consider how wheat is handled and processed into flour.

Tom Lehmann/The Dough Doctor  
1483

### **Dough Clinic / Re: Pizza dough - 2 and 3 days cold ferment**

With 1Kg. of flour weight you will need to use approximately 3.75-grams of IDY or 5-grams of ADY when using the dough management procedure I've described.  
7-grams would be WWAAYY too much.

Tom Lehmann/The Dough Doctor  
1482

### [\*\*Dough Clinic / Re: A Couple of Dough Management Questions\*\*](#)

It's impossible to comment on your question regarding the yeast amount as we don't know how much you're presently using, but the advice you got about using a fork type mixer and not cross-stacking is incorrect in my humble opinion. The reason for cross-stacking is to achieve improved consistency in cooling the dough balls AND to eliminate the formation of condensation within the dough box due to the dough being warmer than the ambient temperature in the cooler. It's just a matter of basic physics.

Tom Lehmann/The Dough Doctor  
1481

### [\*\*Dough Clinic / Re: strech and fold and FDT\*\*](#)

First off, 0.2 to 0.3% IDY is not exactly what I'd call a "trace" amount of IDY, it's essentially a full dose of IDY for a CF dough. This in itself might be the source of some of your issues? I wouldn't recommend going to the lower finished dough temperature as you've proposed since it will be much more difficult to consistently achieve (the further your targeted finished dough temperature is from the room temperature the more difficult it will be to consistently achieve your targeted finished dough temperature. My advice is to keep it where its at in the 70 to 75F range.

Tom Lehmann/ The Dough Doctor  
1480

### [\*\*Dough Clinic / Re: A Couple of Dough Management Questions\*\*](#)

I did quite a bit of work with the different Caputo flours last year, the Caputo Pizzeria, while high in protein content doesn't exhibit good fermentation tolerance which is a characteristic of the soft wheat protein as opposed to the amount of protein present. When it comes to adding sourdough starters it's a wild guess as to how much to use unless you know both the pH and TTA of the starter you're adding. It might be a case of your starter just being too strong at the 20% level so my first inclination would be to use it at a lower use level, maybe try it at 15% and then 10% to see if that helps any. Remember, a dough that has excessive acidity will be weak and tear easily ans it also might show signs of being difficult to achieve a decent bottom crust color.

Tom Lehmann/The Dough Doctor  
1479

### [\*\*American Style / Re: PH pan rolled thin?\*\*](#)

Absolutely! There really isn't anything very special about the PH thick crust dough that would prohibit its use in making a thin crust pizza. There are some commercial frozen pizzas being made using cold pressing equipment which requires the skin to be pressed onto a special pan, and since a pan comes into play oil is needed to facilitate release of the crust from the pan (crusts are par-baked) hence they are fried as opposed to being baked in the traditional manner and don't forget about the Celeste brand frozen pizzas, they are made using a fried crust. Frying absolutely improves the crispiness of the finished crust (any crust formulation), so if you want to use a PH thick crust clone dough formulation and bake it in a pan

using oil as a thin crust go for it, it will absolutely work.

Tom Lehmann/The Dough Doctor

1478

### **Newbie Topics / Re: Struggling with tough crusts**

Also, as I've said so many times before, oil/fat is a "tenderizer" as such it contributes greatly to a more tender eating characteristic of the finished pizza. If you want to see this first hand just buy two packages of tortillas, one a regular tortilla and the other a fat free tortilla, eat one of each and you will see how it influences the texture of the tortilla. It does the same thing in pizza crusts too.

Tom Lehmann/The Dough Doctor

1477

### **Stones/tiles/steel, Pans & Accessories / Re: Non-stick Peel**

While Teflon works with releasing baked dough (crust) it will not release raw dough as is the case when peeling a pizza into the oven. Sticking is not an issue with an oven peel since the dough is already baked and crusted. The idea with a prep peel is to put a coarse material onto the peel as a "peel dust" before placing the dough skin onto the peel, the peel dust will act as ball bearings under the dough to allow it to be easily shuffled off of the peel either in a single stroke or several short strokes.

Tom Lehmann/The Dough Doctor

1476

### **Prep Equipment / Re: Second-hand Mixer Score**

The attachments as well as the attachment method appear to be very much like that of a Hobart mixer. You might want to see if Hobart mixing attachments will fit it.

Tom Lehmann/The Dough Doctor

1475

### **Pizza Ovens / Re: Deck ovens**

Yes, but please define "portable" for your specific needs.

Tom Lehmann/The Dough Doctor

1474

### **Neapolitan Style / Re: Bulk Ferment in Fridge for 48 hours??**

It all depends upon how big your "bulk" dough is weight wise, will assume it's in a bowl. There are also lots of other factors which could influence how the dough preforms under such conditions too, such as the finished dough temperature and if the dough is covered or left open for a period of time (cross-stacked) after being placed in the fridge. The short answer to your question is that if your total dough weight is about 18-ounces or less your "bulk" dough is really just a larger size dough ball and it will act as one during the cold fermentation period.

Tom Lehmann/The Dough Doctor

1473

### **Chitchat / Re: Houston Floods....AGAIN!!!**

I was in Sydney, Australia a number of years ago when we had a monsoon come shore, it dumped the equivalent of 42-inches of rain in 24-hours, it was like having a fire hose pointed directly at you for 24-hours! Not exactly something I would want to go through again if I could help it.

To all of our friends in the path of the storm I echo the words of Jackitup; Stay safe!

Tom Lehmann/The Dough Doctor  
1472

**[Dough Ingredients / Re: Bakingbusiness.com Article: Emulsifiers](#)**

I've never heard of pure lecithin being an egg "replacement". One whole egg only contains about 125 milligrams of lecithin with the remainder being mostly water, protein and fat. While the lecithin could be a stand-in for the fat content it certainly won't coagulate like the egg protein does and it will contribute little to no impact upon the browning reaction due to the protein content and this doesn't even address the nutritional properties of the egg.

Tom Lehmann/The Dough Doctor  
1471

**[Neapolitan Style / Re: adding flour during mix](#)**

My preference is to add the water, then suspend the CY in the water, add the flour and salt together and mix just until a smooth dough is achieved. This results in a more uniform dough than is achieved if the flour is added in stages.

If you are using a dough absorption over 70% you may find it advantageous to put the water in the bowl followed by the flour and mix just enough to incorporate the flour, then allow this (autolyse) to rest for about 30-minutes, add the CY and mix for 2-minutes then add the salt and mix until a smooth dough is achieved.

Tom Lehmann/The Dough Doctor  
1470

**[Dough Clinic / Re: Sauce bleed -through](#)**

I use a simple pastry brush with soft bristles. In this case less oil is more desirable, all you want is an oil shine on the skin. Spraying puts WWAAYY too much oil on the skin.

Tip: A good artificial bristle paint brush 1.5 to 2-inches wide works great.  
Tom Lehmann/The Dough Doctor  
1469

**[New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza"..  
Formulation Change from Tom L.](#)**

Proofer;  
You will need to use 0.6% IDY to replicate the performance of 1.5% CY. I'm not sure what you mean when you ask about different volumes when referencing fats?  
Assuming you are weighing your ingredients an ounce of oil is the same as an ounce of butter or lard just as an ounce of ice is the same as an ounce of water.  
Tom Lehmann/The Dough Doctor  
1468

**[New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza"..  
Formulation Change from Tom L.](#)**

The type of fat used won't impact the way the dough handles to any great extent, I say this because oil, being a liquid, will help to make the dough a tad softer however it does not impact the extensibility characteristics of the dough. Plastic type fats are most commonly used in thick crust and pan-style pizzas where they help volume of the crust by providing additional strength to the dough during final proofing which in turn improves oven spring characteristics of the dough.

Tom Lehmann/The Dough Doctor  
1467

## [\*\*Newbie Topics / Re: Struggling with tough crusts\*\*](#)

Gluten is what makes the finished crust tough/chewy and fermentation degrades the gluten (sufficient fermentation will turn a dough into soup as it destroys the protein/gluten) so a longer fermentation time will naturally give rise to a more tender eating crust. Actually, 24-hours is a pretty short fermentation time even with the short bulk fermentation time (which is really just fermenting the dough in ball form unless your total dough weight is more than about 18-ounces). My suggestion is to keep the IDY at the same 0.3% level, adjust the water temperature to give you a finished dough temperature in the 75 to 80F range ball immediately after mixing and CF for at least 48-hours. Bench mark from there to find the fermentation time that works best for you.

Tom Lehmann/The Dough Doctor  
1466

## [\*\*Newbie Topics / Re: CF dough sticking?\*\*](#)

Here's a tip to keep condensation from forming in the fermentation container. Lightly oil the dough ball as you place it into the fermentation container, then place into the fridge but DO NOT cover it for at least two hours, then apply the lid and condensation will not be a problem. Warm dough going into a cold fridge will ALWAYS form condensation on the top of the container, by leaving it uncovered (cross-stacked) for at least two hours the dough will have sufficiently chilled so condensation will not be much, if any, issue after covering. This same condensation will make the dough sticky and it might be what's causing the dough to stick to the container too.

Tom Lehmann/The Dough Doctor  
1465

## [\*\*Dough Clinic / Re: What can cause dough to be too stretchy?\*\*](#)

Regarding your peel issues, get your fermentation dialed in correctly and then, if you still have problems peeling the pizza into the oven begin incrementally reducing the dough absorption to tighten the dough up a little. Remember, every dough has a "sweet spot" when it comes to absorption, you can't just take an absorption percent and plug it into your dough and expect it to always work. This is due to lot to lot variations in flour absorption (we recently discussed this there) as well as differences in the specific way the dough is being managed as well as ones ability to handle a soft dough.

Tom Lehmann/The Dough Doctor  
1464

## [\*\*Dough Clinic / Re: gooey dough\*\*](#)

BJ;

Try increasing the yeast a little, now that you are controlling the rate of fermentation your dough might need a little more yeast to meet your specific needs or you might try increasing the finished dough temperature by 2 to 3F. I'd try the increased dough temperature first (increase the temperature of the dough water by 5F) and if that doesn't work go with the increased yeast.

Tom Lehmann/The Dough Doctor  
1463

## [\*\*Dough Clinic / Re: Suggestion for oven temp\*\*](#)

I've had my best success with NY style pizzas using a baking temperature of 500 to 550F. If you don't mind your pizzas being a little softer and chewier bake at 700F.

Tom Lehmann/The Dough Doctor

1462

**Dough Clinic / Re: gooey dough**

Big Dave used to have his "Old Faithful", here's mine;

Flour: 12 to 12.8% protein content 100%

Salt: 1.75%

Sugar: (optional) 2%

IDY: 0.375%

Water: (variable) 64%

Mix just to a smooth consistency.

Targeted finished dough temperature: 75 to 80F.

Immediately scale and ball.

Place in fermentation container(s).

Wipe the top of each dough ball with a little oil.

Place in fridge UNCOVERED for 2-hours.

Cover container(s).

CF for 24 to 48-hours. 48-hours is better than 24-hours.

Remove from fridge and allow to TEMPER AT room temperature for 2-hours or until the center/core temperature of a dough ball reaches 60F before starting to open into skins.

The window of time to use the dough balls is about 2-hours from the time they reach a core temperature of 60F.

Tom Lehmann/The Dough Doctor

1461

**Shop Talk / Re: Need help with dough storage!!!!**

Are you looking to use this for your cold fermentation space or are you planning to use it just for temporary holding of the dough for use during the day? The reason why I ask is because I've used prep-table storage at many pizza shows and I can attest to the fact that it just isn't up to holding any quantity of dough under sufficiently cold conditions to work if you are going to CF the dough for much more than about 18-hours. The units were never designed for that purpose. While not the best choice, a much better option for holding the dough during the CF period in a small shop would be a reach-in cooler or a rack type cooler. Reach-in coolers will not allow you to cross-stack the dough boxes so you will need to off-set them front to back for the cross-stack period.

Tom Lehmann/The Dough Doctor

1460

**New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza"..**

**Formulation Change from Tom L.**

Your pizza looks pretty AWESOME!

Tom Lehmann/The Dough Doctor

1459

**New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza"..**

**Formulation Change from Tom L.**

Forgot to add, try making your pizzas using different types of fats, such as pomace grade olive oil, bacon fat (really good), butter (both fresh and aged for about 3-weeks by letting it set on the kitchen table).

Tom Lehmann/The Dough Doctor

1458

## [\*\*Dough Clinic / Re: Suggestion for oven temp\*\*](#)

For ADY use 1/3 more than you would if using IDY.  
Tom Lehmann/The Dough Doctor  
1457

## [\*\*Dough Clinic / Re: Dough Experiments - Guidance\*\*](#)

I think the ingredient missing from your dough formula is sugar. If you add sugar you can manipulate, to some extent, the rate and way the crust bakes. I'd go back to your best effort at 100% bottom airflow and add 1% sugar to the dough formula. This will result in the crust browning faster and absorbing heat better for a more thorough bake in the short baking time being employed. If 1% sugar isn't sufficient go to 2% sugar, from there make incremental 0.5% adjustments in the amount of sugar.

NOTE: Due to the extremely efficient heat transfer properties of an air impingement oven the response to sugar in this type of oven is rather fast and at times dramatic so once you find a sugar level that works for you you will need to be "spot-on" with removing the pizzas from the oven, not a problem with a conveyor model but this can be problematic with air deck ovens which is one of the main reasons why I don't encourage fast bakes with this type of oven.

Tom Lehmann/The Dough Doctor  
1456

## [\*\*New York Style / Re: new haven dough recipe\*\*](#)

In my humble opinion, a New Haven pizza is just a crispy version of a New York style pizza so any New York pizza dough formula should work well for you.  
Tom Lehmann/The Dough Doctor  
1455

## [\*\*Newbie Topics / Re: Bulk Dough Making\*\*](#)

Your first step is the convert your dough (recipe?) into a dough "formula" based on bakers percent. To do this you will need to have the weight of each ingredient including the weight of the starter added to the dough. Then divide the weight of each ingredient as well as the starter by the weight of the flour and multiply by 100. This will give you the ingredient weight in bakers percent.

Once you have your dough formula in bakers percent you can manipulate the size of the dough as desired.

To find the ingredient weight for a new flour weight, using your calculator, enter the new flour weight, then press "X" and enter the bakers percent of the ingredient you want the weight for, now press the "%" key and read the weight of the ingredient in the display. Repeat this for each ingredient including the starter and you will have all of the correct ingredient weights for the new flour weight.

Tom Lehmann/The Dough Doctor  
1454

## [\*\*New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza".. Formulation Change from Tom L.\*\*](#)

If adding a liquid fat such as oils and melted solid fats in most cases they should be added using the delayed oil mixing method to prevent them from being absorbed into the flour. When adding a solid or plastic fat such as butter, margarine or lard they are best added right along with the flour.

How to determine if the delayed oil addition method needs to be used? Place a small quantity of the fat in question in a small bowl, sprinkle with flour, if the flour

absorbs the fat the delayed fat addition method should be used, if it isn't absorbed into the flour the fat can be added along with the flour.

NOTE: Solid/plastic fats should always be added at room temperature or slightly softened. The only exception to this is when we are making a dough where we want to have pieces of the fat dispersed throughout the dough, in that case the fat is frozen and shaved/chipped, and added as a frozen fat so it does not become incorporated into the dough but instead remains as individual fat pieces. This is how a pie crust and many biscuit doughs are made.

Tom Lehmann/The Dough Doctor  
1453

### [\*\*Dough Clinic / Re: gooey dough\*\*](#)

BJ;  
I forgot to show the oil in my dough formula. I normally include 2% oil in the dough. When adding the oil use the delayed oil addition mixing method, by this method you hold out the oil for the first 2-minutes of mixing, then add it, mix 1-minute at low speed then continue mixing at medium speed until you get the targeted smooth dough consistency.

Tom Lehmann/The Dough Doctor  
1452

### [\*\*Dough Clinic / Re: Dough Management for Mobile Units\*\*](#)

I've worked with a number of mobile pizza operations over the years and from what I've seen is that yeast performs better than a sourdough starter under these conditions. This is because the yeast leavened doughs tolerate the cold temperatures better than the culture you have growing in your starter which likes to be kept warm and as you know is counter productive to keeping the dough for any period of time as it tends to get away from you as you have already indicated. Your best bet might be to freeze the dough balls a day ahead of time and set them out to thaw on the day of the event. Thawing time should be relatively short owing to the smaller size dough balls you will most likely be working with (TIP: flatten the balls into "pucks" when you freeze them as they will slack-out faster in this form). You could have one stack of dough trays covered in an insulating wrap (this will be your main supply) and another stack of dough boxes without the insulating wrap which will allow them to slack-out in a few hours and be ready for use. Since all doughs are different you will need to experiment to determine how long these slacked-out dough balls will remain good to use, I'm guessing several hours.

Tom Lehmann/The Dough Doctor  
1451

### [\*\*Dough Clinic / Re: gooey dough\*\*](#)

No difference in taste, just convenience and one less thing to go wrong, go wrong, go wrong, go wrong.

Tom Lehmann/The Dough Doctor  
1450

### [\*\*Newbie Topics / Re: Caputo Confusion\*\*](#)

The sweetness and impact on crust color from honey and sucrose are the same. Honey is a mix of dextrose and fructose while the enzyme invertase in the yeast (and other microorganisms) hydrolyzes the disaccharide sucrose into its component sugars dextrose and fructose, so in the dough both end up being the same. This is one reason why it can be difficult to ascertain if sugar (sucrose) or honey was used as an ingredient in a yeast leavened baked product. With regard to flavor from

honey, aside from sweetness, you would need to get to around the 5% level to detect and flavor from the honey, also keep in mind that the darker the color of the honey the more robust the flavor is, it's also cheaper too. Commercial grade aka bakery grade honey is about the color of black coffee so some care has to be taken or the color of the honey can impact the crumb color making it a dirty gray color, not too bad in a pizza crust but it can be a real problem in bread items where a greater crumb portion is present and more readily visible to the consumer.

Tom Lehmann/The Dough Doctor

1449

### **Dough Clinic / Re: The science of sloppy dough**

While all of the things you've mentioned will most certainly contribute to a soft, limp crust I believe that the number one, and most common cause results from improper baking. Baking the pizza at too high of a temperature or short baking (not baking long enough) the pizza are common causes. Additionally, dough that is too dense or opened into a skin that is too thin are also likely causes. A dense dough often results when the dough is opened into a skin by manually pinning the dough to shape it. A skin that is too thin results when one doesn't have sufficient dough ball weight for the size of pizza being made or they erroneously believe that by making the dough thinner it will bake out crispier. The last of the common things that I've found results from allowing the dressed or sauced pizzas to set for a period of time before baking. In this case the moisture from the sauce and/or toppings will migrate into the dough where it will be impossible to bake out resulting in a limp crust AND the development of the "dreaded gum line" just under the sauce. Aside from all of this, remember, just placing the hot pizza on a metal pan or cold surface will result in condensation forming at the interface of the crust creating a wet, soggy pizza. I could probably write a book on this topic alone but these are the most commonly encountered reasons for a limp crust when making pizzas at home, a whole new chapter is started when we discuss this problem at the pizzeria level.

Tom Lehmann/The Dough Doctor

1448

### **Dough Clinic / Re: Why the edge isn't puffed ? (photo)**

Doing the easy things first, I'd suggest increasing the dough absorption in 2% increments to 62 and 64% to see if that helps. High baking temps demand a high absorption dough that expands readily. Also, when opening your skins be sure to keep your fingers away from the edge.

In the mean time if you can share exactly what you are doing aka dough management (be sure to include times and temperatures) it will help us to better determine what the issue might be.

Tom Lehmann/The Dough Doctor

1447

### **Newbie Topics / Re: The elasticity and gas problems strike a somewhat experienced pizzaiolo...**

Two things might be at play here. First, the salt level is VERY LOW at only 0.2%, I suggest increasing it to something in the 1.75 to 2.5% range, and second I see you are using dough boxes, are you cross-stacking them for at least two hours before lidding them? If you are not cross-stacking them the dough is both over fermenting as it cannot cool down at a consistent rate and it is also sweating in the box (both of which result in the dough balls flowing together into a single mass).

Tom Lehmann/The Dough Doctor

1446

[\*\*Dough Clinic / Re: My First Post - American Style Dough\*\*](#)

Don't worry about over kneading the dough by hand, it is all but impossible to do so. As for gluten development, biochemical gluten development will do that for you given that the dough will be allowed to ferment for at least 6-hours after mixing. You say your crust does not get crispy, what kind of color are you getting on the top and bottom of the crust? In some convection ovens you get too much top color and not enough bottom color which indicates a poor bake which can result in a less than crispy crust. Also not using sufficient dough for the pizza size can result in loss of crispiness ( I personally use a dough loading factor of 0.088 to 0.097 for my 12-inch pizzas). In addition to experimenting with the rack position you might also experiment with turning the convection feature on your oven off as this can result in a more balanced top and bottom bake.

Tom Lehmann/The Dough Doctor

1445

[\*\*Newbie Topics / Re: The elasticity and gas problems strike a somewhat experienced pizzaiolo...\*\*](#)

Wipe the top of each dough ball with a little oil before placing the box in the fridge. This will prevent the dry skin from forming. We have discussed this method numerous times if you want to search the archives for some extra curricular reading. When cross-stacking the idea is to allow the dough boxes to remain cross-stacked until the internal dough ball temperature reaches 50F, then the boxes can be down-stacked or lidded.

1444

[\*\*Newbie Topics / Re: The elasticity and gas problems strike a somewhat experienced pizzaiolo...\*\*](#)

What you are referencing is referred to as "webbing" of the gluten film, it is an indication of under development. Pizza doughs are always under mixed so don't look for a clear gluten film after mixing unless you're making bread. If you have managed your dough properly you will be able to see a clear gluten film in your dough balls when you open them into skins. When we held our annual pizza seminars we used to open a 12-ounce dough ball to nearly 30-inches in diameter with 4 to 5 people standing in a circle opening the dough together, you could clearly see your skin details through the dough membrane when it was opened about as far as we could get it to go without tearing.

Tom Lehmann/The Dough Doctor

1443

[\*\*Newbie Topics / Re: The elasticity and gas problems strike a somewhat experienced pizzaiolo...\*\*](#)

To answer your questions, by "rest" you mean fermentation, the answer is yes because this is where the biochemical gluten development takes place. More mixing time/mixing at a higher speed will also develop the gluten, this is basically the way its done in modern high speed bread bakeries where gluten development is a critical factor. Temperature also plays a role as it controls the rate of fermentation. Colder doughs or colder fermentation environments retard the fermentation process so a longer fermentation time is required for the biochemical gluten development to take place.

I think you're over thinking this, just about any properly managed dough will have full gluten development at the time the dough is being opened into a skin. We have

discussed machine mixing v/s biochemical gluten development a number of time here, a search through the archives should provide you with some additional reading material.

Tom Lehmann/The Dough Doctor  
1442

### **Dough Clinic / Re: My First Post - American Style Dough**

Allowing the dough to rest (begin to ferment) for 20-minutes before scaling and balling and CF reduces the ability of the dough to be cooled at a consistent rate so it is actually introducing variability into the process. Finished dough temperature becomes MUCH more critical and that 20-minute rest period has to have a very hard line, not 25 or 30-minutes (we all know human nature). On the other hand it can give you the fermentation effects of a longer time with a shorter fermentation time and maybe more importantly, it can improve the handling properties of the dough during the scaling and balling process, this is important with some high absorption doughs which tend to be somewhat sticky immediately after mixing. To someone making pizzas at home I really don't think it means a lot as to which way you do it (with or without a 20-minute rest period prior to scaling and balling) as you are not trying to make 200 pizzas all look alike and you are not dealing with "hired help" to make the pizzas so staying on schedule is not that much of an issue and if it is you know exactly who to blame ;D

Tom Lehmann/The Dough Doctor  
1441

### **Dough Clinic / Re: Detroit Style - New Way of doing things**

Sure, do it all the time.

Here is the basic procedure:

- 1) Mix
- 2) Scale and ball
- 3) Cold ferment for 24-hours
- 4) Remove dough from cooler and allow to temper AT room temperature for 60-minutes.
- 5) Open dough balls and place into prepared pans.
- 6) Allow panned dough to rest at room temperature for 45-minutes.
- 7) Re-stretch dough to fit pan as it will shrink back during the 45-minute rest period.
- 8) Allow the dough to rest for 30-minutes, and re-stretch again if necessary and place in the cooler. Cover with a sheet of plastic to prevent drying.
- 9) The panned dough should be ready to use after about 2-hours in the cooler and it will keep for the entire day.

Note:

All dough formulas are different so you will need to experiment with the time in step #8 to determine the correct time that will allow the dough to rise to the desired height during baking.

The dough can be taken directly from the cooler to the prep station and then directly to the oven for baking.

Tom Lehmann/The Dough Doctor  
1440

### **Dough Clinic / Re: What can cause dough to be too stretchy?**

Mouly;

You mention problems with transferring the prepared skin from the table onto the peel. You might think about getting a short handle wood prep peel. The opened

skin is placed on the peel with a little dusting flour under the skin, the skin is then dressed right on the peel and peeled into the oven.

Tom Lehmann/The Dough Doctor  
1439

**New York Style / Re: Troubleshooting my Last Bake**

Additionally, don't forget to lightly oil the dough balls as you place them into the containers and leave the lids off for at least 2-hours or until the internal dough ball temperature reaches 50F, then apply the lids. This will keep condensation from forming inside the containers making for a wet, sticky dough with a penchant for bubbling during baking.

If you research this in the archives this is what we refer to as cross-stacking and down-stacking.

Tom Lehmann/The Dough Doctor  
1438

**New York Style / Re: Troubleshooting my Last Bake**

Going back to the previously asked question, what was the finished dough temperature (temperature of the dough immediately after mixing)? This is a very important temperature as it will determine how the dough ferments. Also, what is the total mixing time in the processor? If the total mixing time is less than 4-minutes it is highly recommended that the IDY be suspended in a small amount of warm (95F/32.2C) water prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
1437

**New York Style / Re: "Achieve a Lighter, Tastier Thick Crust Pizza"..  
Formulation Change from Tom L.**

Proofer;

What part of San Diego are you in? My wife is from La Mesa, (she was a school teacher at Chesterton Elementary School) not too far from the country club.

Tom Lehmann/The Dough Doctor  
1436

**Dough Clinic / Re: Martin's Potato Roll - Is it worth the HYPE?**

Here is a good starting point for your potato buns;

Flour: 100% (strong bread type flour with about 12% protein content)

Salt: 2%

Dehydrated potato flakes (non-sulfited): 8%

Sugar: 13%

Shortening: 4%

Instant dry yeast: 2%

Water: 75% (variable)

The buns are best made using an 80/20 sponge-dough process with 1.5% of the IDY in the sponge and the remaining 0.5% added to the dough side as a yeast spike.

Sponge absorption should be 55%. The dehydrated potato flakes are added at the dough side. The dough should be mixed to full gluten development. The dough then goes directly from mixing to forming with about a 60-minute final proof before baking at 420F/215.5C for about 15-minutes.

Tom Lehmann/The Dough Doctor  
1435

## [\*\*Dough Clinic / Re: Dough sticks to box\*\*](#)

Allowing the dough balls to come up to room temperature is allowing them to warm up too much, you only want to allow them to warm AT (AT) room temperature until they reach an internal temperature of 55 to 60F. In a commercial/pizzeria we use 50F which allows the dough balls to have a 2.5 to 3-hour use period after they reach 50F. It's normal for the dough to stick to the box, this is why they make special hard plastic scrapers for removing the dough balls for the box with minimum distortion. You can also use a flexible bowl scraper pretty well to the same effect.

Tom Lehmann/The Dough Doctor  
1434

## [\*\*Newbie Topics / Re: Barley Malt\*\*](#)

I second the motion. ^^^

Tom Lehmann/The Dough Doctor  
1433

## [\*\*New York Style / Re: Troubleshooting my Last Bake\*\*](#)

With less than 4-minutes mixing time there is a distinct probability that the yeast is still present in the dough in the form of agglomerates (clumps) rather than dispersed as single cells. This means that you will experience inconsistent yeast activity/fermentation and some of the yeast cells will die and release glutathione into the dough making it soft and sticky/tacky. So in your case it is highly suggested that you suspend the IDY in warm (95F) water prior to adding it to the dough. From your description it sounds like a HOT dough rather than a "warm" dough. Remember, you will begin to damage the yeast at temperatures approaching 120F and thermal death point is at about 140F. In any case, I think you need to be looking at using cold or ice water for the bulk of the dough water to get the finished dough temperature into the desired temperature range of 75 to 80F.

Tom Lehmann/The Dough Doctor  
1432

## [\*\*Dough Clinic / Re: Best recipe for thin crust dough?\*\*](#)

Flour: 100% (12 top 12.8% protein content)

Salt: 2%

ADY: 0.5%

Oil: 1%

Too bad you don't use any water, but if you did I would expect it to be in the 52 to 55% range.

Mixing: That 20-quart mixer is a poor choice for this type of dough as it isn't powerful enough and there is a distinct probability of destroying the composite sacrificial gears in the mixer. A larger planetary mixer or a small spiral mixer would be a much better choice. Remember, no mixer, no dough.

Put water and yeast suspension in the bowl first, then add the flour and salt, mix 2-minutes at low speed, add the oil and continue mixing at low or medium speed (3rd. speed is for mixing cake batters only) until a smooth dough is achieved.

Target finished dough temperature is 75 to 80F.

Take dough to bench immediately after mixing and scale 10.5 to 11-ounces for 12" pizzas.

Form dough into balls, place into dough trays, wipe the top of each dough ball with oil, cross-stack in the cooler until the internal dough ball temperature reaches 50F (about 2-hours +/-), then down-stack or cover the dough boxes and allow to cold

ferment for a minimum of 24-hours (36 to 48-hours is better). Remove dough box from cooler, allow to warm AT (AT) room temperature until the internal dough ball temperature reaches 50F then begin opening into skins for immediate use. Once you begin opening the dough balls into skins the remainder will remain good to use for about 3-hours.

Optional: After opening the skin use a docking wheel to dock the skins prior to dressing.

Tom Lehmann/The Dough Doctor  
1431

**Newbie Topics / Re: Bulk CF and balling**

How big is your "bulk" dough?

Tom Lehmann/The Dough Doctor  
1430

**Dough Clinic / Re: Best recipe for thin crust dough?**

The easiest way to find the "desired water temperature" is to subtract the flour temperature from "145". As for mixing time, whatever time it takes to achieve a smooth, appearing dough, this is usually around 8 to 11-minutes, I've never seen it in the 3 to 4-minute range in a planetary mixer. The amount of ADY specified is indeed correct.

Tom Lehmann/The Dough Doctor  
1429

**Dough Clinic / Re: Martin's Potato Roll - Is it worth the HYPE?**

Allow me to correct it for you.

It looks like you are using 245-grams of total flour weight.

SPONGE:

Flour: 196 g (80%)

Water: 107.8 g

IDY: 3.675 g

DOUGH:

Flour: 49 g

Water: 26.95 g ( $107.8 + 26.95 = 55\%$  of 245)

IDY: 1.225 g

The remainder of the math looks to be OK.

Milk: A high priced form of water. Contains lactose sugar which contributes to crust color development, the formula already has 13% sugar plus dehydrated potatoes for PLENTY of crust color development. The flavor improvement from milk comes from the butterfat content the formula already contains BUTTER. The calcium content of the milk might improve the handling properties of the dough but you can get the same improvement using calcium sulfate at 0.25 to 0.5%. Calcium sulfate aka GYPSUM is readily available from many sources including pharmacies.

Tom Lehmann/The Dough Doctor  
1428

**Dough Clinic / Re: Best recipe for thin crust dough?**

Your calculations are indeed correct.

Tom Lehmann/The Dough Doctor  
1427

## [\*\*Dough Clinic / Re: Martin's Potato Roll - Is it worth the HYPE?\*\*](#)

Oops! Sorry about that!

Good catch there, you're right, it should equal 75%. So the corrected absorption should be  $107.8 + 75.95 = 183.75$  which is 75% of 245 (total flour weight). The dough side water amount should show as 75.95-grams while the absorption next to it should be shown as 75%.

Tom Lehmann/The Dough Doctor  
1426

## [\*\*New York Style / Re: Troubleshooting my Last Bake\*\*](#)

In looking at the color of your last pizzas, what is the protein content of your flour and please confirm if it's malted or un-malted. How does the bottom of the pizza look? Decent color or light? I'm guessing that the problem might be a bake issue so also please provide baking information such as temperature, baking platform (what are you baking your pizzas on?) as well as rack position in the oven.

Tom Lehmann/The Dough Doctor  
1425

## [\*\*New York Style / Re: Troubleshooting my Last Bake\*\*](#)

How do you measure the oven and baking steel temperature, do you use an IR thermometer?

Tom Lehmann/The Dough Doctor  
1424

## [\*\*New York Style / Re: Cooked Sauce yuk!\*\*](#)

Commercially manufactured sauce as well as tomato products are indeed cooked, they are heated under very controlled conditions to render them safe for the canning process and then quickly cooled to prevent further loss of volatiles which detract from the flavor profile of the product.

Tom Lehmann/The Dough Doctor  
1423

## [\*\*New York Style / Re: Troubleshooting my Last Bake\*\*](#)

Keep us posted on your progress.  
Tom Lehmann/The Dough Doctor  
1422

## [\*\*Dough Clinic / Re: Causes of thin spots?\*\*](#)

Matt;  
Typical causes are:  
Insufficient dough fermentation.  
Excessive dough fermentation.  
Insufficient dough absorption.  
Opening technique.  
Insufficient dough weight.

From the looks of the opened skin I'm guessing insufficient dough fermentation is the problem here.

If you want to see if it's technique use a rolling pin and carefully open the dough to within 2-inches of the full diameter, then complete the opening of the dough skin by hand.

Tom Lehmann/The Dough Doctor  
1421

## Dough Clinic / Re: Whole wheat

To be considered whole-wheat all of the flour used in making the crust has to be whole-wheat (no white flour allowed). However, if you want to make a wheat crust I would recommend using a blend of 70% white flour and 30% whole-wheat flour.

Tom Lehmann/The Dough Doctor  
1420

## Dough Clinic / Re: what sort of flour to use to make my own starter?

The only thing I would add is after baking with your new starter, if you like the results, use a portion of it to start another one (use different tools and containers) as a back-up reserve. Starters are easily lost through contamination regular bakers yeast is a contaminant in this case and it can be all but impossible to replicate your original starter. This is why we always say if you don't like your new starter, sanitize your tools, possibly change locations where it's made, and try another one, but just like your computer data, it's always a good idea to back it up. I store my back-up in the fridge and only feed it weekly and it does quite well.

Note:

When I was at AIB my first starters were total failures in my opinion, we had sooo many yeast cells floating around in the air that the yeast always became the dominant micro flora and the resulting flavor was always like that of yeast leavened dough. It wasn't until we took it out of that environment that we were able to make a decent sourdough starter.

Tom Lehmann/The Dough Doctor  
1419

## New York Style / Re: Cooked Sauce yuk!

That's a "new" one to me.

Tom Lehmann/The Dough Doctor  
1418

## Dough Clinic / Re: Causes of thin spots?

Matt;

Fermentation is more than carbon dioxide production, it is also production of acids and the effects of various enzymes on the gluten forming proteins of the flour. Refrigeration of the dough limits the production of acids and the work of the enzymes resulting in under fermented dough characteristics and performance properties. There is a point in dough rheology where both under fermented dough and over fermented dough have identical characteristics and the only real way to sort them out is by TTA (titratable acidity) of the dough itself with a greater TTA being present in the over fermented dough.

Tom Lehmann/The Dough Doctor  
1417

## New York Style / Re: Cooked Sauce yuk!

Even low temperature pasteurization requires heating to 180F and maintaining that temperature for 30-minutes.

I'll take a pass on anything canned at 140F.

Tom Lehmann/The Dough Doctor  
1416

## Dough Clinic / Re: Whole wheat

Actually, whole-wheat flour really doesn't make an unusually dense loaf of bread IF

YOU USE THE CORRECT DOUGH ABSORPTION. If you do a search in the archives you will find discussion on how to find the absorption of YOUR SPECIFIC whole-wheat flour. I've also written an article on it too. Getting the absorption correct is the key in making decent dough and finished products using any kind of whole-wheat flour, you will also need to make a "soaker" from the whole-wheat flour aka autolyse. Forty five to sixty minutes is about right for the hydration time as the bran takes some time to hydrate.

Tom Lehmann/The Dough Doctor

1415

### **New York Style / Re: Rescuing balled CF dough**

When you re-ball an over fermented dough the gluten tightens up to the point of being non-elastic (don't need to tell you that) :-D.

You will then need to allow time for the gluten structure to relax once again, depending upon how much over fermented the dough is, this could take anything from 2 or 3-hours to as much as 5 or 6-hours.

Why did the dough blow?

What was the finished dough temperature?

Was the correct amount of yeast used?

Did you leave the dough box open (cross-stacked) for a few hours when you placed it into the fridge?

Did you leave at least 2-inches of space between the dough balls in the box?

Did the amount of dough placed into your fridge cause the temperature to rise in the fridge?

Remember, when loading several dough balls into a home fridge it may be advantageous to lower the finished dough temperature to the 65 to 70F range to compensate for the home fridge.

Tom Lehmann/The Dough Doctor

1414

### **Dough Clinic / Re: Whole wheat**

Thank you Peter, I don't know what we'd do without you!

Tom Lehmann/The Dough Doctor

1413

### **Dough Clinic / Re: Blast Freezer question**

Proofed, frozen and straight to the oven = Freschetta brand frozen pizzas.

I am not aware of anything along the lines of what you are looking for, nothing that small.

To make pre-proofed frozen pizza you will need to have a freezer capable of reaching temperatures in the -25 to -38F range (ammonia refrigerant) or it will need to be a cryogenic freezer using an industrial cryogen (liquid carbon dioxide or liquid nitrogen) usually adjusted to freeze at -45 to -60F.

Tom Lehmann/The Dough Doctor

1412

### **Dough Clinic / Re: Pressing dough to edge of pan**

Yup, you've identified the culprit. When using a plastic fat, like Crisco, the dough acts as if it were glued to the pan with contact cement. The fat holds the dough to the pan sufficiently long for it to fully relax and not pull away from the edges. When using oil the only really effective action is to press the dough out in the pan several times with at least a 30-minute rest period between each session of fitting the dough to the pan. You can also use your Crisco on the sides of the pan and olive oil

on the center portion of the pan if you want to go that route. In my experience even a fully relaxed dough will tend to pull away from the sides of the pan when using only oil in the pan unless you press fit it into the pan multiple times.

Tom Lehmann/The Dough Doctor  
1411

### **Dough Clinic / Re: Dough Not Rising - Help!**

Additionally, you didn't provide any information on how you activated the ADY.  
Tom Lehmann/The Dough Doctor  
1410

### **Dough Clinic / Re: Math & Pizza**

Kelly;

While you might "suck" at math, I'm betting that you can figure out the amount for a tip to leave after a meal out, right? If you can do that you can work with bakers percent.

Let's start with your dough "recipe" for a 12" pan. The first thing to do is to get a good scale that will weigh in grams. There are many very good ones available on the internet priced at or under \$50.00.

Portion each ingredient three times and weigh the portion each time and write it down. After you have done this for each ingredient add up the total weight for each ingredient and divide it by three, this will give you the average ingredient weight. Now divide the average weight for each ingredient by the total flour weight and multiply by 100. You have now put your dough "recipe" into a formula based on bakers percent. By the way, flour is ALWAYS 100%.

A 9-inch pan has a surface area of  $3.14 \times (4.5 \text{ squared})$  or  $3.14 \times 20.25 = 63.585$  square inches.

A 12-inch pan has a surface area of  $3.14 \times (6 \text{ squared})$  or  $3.14 \times 36 = 113.04$  square inches.

The difference in pan size is  $113.04 - 63.585 = 49.455$  square inches.

Divide 49.455 by  $113.04 \times 100 = 43.75\%$  difference in pan size. The 12-inch pan is 43.75% larger than the 9-inch pan. Or to put it another way, the 9-inch pan is 43.75% smaller than the 12-inch pan.

To find out how much flour to use in your dough formula for the 9-inch pan:

$100 - 43.75 = 56.25\%$  Your new dough formula will use only 56.25% of the flour weight needed to make the dough for a 12-inch pan.

This is where being able to calculate the amount of a tip comes in handy:

To find your new flour weight for the 9-inch pan, using the flour weight for the 12-inch pan multiply the weight by 56.25 and press the percent key and read the new flour weight in the display.

To find the weight for each of the other ingredients enter the new flour weight for the 9-inch pan then press "X" and enter the bakers percent for that ingredient and press the "%" key, read the ingredient weight in the display.

In this case the flour weight is the cost of the meal and the percent of each ingredient is the amount of tip you want to leave.

You can also use an Excel Spread Sheet to find the ingredient amounts too but you first need to convert your dough "recipe" into a formula based on bakers percent.

Tom Lehmann/The Dough Doctor  
1409

### **Cracker Style / Re: Pizza Shoppe-style?**

I've been to the store in Olathe, KS many times as it's near to where my son lives. The dough is yeast leavened, 50% absorption, and formed using a dough

sheeter/roller. They use cutter pans (40-degree shoulder angle) and bake in deck ovens. To use the cutter pan just drape the sheeted skin over the pan and crimp cut by rolling a rolling pin over the top of the pan.

Tom Lehmann/The Dough Doctor  
1408

### **Dough Clinic / Re: Whole wheat**

Hopefully the dough felt slightly soft and slightly tacky too, if it didn't you might find that you are too low on absorption.

Tom Lehmann/The Dough Doctor  
1407

### **Neapolitan Style / Re: Help with dough process**

You'll be making over 40 pizzas, over what period of time? What is your dough ball weight? How are you planning to bake the pizzas? In a typical home oven this could be an all day affair, if you have a commercial deck oven, depending upon the size of the oven and size of the pizzas it could take anything from 30-minutes to an hour or more.

Tom Lehmann/The Dough Doctor  
1406

### **Dough Clinic / Re: Need some help in a pinch**

That's a difficult question to answer as I have no idea of how strong your starter is or if it is a "natural" starter or one based on commercial yeast. The refrigeration process will slow the rate of fermentation regardless of the type of starter being used so I'm guessing that your best bet will be to refrigerate the dough balls and to give them at least 4-hours, or more, to regain activity before opening into skins once you're at the event.

Good Luck!

Tom Lehmann/The Dough Doctor  
1405

### **Neapolitan Style / Re: Help with dough process**

Since you are going to be using the dough over a 4-hour period of time I think you might be ahead of the game by refrigerating the dough balls immediately after forming and then pulling the dough on a schedule which will allow the dough to warm over a 5 to 6-hour period of time before it is opened into skins for immediate use.

Tom Lehmann/The Dough Doctor  
1404

### **Dough Clinic / Re: Blast Freezer question**

The link took me to one that is only rated to -18C (-0.4F) which is not cold enough. You will need to have one that is rated to -37C or something close to it.

Tom Lehmann/The Dough Doctor  
1403

### **Neapolitan Style / Re: Help with dough process**

Why not use bags? They are a lot easier to manage than trays and require a LOT less space too.

Tom Lehmann/The Dough Doctor  
1402

## [\*\*Dough Clinic / Re: Blast Freezer question\*\*](#)

I would be inclined to go with the Deerfield unit. Good name and strong reputation in freezing equipment.

Tom Lehmann/The Dough Doctor  
1401

## [\*\*Neapolitan Style / Re: GI metal perforated versus solid turning peel\*\*](#)

The wood peels are not intended to be used in the oven, instead they are intended to be used as a prep-peel. In this application I think they are more forgiving than a metal peel as the wood will not contribute to the formation of condensation under the skin as a metal blade peel can if it is allowed to ever get cold (this is a good reason for keeping your peels close to the oven). For many home pizza makers this can't always be done so care must be taken to prevent putting an opened skin on a cold metal peel. With a wood peel it really doesn't make too much difference if the peel is cold or not. I've also noticed that you can leave a dressed skin on a wood peel longer than on a metal peel before it begins to show a penchant for sticking. Its these two characteristics which make it more forgiving.

Tom Lehmann/The Dough Doctor  
1400

## [\*\*New Forum Members / Re: Hello from Istanbul\*\*](#)

Welcome to the site!

I've visited Istanbul many times in the past, in fact it was my favorite city for holding regional meetings when I was on the McDonalds (hamburger chain) International Task Force. I used to stay at the Divon Hotel. Beautiful city with GREAT shopping.

Tom Lehmann/The Dough Doctor  
1399

## [\*\*Dough Clinic / Re: Causes of thin spots?\*\*](#)

A quick test to see if your dough is being over fermented for the specific flour being used is to reduce the total fermentation time by 1/3 (33.33%), if you see an improvement make further adjustments in the fermentation time. Also opening the dough in oil as opposed to flour might also be responsible so be sure to follow up on that too.

Tom Lehmann/The Dough Doctor  
1398

## [\*\*Neapolitan Style / Re: Pizza hydration\*\*](#)

I'm in the same boat, back when using a wood fired oven I was making doughs in the 70 to 75% range but now you will most often find me using something in the 62 to 65% range. The type of pizza that I most often make is a N.Y. or New Haven style using cold fermentation in the 2 to 4-day range. I like the flavor and textural properties of the finished crust when made this way, just my own personal preference.

Tom Lehmann/The Dough Doctor  
1397

## [\*\*Neapolitan Style / Re: Pizza hydration\*\*](#)

As with everything else, there are limits to the absorption used when making pizza crusts. To a point, increased absorption will promote greater porosity in the finished crust but only if the gluten strength is sufficient to carry the amount of water being added, and the oven is hot enough to provide the extra oven spring

made possible by the higher absorption, additionally, the crust must set fast enough to lock-in the increased volume without collapsing. All of this must be balanced against the amount of fermentation the dough is subjected to as fermentation has a mellowing/weakening effect upon the gluten structure of the dough which means even though a flour might be sufficiently strong to carry high a high dough absorption if it is subjected to excessive fermentation the gluten will be sufficiently degraded to render it incapable of carrying the high absorption and dough collapse or reduced oven spring will be the end result. Added on to all of this, there are certain genetic properties of the wheat from which the flour is made which will allow the protein/gluten structure to effectively carry more water than other wheat varieties. When breeding for new wheat varieties this is but one of the criteria assessed to determine if a variety will be released for future planting. Indeed, dough absorption can be a rather complex issue.

Tom Lehmann/The Dough Doctor  
1396

### **Neapolitan Style / Re: Pizza hydration**

That's a very good point with the excess bench/dusting flour. When the absorption reaches a point where, for whatever reason, excess dusting flour must be used to facilitate handling of the dough, and that flour cannot be removed before the pizza is taken to the oven any flour that is on the bottom of the skin can burn, resulting in a bitter taste. I've found this to be somewhat more problematic when the pizza is baked directly on the deck/stone than when it is baked on a screen, disk or pan. One might think of this as collateral damage from having a dough with an excessively high absorption.

Tom Lehmann/The Dough Doctor  
1395

### **Thick Style / Re: Pan thick style vs with Stone**

Chicago Bob is spot on! When using a pan you will also be using a release agent such as oil or shortening in the pan which facilitates removing the finished pizza from the pan. Oil will give you a different crust characteristic than shortening. I like to say that oil will provide some level of a fried effect while shortening will provide a bread like crust. By increasing the amount of oil in the pan you can achieve a truly fried crust characteristic, oily like CB said, but fried and crispy. As for baking on a stone, I never liked the idea of baking pan pizzas on a stone as it can be difficult to control the bottom bake. When I bake pan pizzas in a deck oven I always place the pans on a pizza screen to give control over the bottom crust color. For something a little different you might try putting some cheese in the the outer crust (like P.H.) or how about putting some pepperoni in the crust rather than cheese?

Tom Lehmann/The Dough Doctor  
1394

### **New York Style / Re: difference between IDY and ADY (glutenboy method vs what Gemignani says)**

When substituting ADY with IDY a good rule is to use 25% less IDY than the amount of ADY you're replacing. When it comes to high speed mixing and IDY even when using a VCM (1825 r.p.m. and about 70-seconds mixing time) the recommendation still stands to suspend the IDY in a small portion of 95 to 100F water. The reason for this is to endure that the yeast agglomerates (particles that you see in the bag) are thoroughly incorporated into the dough as opposed to be enveloped in the dough.

Tom Lehmann/The Dough Doctor  
1393

**[Neapolitan Style / Re: Pizza hydration](#)**

I like it too, but my go to peel dust is a blend of equal parts of semolina flour, my regular pizza flour and fine grind corn meal. If you query 50 people as to what their favorite peel dust is you will get 50 different opinions. If it works for you and you're comfortable with it, use it. Many pizzerias use nothing but fine corn meal, some use rice flour and some use wheat bran or rice bran, just about anything goes.

Tom Lehmann/The Dough Doctor  
1392

**[Dough Clinic / Re: Polselli Super](#)**

I don't know too much about it except that it is milled from soft wheat varieties as are other "00" type flours. The fermentation for this flour is limited to about 24-hours and it is not malted. It's just a guess, but I would think that Caputo "00" Pizzeria Flour would be a good substitute. Any U.S. milled flours are going to be made from hard wheat varieties so the dough is going to be somewhat different.

Tom Lehmann/The Dough Doctor  
1391

**[Dough Clinic / Re: HELP!!! Having trouble with 00 Tipo flour.](#)**

First off, put the "00" flour aside for now as it will not give you a dough that will brown properly (hardly at all) given the baking temperature you are using, instead, use a bread type flour that has been malted (it will indicate this on the bag). Rather than working with a "recipe" in volumetric portions get a scale that will weigh in grams so you can weigh all of your ingredients, then get a thermometer to measure the dough temperature. I have a feeling that your water temperature might be WAY too warm. Fresh/compressed yeast isn't necessary you can use either active dry yeast (ADY or instant dry yeast (IDY) which form do you have available to you locally?

Here is a very good dough formula which I am showing in both bakers percent as well as grams.

Flour: 100% 600-grams

Salt: 2% 12-grams

IDY: 0.4% 2.4-grams OR ADY @ 0.5% 3-grams

Water: 390-grams/ml (75F/23.8C)

Procedure:

Put water in mixing bowl, then remove a small quantity (50-ml) and heat it up to 100F/37.7C (use the thermometer as this temperature is rather critical), put the yeast into the slightly warmed water along with a pinch of sugar and stir to suspend the yeast, set aside for 10-minutes to allow yeast to hydrate/activate, then pour into the water in the mixing bowl. Add the salt and immediately add the flour and begin mixing by hand or machine. If mixing by machine mix until a smooth dough is achieved, if mixing by hand just mix until ingredients are well incorporated, then cover the bowl with a piece of plastic and set aside to ferment for 90-minutes, turn the fermented dough out of the bowl (use a plastic scraper) onto a floured surface and knead the dough several minutes until it begins to look smooth, lightly oil the mixing bowl, form the kneaded dough into a ball and lightly oil it, then place it into the oiled mixing bowl, cover with the plastic and allow to ferment for 1 to 2-hours, turn the dough out of the bowl and knead for a minute or two, form into a ball, lightly oil and place back into the mixing bowl, lightly oil the

top of the dough ball and place the bowl of dough into the fridge to cold ferment for 2-hours, then cover the bowl with the sheet of plastic and allow to continue cold fermenting for 18 to 48-hours. After the dough has cold fermented, remove it from the fridge and allow it to set at room temperature until the internal temperature of the dough ball reaches 60F/15.5C, it is then ready to remove from the bowl, place it onto a floured surface and open into a pizza skin by your preferred manner. Bake the pizza on a pre-heated pizza stone or steel as hot as possible (allow at least 1-hour to heat the stone or steel). If you want more color on the crust add 2% (12-grams) sugar to the dough formula.

This should give you a pretty decent pizza to begin working with.

Tom Lehmann/The Dough Doctor  
1390

### **Dough Clinic / Re: HELP!!! Having trouble with 00 Tipo flour.**

The longer you allow the dough balls to cold ferment the softer and more extensible (less elastic) they will become, additionally the longer the CF time the more flavorful the finished crust will become after baking. I suggest experimenting with different CF times to see what works best for you under YOUR specific conditions. I'm not sure what you mean by "letting it proof for a few hours"? The only proofing the dough receives is after the dough is fitted to a pan, such as when making a deep-dish pizza. When the dough balls are removed from the fridge after the CF period this is to allow the dough to warm sufficiently for ease of opening the ball into a skin, it is not a proofing period in the true sense. The difference between AP and bread flour is that AP flour has no specific application (that's what All Purpose means, while "bread" flour means that the wheat varieties that the flour is milled from are selected for their ability to make a strong dough (strong gluten) and have good fermentation tolerance which are all desirable characteristics for a bread type flour and are also desirable characteristics for a pizza flour too. In short, you have a better idea of what you are getting with a bread flour than with an all purpose flour. Some all purpose flours are quite good and work well for both bread and pizza while others do not. Bread type flours can generally be counted on to perform in a satisfactory manner across the board.

Tom Lehmann/The Dough Doctor  
1389

### **Dough Clinic / Re: Scale recommendations....**

My own personal preference is the KD-8000, I'm sure there are better scales available but for the money, capacity and accuracy the KD-8000 is awfully hard to beat. It also takes regular flashlight batteries that never seem to wear out. I use mine all the time for baking, making preserves and fruit butters, jerky and any other kitchen chore requiring me to weigh something. The only thing it might be lacking is the "finesse" in scaling accuracy to make very small doughs, but then I don't make those really small single pizza size doughs so it's not an issue for me, but if it was I could buy a second, smaller scale with the capacity and accuracy needed for those specific tasks. For those interested in my opinion on commercial application scales for use in a pizzeria the scales offered by AND Weighing <[www.andweighing.com](http://www.andweighing.com)> / Stein Carlsen <scarlsen@andweighing.com> are really hard to beat. We used them at AIB for a good number of years and like a Timex watch, "they took a licking and kept on ticking", they're extremely durable, accurate and again, they use regular flashlight batteries.

Tom Lehmann/The Dough Doctor  
1388

## **Neapolitan Style / Re: Window Pane Test**

In order to be able to stretch the dough (window pane test) to see a clear gluten film at the mixer (immediately after mixing) the dough MUST be fully developed in the mixer, no two ways about it. You either develop the gluten matrix mechanically (mixing) or biochemically (fermentation). Bread doughs, by nature are essentially fully developed at the mixer but pizza doughs are only mixed to a point of just being incorporated or just to a point on being smooth, they are then subjected to rather lengthy fermentation times which allow for biochemical gluten development to take place, this is why if you stretch out a dough ball at the time of opening you will be able to see a much better formed gluten film than you did after mixing.

Tom Lehmann/The Dough Doctor

1387

## **General Pizza Making / Re: Bulk vs ball ferment**

If your total dough weight is around 18-ounces or less there is essentially no difference between bulk and dough ball cold fermentation. This very topic was discussed in significant detail not too terribly long ago.

Tom Lehmann/The Dough Doctor

1386

## **Neapolitan Style / Re: Window Pane Test**

A sourdough starter and a biga are different animals. In the baking industry bigas are called liquid ferments or "brews" and are typically used at levels of 20 to 45% of the total flour weight with total fermentation time running from as short as one hour to as much as 5 or 6-hours. Sourdough starters are much more acid and also have a higher TTA (titratable acidity) which is why they are typically used at lower levels. They are allowed to ferment for days, not hours to develop their unique flavors and the type of fermentation is different too, in a biga the fermentation is yeast based while in a sourdough starter it is primarily bacterial based. For many years bakers have used "sours", not to be confused with sourdough starters, these sours are nothing more than old dough which has been allowed to ferment to develop acidity as well as flavor. It must be noted that the flavor obtained from these "sours" is nothing like that obtained from a sourdough starter.

Tom Lehmann/The Dough Doctor

1385

## **Off-Topic Foods / Re: Decaf**

Huh? I always thought it was how one referenced a baby cow, "decow" and decaf were standing out in depasture" :-D

How to make decaffeinated coffee taste better: put some type of flavoring into it.....like Baileys Irish Cream.

Tom Lehmann/The Dough Doctor

1384

## **Neapolitan Style / Re: Dough sticking to plastic tray**

The easiest way to remove dough balls from a plastic tray is to use a specially designed dough scraper, designed just for removing the dough balls from the box with minimal distortion as well as scraping any residual dough out of the tray/box after its been emptied. The corners of the scraper are radiused the same as the inside box corners to make this an easy and effective task.

Tom Lehmann/The Dough Doctor

1383

## [Off-Topic Foods / Re: Decaf](#)

Made my day and got a good laugh from the thread. :-D :-D :-D

Tom Lehmann/The Dough Doctor

1382

## [Neapolitan Style / Re: Window Pane Test](#)

Pizzaman123;

That, my friend is how you can start another sourdough starter having like characteristics to the mother starter from which it was made.

Tom Lehmann/The Dough Doctor

1381

## [Stones/tiles/steel, Pans & Accessories / Re: New Pizza Cutter Idea](#)

If you are looking at ways to cut commercially made pizzas be aware that Colbourne Manufacturing makes an ultra-sonic cutter (20,000+ strokes per second) for cutting pizzas into slices or shapes without any loss or distortion of toppings or crust. All of the New York school pizzas are per-sliced at the manufacturing facility using the ultra-sonic cutters. Additionally, some work is also being done using water jet cutting but the ultra-sonic is easier to install into an existing production line. Anything developed for the retail (pizzeria) industry will have to be low cost, effective, durable, easy to use, safe to use and easy to clean. Right now the retail industry uses pizza wheels, rocker knives of various design (The "Equalizer" by Lloyd Pans is an example of a modified design rocker knife used for cutting multiple slices at once) and even large French/Chef's knives to cut pizzas. If you should want to discuss this with me you may contact me at 785-537-1037 (let me know by e-mail before you plan to call) or you may e-mail me directly at <[thedoughdoctor@hotmail.com](mailto:thedoughdoctor@hotmail.com)>

Tom Lehmann/The Dough Doctor

1380

## [Neapolitan Style / Re: Dough sticking to plastic tray](#)

I deplore metal scrapers in a plastic dough box, it has been voted as the #1 way to tear up your plastic dough boxes. Plastic dough scrapers are just too plentiful and work just as well, if not better.

Tom Lehmann/The Dough Doctor

1379

## [Neapolitan Style / Re: Dough sticking to plastic tray](#)

John;

Without question, those are the best scrapers for plastic dough trays/boxes.

Tom Lehmann/The Dough Doctor

1378

## [Dough Clinic / Re: Causes of thin spots?](#)

Insufficient dough absorption is just another way of saying that sufficient water has not been added to the dough to make it sufficiently malleable to be opened easily. I realize that water/absorption is only part of that equation but if the absorption isn't correct for the flour being used the dough will always tend to fight you during the opening process rather than stretching out evenly for a more uniform skin.

Tom Lehmann/The Dough Doctor

1377

## [Dough Clinic / Re: Cooking lower and slower in wood fired/gas rotating](#)

## oven

Sure you can, done it any number of times. You can also experiment with baking your pizzas on a screen and then decking them for the last 15 to 20-seconds.  
Tom Lehmann/The Dough Doctor  
1376

## New York Style / Re: NY pizzeria yeast amount

I normally use 0.375% IDY for a 24-hour cold ferment.  
Tom Lehmann/The Dough Doctor  
1375

## Dough Clinic / Re: Causes of thin spots?

Do you keep a 500-gram bag or individual packets in the Mason jar?  
Tom Lehmann/The Dough Doctor  
1374

## New Forum Members / Re: New User - Hot Shop

I've written a couple of articles on ovens. The air impingement ovens are by far the best ovens for DELCO shops as they give you the driest pizzas possible, deck ovens are not as well suited to DELCO as they are not as good at providing a dry pizza which is important in this application.

Tom Lehmann/The Dough Doctor  
1373

## Other Types / Re: Breakfast Pizza

We did it for many years. While we had some success using raw eggs we had a better product using scrambled eggs as a topping. There was a pizzeria in the Columbus Convention Center Food Court that served a breakfast pizza.  
Tom Lehmann/The Dough Doctor  
1372

## Chicago Style / Re: Petezaa's deep dish with semolina

From the picture I would not have pressed the dough down either, I do like to pull the dough up onto the sides of the pan so they are a little thinner but that's just a personal preference. Overall, that's a good looking deep-dish pizza. :drool:  
Tom Lehmann/The Dough Doctor  
1371

## Other Types / Re: Breakfast Pizza

For sausage I like to use breakfast sausage, and for my potatoes I use frozen hash browned potatoes, crispy fried bacon bits fresh tomato slices and some cheddar cheese. They're also good with a TEX-MEX twist by using 25% Maseca Flour to replace an equal amount of white flour in the dough formula and using picante sauce for the sauce.

Tom Lehmann/The Dough Doctor  
1370

## General Pizza Making / Re: Pizza Screens

Two things to remember about screens.

- 1) If you are going to be baking on them ALWAYS season the screens first and then DO NOT wash them as you stand a good risk of the seasoning peeling off.
- 2) Don't proof directly on the screen as the dough can flow into the screen openings and expand during baking effectively locking the pizza to the screen.

However, if you transfer the skin to another screen (this places the raised spots there the dough flowed into the screen openings off register) you can store pre-opened skins on screens and you can even proof the dough to some extent providing the dough absorption isn't too high to allow the dough to flow into the screen openings.

Screens are also great for baking bread sticks and calzones too, and if you're baking pan style pizzas in a deck oven or on a stone/steel slip one under the pan to control the bottom heat so you don't get too much bottom crust color or worse, a burnt bottom crust.

Tom Lehmann/The Dough Doctor  
1369

### **Shop Talk / Re: Cleaning Pans - What's the best method?**

For the Lloyd's pans you can dip in hot soapy water, scrub with a soft plastic bristly pot brush, rinse and sanitize then wipe dry. For the old seasoned pans NEVER put them into water (if you do the seasoning will begin to come off like a bad sunburn and you will need to strip them back down to bare metal before re-seasoning). Just wipe out with a dry bar towel and you'll be just fine. IF you should ever need to wash the seasoned pans here's how:

Grasp pan in hand, dip in soap water, lightly scrub with a soft plastic bristle pot brush, dip in rinse, dip in sanitizer solution, wipe dry, place in oven at 350 to 400F for force dry. Please note that at NO TIME did I say to release your grip on the pan, after picking it up the only time you will put it down is when you place it in the over to force dry.

Tom Lehmann/The Dough Doctor  
1368

### **Dough Clinic / Re: when to add salt and oil to dough?**

Using the delayed salt addition mixing method is fine if you are making bread where you actually want to have significant gluten development but when making pizza dough where you DO NOT want to have significant gluten development in the dough during mixing, the salt is best added in the water for machine mixing or in the flour when hand mixing. If you are using a coarse granulation salt it should be dissolved in a small portion of the water and added soon after incorporating the flour. We don't like to add the oil to the water since it will float on top of the water and when you add the flour a portion of the flour will become oil soaked rendering an unknown portion of the flour incapable of absorbing its full amount of water and more importantly that portion of the flour which has been oil soaked will not be able to develop gluten. What this all leads up to is a greater level of inconsistency in your doughs.

Tom Lehmann/The Dough Doctor  
1367

### **Neapolitan Style / Re: How much of what is in the can do you use?**

Here's what I do personally. Remove the tomatoes from the can and tear into pieces, place into colander to drain for 20-minutes +/-, add a little salt and mash slightly then apply to the pizza skin. Save the juice for the next time you make pasta.

Tom Lehmann/The Dough Doctor  
1366

### **Dough Ingredients / Re: The effect of yeast percentages on taste**

Personally, I think you like the flavor from fermentation ^^. You're not alone in your preference either as most of us here have similar tastes. You will probably want to look at a 48-hour fermentation period as this provides many of the finished product flavor characteristics you have experienced. You can certainly go to a longer fermentation period too, it all depends upon personal tastes, formulation and how the dough is being managed. At some point you might want to try your hand at making a sourdough crust to see if you like that kind of fermentation flavor profile too as it is entirely different from that achieved from using commercial yeast.

Tom Lehmann/The Dough Doctor  
1365

### **Dough Clinic / Re: First attempt at making dough**

It sounds like your flour might be too strong so first thing I would do is to see if you can find a lower protein/weaker flour to try. You can also experiment using your existing flour and increasing the finished dough temperature by increasing the water temperature in 5F increments. This will provide for a faster fermentation rate so the dough will receive more total fermentation within a 24/48-hours period of time. Be sure to measure and record the finished (mixed) dough temperature when doing this. The use of a "00" flour will also provide for a more extensible dough but at a higher cost. If you experiment with this type of flour, unless your oven can get up to at least 800F/427C you will need to add at least 2% sugar to the dough formula or a small quantity (0.25%) of a 20-L diastatic malt powder, this is because the "00" flours are not malted so the yeast will run out of nutrient during the fermentation period and the finished crust will be severely lacking in crust color. Once you get the dough details worked out you can divide the dough into individual pieces, form into balls, wipe with oil and place into individual plastic bags to cold ferment (this process has been discussed here a number of times), then just remove from the fridge and allow to warm to 60F/15.5C, turn the dough out of the bag onto a floured surface and begin opening the the dough ball into a pizza skin.

One last thought, another reason why your dough might be difficult to open would be due to insufficient dough absorption. Again, using your existing flour, increase the dough absorption by 5%, this will provide a softer dough that might prove easier for you to open, again, if you need to add more than 5%, do so by all means but only work in 2% increments after the initial 5% increase. Every flour has a "sweet spot" when it comes to dough absorption so you'll need to experiment to determine what it is for YOUR flour, using YOUR dough formula, using YOUR dough management procedure, and YOUR skill set for the type of pizza YOU want to make.

Tom Lehmann/The Dough Doctor  
1364

### **Dough Clinic / Re: when to add salt and oil to dough?**

In my response cited by Peter I explained how the delayed salt addition mixing method impacts gluten development and development of a lighter dough color as well as a lighter crumb color in the finished product. While this might have validity in bread production it has essentially no validity in pizza production, the reason being that in pizza the dough is never mixed enough to achieve the oxidation by exposure to air during mixing (explained in my response) and any change to a brighter crumb color is all but impossible to distinguish in the crumb structure of a pizza crust (in bread it is easy to see, but not in a pizza crust). As for flavor, the shift in flavor is much too subtle to detect in a dressed pizza (again, bread is a

different story). In my opinion, the delayed salt addition mixing method has no real value in making pizza doughs, and the greatest challenge when using the delayed salt addition mixing method whether it be for bread or any other dough application is in not having a pre-scaled portion of salt left over at the end of the production run, Oops! With all of this said, there is one place where the delayed salt mixing method IS almost universally used in dough production and that is in commercial frozen dough production (both bread and pizza). When making these doughs the absorption is minimized to some extent to help control ice crystal development in the dough and the doughs are mixed very cold (60 to 65F) with full gluten development being the objective. This means that the dough is going to be VERY tough and difficult to mix (specially designed mixers are employed) so steps are taken to help reduce the mixing time, these steps are use of the delayed salt addition mixing method as well as inclusion of a dough reducing agent such as L-cysteine/L-cysteine hydrochloride or glutathione (dead yeast) or even possibly deodorized vegetable powder (onion and garlic). This just further reinforces my observation that was responsible for me getting into pizza research back in the early 1960's, that observation was that bread and pizza technologies are very different.

Tom Lehmann/The Dough Doctor  
1363

### **Dough Clinic / Re: First attempt at making dough**

The REALLY great thing about working in bakers percent is that it allows you to change any one ingredient (like water) without changing any other ingredient amount, so no, don't change anything but the amount of water being added to the dough. As many people here will attest to is the fact that I personally like to use individual plastic bags to store my dough in. The bags are like bread bags and can be bought at your local supermarket as food storage bags, they come on a roll and sell for only a couple of dollars. Hopefully you will have them available to you, but if not you can use any low cost, stackable, plastic food storage box with a snap on lid. Just be sure to put a couple of small holes in the lid to release pressure and then be sure to leave the lid off for the first 2-hours after placing them in the fridge, after that they can be lidded for the duration of refrigerated storage. Be sure to lightly oil the dough ball just before placing it in the box to prevent drying while the lid is off and to facilitate removing the dough from the box/bowl.

Tom Lehmann/The Dough Doctor  
1362

### **Dough Ingredients / Re: The effect of yeast percentages on taste**

The real flavor/taste of raw yeast is much like that of musty newspapers. Some restaurants use frozen dough for their dinner rolls and the finished rolls have a very distinctive "yeasty" flavor owing to the fact that high levels of yeast and little to no fermentation is used in making frozen dough. What you are tuning in to are the flavors resulting from the by-products of fermentation. Buy a frozen bread dough, slack it out and make a pizza with it and you will get the same flavor profile, I've heard it likened to that of home made bread too (like Grandma used to make), that's because many home bread recipes use a lot of yeast and short fermentation times (just like that frozen dough mentioned above). It doesn't surprise me at all that you like a sourdough flavor since it's something like an exaggerated fermentation flavor. Those who like a well fermented flavor usually appreciate a sourdough flavor but those who think a well fermented flavor is like smelling a brewery generally don't appreciate a good sourdough flavor.

Tom Lehmann/The Dough Doctor

1361

### **Dough Ingredients / Re: The effect of yeast percentages on taste**

The yeast itself has nothing to do with it, pizzerias use the same yeast that is used by many home pizza makers, be it CY, ADY or IDY, but like other things in life, it ain't what you got that counts, its how you use it. Most pizzerias will use dough with anything from 24 to 72-hours cold fermentation time. Could they be using an inactive sourdough? Sure they could. We just recently had some discussion here on one from Lesaffre/SAF Yeast. Since dough becomes more acid the longer it ferments and acid is tart, the sweetness you mention is confusing because sweet is just the opposite of tart. You also mention "savory" which is not usually mentioned when describing crust flavor so I'm wondering if you are not being confused by possibly the flavor of the sauce which they use which might be described in those terms (sweet and savory).

Tom Lehmann/The Dough Doctor

1360

### **Dough Clinic / Re: Forgot to knead before first rise**

Here is my home made hand mixed dough process;

Put 75F water in bowl

Add salt and sugar (if used).

Put yeast in a small portion of water at 100F, stir to suspend and allow 10-minutes to hydrate & activate.

Pour yeast suspension into the dough water in the bowl.

Using a wood spoon mix well to incorporate.

Scrape dough out of the bowl onto a floured surface and knead for a minute or two.

Form into a ball and place into lightly oiled bowl (I re-purpose my mixing bowl).

Allow to ferment at room temperature for 1 to 2-hours (not critical).

Turn dough out of the bowl onto a floured surface and knead several minutes just until the dough becomes smooth.

Lightly oil the dough ball and place back into the bowl to ferment for desired length of time or place into bread bag and refrigerate for 24 to 72-hours before use.

So, to answer your question, I would have kneaded it a few minutes until the dough took on a smooth appearance and placed it back into the bowl or a plastic bag (Walmart bags work in a pinch) to continue fermenting for the desired length of time.

Tom Lehmann/The Dough Doctor

1359

### **Dough Clinic / Re: Need More Flavor**

1) Go to 72-hours cold fermentation.

2) Utilize a sourdough starter in place of the IDY you are presently using.

3) Increase the olive oil to 2%. Try using a pomace grade olive oil as it has a more "robust" flavor.

4) Baking has a significant impact on crust flavor but you didn't provide any details so I cannot comment but make sure the crust is getting a good, solid bake with a little char if possible.

Tom Lehmann/The Dough Doctor

1358

### **Dough Clinic / Re: Need More Flavor**

You're already over dosed on the diastatic malt and there is no benefit to using

honey over regular table sugar so my advice is to delete the honey, reduce the diastatic malt to 0.25% and add 4% table sugar then adjust as necessary. I'm guessing that the lack of browning is why you're not getting the flavor profile you're looking for. Are you baking on a stone or steel? In not how are you baking your pizzas?

Tom Lehmann/The Dough Doctor  
1357

### [\*\*Dough Ingredients / Re: The effect of yeast percentages on taste\*\*](#)

Remember, oil retains flavor compounds released during baking, that's why my mother always told us kids to "keep the butter dish covered in the fridge". Ever have a slice of wedding cake that tasted like a cigarette? Yep, the fat in both the cake and the icing retained all of those wonderful aromas of that smoke filled room. Try as you might, you cannot remove the flavor compounds absorbed into the crust during baking.

Tom Lehmann/The Dough Doctor  
1356

### [\*\*Dough Clinic / Re: Need More Flavor\*\*](#)

Hopefully at least 1/4-inch or thicker. Be sure to allow at least an hour for it to thoroughly heat up and if at all possible, if you have a bottom burner or heating element in your oven, move it close to the bottom heat source for the first part of the bake then move it to a higher rack position for top color.

Tom Lehmann/The Dough Doctor  
1355

### [\*\*Dough Clinic / Re: Why does the top of the dough ball become the bottom of the pizza?\*\*](#)

We've discussed this a few times before and if you ask ten different people you will probably get at least five different answers. My procedure is to begin opening the dough ball with the top side down as less dusting flour is required (more flour adheres to the rough bottom than the smooth top) and then flip the partially opened skin over to finish opening then turn it over again for docking and/or dressing. This means that the skin ends up top side down (bottom side gets dressed). In tests that we did at AIB we found that we got fewer bubbles (large bubbles), less sticking to the peel and if there was any drying of the dough ball the dry, scaly dough skin was on the bottom of the finished pizza where it posed no problems.

Note: When plastic bagging the dough there is no top or bottom to the dough ball so this becomes a moot issue in that case.

Overall, it doesn't seem to be an overly critical issue which side goes up or down as long as you're not experiencing problems cited above and you're happy with the finished pizza.

Tom Lehmann/The Dough Doctor  
1354

### [\*\*Dough Ingredients / Re: The effect of yeast percentages on taste\*\*](#)

When you open an oven in which pizzas are being baked the aroma is wonderful! Those are the aromatic compounds which are retained in the oils, even just a small amount of fat in the dough will retain these compounds, those which are not retained are lost forever which makes for a pretty good case for adding some oil to the dough formula.

Tom Lehmann/The Dough Doctor

1353

[\*\*Starters/Sponges / Re: Does Anyone 48 Hour or More CF with Ischia \(or other\) Starter?\*\*](#)

Most starters as well as doughs leavened only with a sourdough starter typically don't do all that well in a cold fermentation environment, and if you spike the dough with yeast the yeast will quickly become the dominant micro-organism resulting in a loss of a lot of the flavor notes derived from the starter.

Tom Lehmann/The Dough Doctor

1352

[\*\*Dough Clinic / Re: Causes of thin spots?\*\*](#)

Q.J.;

You took the words right out of my mouth! :-D

Tom Lehmann/The Dough Doctor

1351

[\*\*Prep Equipment / Re: Seasoning aluminum peel\*\*](#)

Ditto! Tried it once and until the seasoning fully cured it was indeed worse, that's the "good" news, the "bad" news is that it seemed to take forever for the seasoning to fully cure.

Tom Lehmann/The Dough Doctor

1350

[\*\*Dough Clinic / Re: Yeast measurement\*\*](#)

Suspending the yeast in a quantity of water and then using a portion of that water will work fine. Here are some things to keep in mind if you opt to go that route.

- 1) Make sure that the water you suspend the yeast in is 100F if using ADY or IDY. You don't have to worry about water temperature if using CY.
- 2) Remember to include the water that the yeast is suspended in as part of your dough water/absorption.
- 3) If using ADY be sure to allow 10-minutes to activate and hydrate the yeast. This is not necessary if using IDY.
- 4) ALWAYS stir the yeast suspension well immediately before you subdivide it.

Here is a simple example of how to make a yeast suspension and subdividing it for a smaller yeast amount.

50-grams of water (weighed).

1-gram yeast.

Stir well to suspend the yeast in the water.

Allow to activate if using ADY.

Stir well.

Weigh desired amount.

In this case every 5-grams of the solution will provide approximately 0.1-gram of yeast, if your scale will weigh out to 1-gram accurately you are able to weight the yeast out to 0.1-gram divided by 5 = 0.002-gram.

While not as accurate as a good scale this method is plenty accurate for home use.

Tip: A trip to The Dollar Store will get you a package of small, plastic communion cups that work great for weighing out small amounts of liquid, just remember to rinse the cup with the remainder of the dough water.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

1349

## [\*\*Dough Clinic / Re: How to determine internal Dough ball temp before opening\*\*](#)

Your IR thermometer only measures surface temperature, you want to measure the internal temperature of the dough ball which is different from the surface temperature. A low cost dial/stem type thermometer is what you want to use to measure the internal dough ball temperature.

Tom Lehmann/The Dough Doctor  
1348

## [\*\*Prep Equipment / Re: Seasoning aluminum peel\*\*](#)

Wood peels are used as a prep peel and metal blade peels are your oven peels (for removing baked pizzas from the oven).

Tom Lehmann/The Dough Doctor  
1347

## [\*\*Dough Clinic / Re: Doctor, where is the mistake\*\*](#)

I think this will help you a lot;

- 1) Adjust the yeast level to 1% compressed yeast/CY OR 0.5% active dry yeast/ADY OR 0.4% instant dry yeast/IDY. Be sure to remember to activate/hydrate the ADY prior to addition.
- 2) Adjust the water temperature to give you a finished dough temperature (after mixing) of 75 to 80F/23.8 to 26.6C.
- 3) Immediately after mixing divide the dough into desired weight pieces for the size pizza you are going to make.
- 4) Form each piece into a ball.
- 5) Lightly oil each dough ball and place into individual plastic bags (like bread bags).
- 6) Twist the open end of the bag into a pony tail and tuck it under the dough ball as you place it into the fridge.
- 7) Allow the dough balls to cold ferment (CF) for a minimum of 24-hours (48-hours is better). Experiment to find what works best for YOUR specific dough.
- 8) To use the dough, remove from the fridge, allow to warm AT room temperature for 2-hours.
- 9) Turn the dough out of the bag allowing it to drop onto a floured surface.
- 10) Open the dough ball into a skin by your preferred method.
- 11) Dock the dough skin or begin dressing the skin.
- 12) Take dressed skin to the oven for baking.

Tom Lehmann/The Dough Doctor  
1346

## [\*\*Dough Clinic / Re: Store bought dough would not create crisp crust - suggestions appreciated\*\*](#)

The dough you bought was it frozen bread dough or frozen pizza dough? The reason why the dough was so easy to open is because it had a good healthy dose of a dough relaxer (used as a processing aid when making frozen dough). The dough relaxer (L-cysteine or dead yeast) are the most commonly used. Look on the package ingredient declaration to see if L-cysteine appears. If dead yeast is used it does not need to be declared separately as it is included in with the live/active yeast. Further, frozen dough has essentially NO fermentation time on it. I think this is what is causing the issue for you. To use frozen dough and get a better product try this:

- 1) Slack out the frozen dough by placing it in the fridge over night.
- 2) Remove the dough from its packaging, lightly oil it and place in a fermentation

container (bowl, bag, etc).

3) Place at room temperature for 1-hour (make sure the dough is covered).

4) Place the dough back into the fridge for 24-hours to cold ferment.

5) Remove the dough from the fridge and allow it to warm until the internal dough ball temperature reaches something in the 50 to 60F range.

6) Turn the dough out of the container onto a floured surface and proceed to open into a skin for immediate use.

We developed this procedure back when we did pizza seminars at AIB and it worked quite well for us as we demonstrated the use of frozen dough to our students.

Tom Lehmann/The Dough Doctor  
1345

**Dough Clinic / Re: Store bought dough would not create crisp crust - suggestions appreciated**

Steve;

Refrigerated dough is a whole different store from frozen dough. It is most likely made in-house as it's made with IDY, the last five words in your response told me that. In any case, the dough is waaayy short on fermentation, it's not too much more than a glorified emergency dough. The next time you use it try allowing it to ferment in the fridge for 48-hours before using it. Let's see if that improves the finished crust in any way.

Tom Lehmann/The Dough Doctor  
1344

**Dough Clinic / Re: Inconsistent Cook on Bottom of Pizza**

I think I might know what's happening but first, can you please send a picture of the bottom of a pizza where this is occurring so I take a look at it? Just pop the entire pizza out of the pan and invert it then take a couple of photos of it.

Tom Lehmann/The Dough Doctor  
1343

**Dough Clinic / Re: when to add salt and oil to dough?**

If you are having a problem with the turning peel you're probably not allowing the pizza to set long enough before moving or spinning it.

Tom Lehmann/The Dough Doctor  
1342

**Dough Ingredients / Re: The effect of yeast percentages on taste**

It's not the age of the oven, it's the heat/temperature in the oven that is both creating and releasing those aromas. There is a point of diminishing returns when it comes to oil and retention of those aromatics. Our research showed that 1.5% (flour basis) was the tipping point, beyond that we didn't detect any appreciable increase in crust flavor/aroma. A bunch of years ago I did work on Paradise Island, Bahamas for a locally owned pizza chain. One of the things I was asked to address was the lack of flavor in the pizzas, when addressing this all I did was to include 1.5% oil in the dough formulation and that was all that was needed to give them the flavor profile they were looking for. Sometimes things are easy, sometimes they ain't.

Tom Lehmann/The Dough Doctor  
1341

**Newbie Topics / Re: Are American Pizzas (New York etc) made with hard or**

## [\*\*soft wheat?\*\*](#)

Hard wheat varieties are used for 100% of the bread and pizza flours in the U.S. Most bread flour are milled from either straight HRW (hard red winter) or a blend of HRW and HRS wheat varieties while the high protein/gluten flours are milled exclusively from HRS (hard red spring wheat) varieties. Over the past few years there has been growing use of HWW (hard white wheat) varieties in making flour but for now these wheat varieties are relegated mostly to making whole grain/whole-wheat flours. In Australia the use of HWW is almost exclusive to all types of bread and pizza flour.

By the way, All Trumps flour is the main flour used in New York and AT flour is milled from varieties of HRS wheat.

Tom Lehmann/The Dough Doctor  
1340

## [\*\*Dough Clinic / Re: Doctor, where is the mistake\*\*](#)

That's impossible for me to say as every flour has an "optimum" absorption. My "go to" absorption is 62% and from there I decide if I need to further increase or decrease the absorption to achieve desired dough handling and performance characteristics.

Tom Lehmann/The Dough Doctor  
1339

## [\*\*Newbie Topics / Re: Are American Pizzas \(New York etc\) made with hard or soft wheat?\*\*](#)

Wheat as we know it and durum are two entirely different animals. The gluten formed from the durum wheat has a very tough and rubbery characteristic. The hard wheat varieties grown in the U.S. are bred for a specific purpose or characteristic. Most commonly bread making properties, yield, agronomic characteristics as well as resistance to pests and disease.

Tom Lehmann/The Dough Doctor  
1338

## [\*\*Dough Clinic / Re: Inconsistent Cook on Bottom of Pizza\*\*](#)

Those are from gas pockets being formed on the bottom of the crust. Reduce the dough absorption by 3% to see if that improves the situation, if you see some improvement you might need to make further reductions in dough absorption.

Tom Lehmann/The Dough Doctor  
1337

## [\*\*Dough Clinic / Re: Inconsistent Cook on Bottom of Pizza\*\*](#)

I forgot to add that this can also be caused by placing the pan directly on a hot deck. Place a screen under the pan for the first five minutes of the bake then complete the bake on the deck if you want to. The rapid heat transfer results in gas bubbles coalescing into large gas pockets which you are seeing, placing a screen under the pan reduces the rate of heat transfer thus eliminating the problem.

Tom Lehmann/The Dough Doctor  
1336

## [\*\*Dough Clinic / Re: Some issues I've been having, dough rising a lot, hard to stretch, crust forming\*\*](#)

OMG! Where to begin, can you share your dough formula and dough management procedure as well as finished dough temperature? And then there's the matter of the yeast, 1% IDY is wwaayy too much for the average pizza dough. Instead, the

amount of IDY should be something between 0.15 and 0.4% depending upon how the dough is being managed.

Tom Lehmann/The Dough Doctor  
1335

**General Pizza Making / Re: Urban myth or truth? Different dough served in the pizzeria and in delivery**

Delivery v/s dine-in pizza.

- 1) In commercial practice they are both made using the same dough as it would create a nightmare trying to use different doughs.
- 2) This is not to say that DELCO stores don't use a dough formula developed to be more compatible with the rigors of DELCO, they sometimes do.
- 3) The changes made for a specific DELCO application are to use a slightly thicker crust, think Domino's.
- 4) Lightly oil the skin prior to dressing.
- 5) Go easy on the sauce and toppings.
- 6) Use an air impingement oven as opposed to a deck oven to achieve a drier pizza.
- 7) Allow pizzas to steam off prior to boxing.
- 8) A cut pizza tends to hold up better but your customer will dictate what they want in this regard.
- 9) Boxes to have steam vents.
- 10) Ripple sheets or Pizza Savors are an asset.

Note: A lower protein content flour might benefit DELCO pizzas by reducing chewiness (#1 complaint of DELCO pizzas).

We discussed all of this not too terribly long ago.

Tom Lehmann/The Dough Doctor  
1334

**Dough Clinic / Re: Some issues I've been having, dough rising a lot, hard to stretch, crust forming**

The missing piece to the puzzle was the finished dough temperature. If the dough balls are expanding too much it might be due to the finished (mixed) dough temperature being too high or you are covering the containers right away as you place them into the fridge, instead, cross-stack them (just another way of saying to leave the containers open until the internal dough ball temperature reaches 50F/9.9C) this usually takes 2 to 3-hours, then proceed with covering the containers aka "down-stacking" for the duration of the CF period.

Tom Lehmann/The Dough Doctor  
1333

**Dough Clinic / Re: Inconsistent Cook on Bottom of Pizza**

Absolutely! Adding more water actually reduces the energy input into the dough due to the softer dough condition. When mixing pizza dough just mix it until you achieve a smooth, satiny appearance to the dough. You will find that as you continue to mix the dough it will become progressively smoother in appearance and become MUCH easier to work with immediately after mixing. Your mixing time should be in the range of 9 to 11-minutes. If you stop the mixer every 2-minutes, or so, you will be able to see the dough becoming less sticky as you handle it.

Tom Lehmann/The Dough Doctor  
1332

**Dough Clinic / Re: Flour specs like W, P/L and others**

The Alveograph is seldom used as a testing/measurement tool with American flours, with the quality of protein in these flours it really isn't necessary. To a great extent U.S. flour quality as well as dough quality characteristics are pretty well tied in to protein content of the flour. This is not the case with most European flours which are made from varieties of wheat having significantly different protein/gluten attributes so the Alveograph is much better suited to differentiating quality characteristics between different flours. You might want to do a search to see if you can find a cereal research facility such as the Canadian Grain Research Facility in Winnipeg, Manitoba, Canada. There is also a facility in France as well as in the U.K (Leatherhead), Australia also has one called the BRI (Bread Research Institute). I would think that a research facility near you with access to your local flours would be able to answer your question. As a side note: A good number of years ago France was buying a significant amount of U.S. wheat (DNS #2) dark northern spring wheat #2 (the most common exported wheat from the U.S.) U.S. Wheat Associates asked me to travel to France to survey the wheat/flour market to get a better grasp of where/how all of this wheat was being utilized. France, at the time was claiming that they had the best flour in Europe, or something to that extent. So where was a large portion of all that wheat going? Turns out it was being milled and blended into the local French flour to improve its overall baking properties and sold as French flour. I have no idea if this is still the case or not as it has been too many years since then. The point is that you might find a pretty decent flour with a lot of the DNA of a U.S. flour being marketed as domestic flour.

Tom Lehmann/The Dough Doctor  
1331

#### **Dough Clinic / Re: Bulk RF vs Balled CF Need Help Please**

I agree with Yael that 0.8% ADY is excessive for a 24-hour CF dough. The most I typically use is 0.5% but that amount can change depending upon the finished dough temperature. You also stated that the dough balls flowed together so I'm assuming (we all know what that means :D ) that you're using dough boxes. I didn't see any mention of cross-stacking the dough boxes when placing them into the cooler, are you cross-stacking? If so for how long? Not cross-stacking long enough is as bad as not cross-stacking so the time is an important too. One common error associated with not cross-stacking or not cross-stacking long enough is associated with the dough blowing. To correct this the yeast is reduced (sometimes to ridiculously low levels) which addresses the blown dough but now there isn't sufficient yeast to provide the necessary leavening during the critical oven spring stage of baking which results in setting the stage for the "dreaded gum line" and a tough, chewy finished crust.

Tom Lehmann/The Dough Doctor  
1330

#### **Prep Equipment / Equipment from AIB is now for sale online.**

For anyone interested, AIB (American Institute of Baking) is selling their equipment from one of the training labs. To see the online auction go to: <equipbid.com/manhattan kansas> and look for the AIB heading.

Tom Lehmann/The Dough Doctor  
1329

#### **Dough Clinic / Re: Flour specs like W, P/L and others**

U.S. and Canadian flours are all milled similarly (Manitoba) I'm betting money on this, is probably a Canadian milled flour, as such it would be a hard red spring wheat variety and most likely be of high protein content, I'm guessing around

13+%. As to particle size distribution in a typical U.S. / Canadian flour the range will be from about 15 to 220-microns with most of it clustered around 100 to 150-microns in size. I have not seen any particle size distribution data on European or Italian flours so I don't know how they would compare.

You have to remember that when it comes to wheat flour it's a lot more than just protein content and particle size, genetics plays a huge part in the quality picture. U.S. and Canadian wheats have been bred for very specific characteristics (crop yield, disease and pest resistance, resistance to drought, maturity, protein content and protein quality (as it relates to stronger gluten). Other countries have different flour needs so they have developed their wheat varieties to have different characteristics which may or may not be compatible with pizza production.

Tom Lehmann/The Dough Doctor  
1328

**Dough Clinic / Re: Best Practices for hand-stretching bases in advance ?**

What we regularly do is to open the dough balls into skins, place the skins on screens and put the screens with the opened skins into a wire tree rack and place in the cooler (uncovered for 30-minutes) then cover with a plastic bag until ready to use. To use the pre-opened skins, remove from the cooler and remove skin from the screen, dock the skin and place on a dusted peel or a baking platform, dress to the order and bake. We have used this ourselves at pizza shows and at stores where the staff gets slammed at "crunch" time. The process works quite well.

Tom Lehmann/The Dough Doctor  
1327

**Dough Clinic / Re: Some issues I've been having, dough rising a lot, hard to stretch, crust forming**

Those dough balls look really under fermented to me!

Tom Lehmann/The Dough Doctor  
1326

**Dough Clinic / Re: A question about Pizza dough**

Dry yeast: is it IDY (instant dry yeast) or ADY (active dry yeast)?

What is your water temperature?  
Tom Lehmann/ The Dough Doctor  
1325

**Dough Clinic / Re: Inconsistent Cook on Bottom of Pizza**

With your reach-in cooler a finished dough temperature in the 70 to 75F range will work much better for you.

Tom Lehmann/The Dough Doctor  
1324

**Dough Clinic / Re: 70% hydration dough not coming together in Kitchen Aide Mixer**

Does your KA mixer have a "J" hook or a reverse spiral dough arm? With higher absorption doughs I've found a "J" hook and spiral dough arm to be a difference without a distinction due to the small diameter of the mixing attachments. Still, the reverse spiral dough arm will perform better at developing the gluten than the "J" hook. If it will perform good enough to form a cohesive dough using your flour and dough formula remains to be seen. Keep in mind that high absorption doughs do require longer mixing times than lower absorption doughs do there is a possibility that you are just not mixing the dough long enough to sufficiently develop the

gluten allowing for the formation of a dough ball in the mixer. Aside from that, you are adding a lot of malt and also a lot of sugar to the dough formula which is giving you a sweet taste in your finished crust and depending upon your oven and baking conditions, a dark crust color.

Tom Lehmann/The Dough Doctor  
1323

**Dough Clinic / Re: Is there any problem with this dough and if yes, which?**

The dough looks pretty good to me.  
Tom Lehmann/The Dough Doctor  
1322

**Starters/Sponges / Re: Poolish Experiment with Question!**

Unless the whole-wheat flour was malted the poolish with ADY most likely ran out of nutrient for the yeast after around 6-hours while the poolish with the sourdough starter was based on bacterial fermentation, not yeast fermentation so it didn't need a source of amylase enzyme to convert starch to sugars for the yeast to feed upon during the fermentation period. In essence you were comparing apples to watermelons since the mechanism for fermentation between the two tests/doughs is so different. The stickiness of the sourdough fermented dough was due to the acidity of the dough which breaks down the protein rendering a weaker or very poor gluten film depending upon the quality of the protein in the flour being used.

Tom Lehmann/The Dough Doctor  
1321

**Dough Clinic / Re: Best Practices for hand-stretching bases in advance ?**

The picture that you've attached is that of the type of tree rack to which I was referencing.

Tom Lehmann/The Dough Doctor  
1320

**Dough Clinic / Re: Doctor, where is the mistake**

I agree with Yael in that while All Trumps flour (14+% protein content) is the gold standard for making N.Y. pizzas in N.Y.C. it is not really necessary to use such a high protein flour. When we did our pizza seminars we made great N.Y. pizzas using flours in the 12.2 to 12.8% protein range (U.S. flours). The main advantage to using a very high protein flour in this case is to achieve the desired fold ability and chew that one has come to expect from N.Y. pizzas. However, we found that today, not everyone appreciates that amount of "chew", so we are seeing more N.Y. "style" pizzas being made using lower protein flours which still produce pizzas with all of the desired characteristics but with less chew.

Tom Lehmann/The Dough Doctor  
1319

**Starters/Sponges / Re: Poolish Experiment with Question!**

Peter;  
Good point!

It takes about 45-minutes for whole-wheat flour to fully hydrate so both experiments should have been on an even footing BUT if the dough absorption was NOT optimized for the inclusion of the whole-wheat flour you are correct in that it might have been sufficiently low in absorption to exhibit an inhibiting effect on the rate of fermentation in the dough made with the yeast. We typically do not see much of an inhibiting effect due to low absorption when sourdough starters are

used due to the nature of the bacteria as opposed to yeast cells.

Tom Lehmann/The Dough Doctor

1318

### **Starters/Sponges / Re: Poolish Experiment with Question!**

Your assumption is absolutely correct. In commercial bread making where sponges rule the game we do essentially this very thing by adjusting the percent of the total flour in the sponge to balance the desired dough/finished product characteristics.

For example, when making white pan bread a 70/30 sponge dough system is typically used since it provides a good balance of dough handling properties and dough strength needed to withstand the mechanical shock/impacts encountered when the fully proofed dough is conveyed to the oven for baking while still providing a finished loaf with all of the desired finished product characteristics. Hamburger buns, on the other hand, are typically made using an 80/20 sponge dough process (80% of the total flour is in the fermented sponge), this is because in the production of hamburger buns a very soft and extensible dough is needed to provide the desired symmetrical shape and since the dough is not proofed to the height of a bread dough it is less prone to mechanical shock damage (generally defined as collapse) than dough used for white pan bread production.

Tom Lehmann/The Dough Doctor

1317

### **General Pizza Making / Re: Difference on impact from stretch and fold**

When we studied hand mixing techniques back in the 1980's we found that the critical aspect to stretch and folds was that sufficient time was allowed between stretch and fold session for the dough to sufficiently relax. Failure to do so resulted in the dough becoming progressively tighter with each stretch and fold session until the dough became unmanageable. The time needed for the dough to relax was variable and dependent upon flour strength, dough formulation, dough temperature and environmental temperature.

Tom Lehmann/The Dough Doctor

1316

### **Dough Clinic / Re: Doctor, where is the mistake**

Just to weigh in here, North American flours are tailored specific to the needs/demands of North American bakers, in general it might be said that they are designed specifically for use in high speed, automated bakery operations. If a lower protein flour option is selected such as one made from varieties of hard red winter wheat (typically 10.2 to 11.2% protein content) the flour becomes more applicable to both home and small scale bakery operations however it must be remembered that essentially all bread flours, regardless if they are made with hard red spring wheat, hard red winter wheat or hard white winter wheat or a blend of them, are genetically designed to have protein properties that are strong and elastic with excellent resistance to over mixing and over fermentation, that's just the nature of the beast. When McDonalds (hamburger chain) went International I was on the Bakery Products Task Team, our job was to show local bakers/bakeries how to make a "McDonalds Bun". These buns were at first brought in frozen from a bakery in the U.S. or some other location until a specific number of stores were opened, then a large automated bakery was built specifically for the dedicated production of McDonalds hamburger buns (France, U.K., Germany, Turkey, Russia, to name but a few). In most cases bakers didn't even know what a hamburger bun was, let alone a "McDonalds Bun", and in all cases their local flours were not suited for the production/high speed production of the buns. This meant that we also had to work

with the local flour mills to arrange for the correct type of wheat to be imported and milled to U.S. specifications, we were then able to work with the individual bakeries to produce the desired quality "McDonalds Buns" which were then distributed to the local McDonalds stores. As we brought more commercial bakeries on-line we didn't need to bring in frozen buns from the States anymore (damned expensive to air-ship frozen hamburger buns half was around the world). Today there is a network of commercial bakeries producing McDonalds Buns around the world with most, of them using a flour that was not even available to them back in the 1980's. Since McDonalds is said to be the second largest user of wheat flour in the world (think of that, it's pretty impressive) some countries may have started planting North American wheat varieties while others, even today, I am sure are still importing wheat specifically for this application. By the way, Weber Bros. Bakeries was the first German bakery to produce McDonalds Buns. and France was the last country that we built a bakery in and trained their production personnel before the team was disbanded. Just for the record, Australia and New Zealand were the most challenging but also the most rewarding, and Panama was the funniest by far! Czechoslovakia and Slovenia were the most interesting and scary but that's another story.

Tom Lehmann/The Dough Doctor  
1315

**Prep Equipment / Re: Equipment from AIB is now for sale online.**

Thanks Craig, I'm familiar with essentially all of the equipment shown, you can safely consider it to be very lightly used and very well maintained (remember, AIB was a show place too). If anyone has a sincere interest in buying something and has any questions about it feel free to reference the item(s) in a PM to me and I'll try to answer any questions you might have.

Tom Lehmann/The Dough Doctor  
1314

**Dough Clinic / Re: 70% hydration dough not coming together in Kitchen Aide Mixer**

0.25% of 20L dry malt powder is the recommended dosage for an unmalted flour.  
Tom Lehmann/The Dough Doctor  
1313

**Dough Clinic / Re: Opinions on Oiling Dough Balls and Proofing Boxes**

Too much oil? Yes.  
Do you need to oil the box? No.  
The biggest issue with oiling the dough boxes is that should the box be tipped the dough balls will cluster to one side of the box and on the following day instead of finding a bunch of individual dough balls you will find just one big old ragged dough ball. :(

Tom Lehmann/The Dough Doctor  
1312

**Dough Clinic / Re: Is there any problem with this dough and if yes, which?**

To replace 0.5% ADY with CY use only twice as much CY as ADY.

To replace ADY with IDY use 75% as much IDY as you do ADY.

Tom Lehmann/The Dough Doctor  
1311

**Dough Clinic / Re: Doctor, where is the mistake**

All other users combined, that's what made that statement so interesting to me. It's a lot like the Digiorno brand of frozen pizzas, at the time of my retirement, the Digiorno brand of frozen pizza had 23% of the ENTIRE frozen pizza market for their single brand, think Schwan's/Marshall Foods (Tony's, Red Baron, Freschetta) is big? They only had 19% of the market for their three flagship brands COMBINED.

Sometimes you have to take a step or two back to see just how big the picture really is.

Tom Lehmann/The Dough Doctor  
1310

### **Dough Clinic / Re: Opinions on Oiling Dough Balls and Proofing Boxes**

Just oil the top of the dough balls and you'll be just fine.

Tom Lehmann/The Dough Doctor  
1309

### **Dough Clinic / Re: starter and thermal shock**

That's pretty close t S.O.P. Here I thought you were going to ask if it would hurt a sourdough starter in if it was taken directly out of the freezer and put directly into boiling water :-D

Tom Lehmann/The Dough Doctor  
1308

### **Dough Clinic / Re: Sealing dough ball**

Josh;

Too many people are A.R. over sealing the bottom of the dough ball. It's not necessary. The most important aspect of balling the dough is to be CONSISTENT in how you do it. I think I show it being done in one of my videos.

Tom Lehmann/The Dough Doctor  
1307

### **Dough Clinic / Re: 70% hydration dough not coming together in Kitchen Aide Mixer**

Enchant;

That sounds like the work of the hated "J" hook.

Tom Lehmann/The Dough Doctor  
1306

### **Dough Clinic / Re: Sealing dough ball**

You might try first reducing the dough absorption in 2% increments to see if that helps you open the balls without thin spots. Then try reducing the bulk fermentation to 18-hours before scaling and balling.

Tom Lehmann/The Dough Doctor  
1305

### **Dough Clinic / Re: Flour specs like W, P/L and others**

When Googling "Manitoba wheat flour" this is what I got.

[ Currently this term is used to refer to any flour that irrespective of the variety of wheat used or the production area, has resistant features similar to those of American flour. With an index of bread making capacity (W) greater than 350, the Manitoba flour is classified as a special flour]

To put it in simple terms, if you are buying Manitoba flour, you are buying someones version of an American bread type flour which will most likely be

different from the domestic flours.  
Kinda what we've been saying all along.  
Tom Lehmann/The Dough Doctor  
1304

**Dough Clinic / Re: 70% hydration dough not coming together in Kitchen Aide Mixer**

We normally see that happening with large capacity mixers when trying to mix doughs that are sized too small for the bowl size. The only way to address the issue is to increase the speed of the mixer, this will allow centrifugal force to pull the dough off of the agitator allowing for effective interaction between the agitator and the dough rather than allowing the dough to just go for a free ride around the inside of the bowl while clinging onto the agitator.

Tom Lehmann/The Dough Doctor  
1303

**Dough Clinic / Re: Sealing dough ball**

It has nothing to do with time, it's all about optimizing fermentation for your specific flour. Too much fermentation results in weakening of the gluten film making it over soft and extensible and easily stretched too thin, insufficient fermentation will result in a dough that is difficult to open due to its memory characteristics (elasticity) which leads to over stretching in an attempt to get the skin to remain at the desired size after opening, this is where thin spots can again be formed. Dough which has been properly fermented will open easily with only enough elasticity to facilitate handling.

Tom Lehmann/The Dough Doctor  
1302

**Dough Clinic / Re: 70% hydration dough not coming together in Kitchen Aide Mixer**

I won't tell if you don't tell! :-D  
Somebody once said "drastic times call for drastic measures", you do what ya gotta do sometimes. While your manual might have said not to use anything above speed #2 for bread or pizza dough I bet it didn't reference a 70% absorption dough in the sentence ;D

Tom Lehmann/The Dough Doctor  
1301

**Dough Clinic / Re: Opinions on Oiling Dough Balls and Proofing Boxes**

Can you provide a picture of your pans?  
Tom Lehmann/The Dough Doctor  
1300

**Dough Clinic / Re: Flour specs like W, P/L and others**

Look for an ash content of 0.52 to 0.54% which is typical to North American high protein flours.

Tom Lehmann/The Dough Doctor  
1299

**Dough Clinic / Re: Opinions on Oiling Dough Balls and Proofing Boxes**

With individual containers like that you will want to oil the container too which makes removing the dough a lot easier as there isn't the room afforded by the larger dough boxes for getting a plastic dough scraper under the dough ball to

facilitate lifting it out, and since there is only one dough piece in the container you don't need to worry about the dough balls clustering if the container is tipped or bumped.

Tom Lehmann/The Dough Doctor  
1298

### **Dough Clinic / Re: Did i over work my dough?**

Mark;

An understanding of mixer types will tell you what went wrong.

Spiral dough mixers are designed to develop the gluten while mixing the dough, fork type mixers, on the other hand, are designed to incorporate the dough ingredients while imparting minimal gluten development, they were actually designed to replicate hand mixing of the dough in pastry dough applications. I would suggest that you look at pulling a dough as soon as it begins to come together in the spiral mixer, record that time, and then make a couple more doughs with incrementally longer mixing times, this should give you something closer to what you are looking for.

By the way, with your dough formulation the mixing time you used in the spiral mixer should have given a pretty well developed dough structure, nothing like I would have expected from a fork type mixer using a much shorter mixing time and different mixing action.

Tom Lehmann/The Dough Doctor  
1297

### **Dough Clinic / Re: Too much salt?**

Steve;

What was the total flour weight you used?

You can do the math yourself, just divide the ingredient weight, salt in this case, (23.92) by the total flour weight and multiply by 100. If the resulting percent is over 3% the answer is yes. The typical range for salt in U.S. pizza dough is 1.75 to 2.5%, world wide it is 1 to 3%.

There are a number of things which influence the salt level used in pizza dough, here are a few of them;

- 1) Type of salt used. (It isn't the "salt" it's the sodium content).
- 2) Salt content of toppings (sauce is a topping).
- 3) Proximity to ocean/sea.
- 4) Local tastes.
- 5) Demographics of customer base.
- 6) Dough formulation, especially with regard to flour, yeast and sugar.
- 7) Environmental conditions. Think dough and fermentation temperature.
- 8) Personal tastes.

I could write a chapter in a book on this alone, probably should :-D

Tom Lehmann/The Dough Doctor  
1296

### **Dough Clinic / Re: Did i over work my dough?**

That my friend is a tell tale indication of an over mixed pizza dough! The more you mix the dough the more bread like the finished crust becomes, if you want a more open, porous crumb structure you must mix the dough just until it comes together and forms a smooth skin on the surface (the smooth skin eliminates much of the stickiness associated with an under mixed dough) but if you don't mind contending with a sticky dough you can remove the dough from the mixer as soon as it comes together and begins to ball up. Many home pizza makers don't mind dealing with a

sticky dough, I do it all the time (at home), but in a commercial setting it's usually out of the question as it can take too long to process and then you will have the enterprising employee(s) who will discover the benefits of copious amounts of dusting flour or oil in making the sticky dough handle better :(  
Tom Lehmann/The Dough Doctor  
1295

### **Dough Clinic / Re: Flour vs Oil**

I've seen that too which makes one wonder why are you putting dusting flour on the dough balls? The answer was easy once I had an opportunity to really watch the process in real time. They were not taught the advantages to cross-stacking and they knew all too well that the dough balls get wet and sticky in the dough box (in view of the fact that they are not cross-stacking the boxes) so they put the dusting flour on to help absorb the condensation which forms on the dough balls, end result is still sticky, but not AS sticky. When you oil the tops of the dough balls and cross-stack properly the end result is not sticky.

You be the judge, which method do you want to use?

By the way, to help sway you a little, there are many significant benefits to being able to cool those dough balls quickly and consistently as is afforded by proper cross-stacking. There is a reason why it is do widely practiced in places where dough failure is not an option.

Tom Lehmann/The Dough Doctor  
1294

### **Dough Clinic / Re: Dual Arm / Diving Arm Mixer**

If you want to have a hand mixed dough without getting your hands doughy it's a good mixer but if the type of pizza you're making or the dough management procedure requires a more developed dough a spiral mixer would probably be a better choice.

Tom Lehmann/The Dough Doctor  
1293

### **Dough Clinic / Re: Flour vs Oil**

Steve;

The plastic bag approach is a good one and should work well for you in this application. If it were me, I'd put them into the freezer for the first two days then transfer to the fridge for the remainder of the time, bring out, allow to warm to 50 to 60F internal ball temperature, turn out of the bag onto a floured surface and begin opening into skins.

Tom Lehmann/The Dough Doctor  
1292

### **Prep Equipment / Re: Equipment from AIB is now for sale online.**

About 100,000 square feet of it (that's the size of the baking labs) Cake & Pastry Lab, Bread Lab., and the Cookie, Cracker & Pizza Lab.

Some of the large scale equipment was special built and designed just for AIB.  
Tom Lehmann/The Dough Doctor  
1291

### **Dough Clinic / Re: Sicilian Dough Chewy**

Yael:

Your advice is "spot-on"! ^^^

I would probably want to go to something in the 5 to 10% range for added fat to

the dough formula. Try using something like Butter Flavored Crisco or Lard/ bacon fat for the flavor aspect.

Tom Lehmann/The Dough Doctor  
1290

### **Dough Clinic / Re: Yeast enough?**

What is your finished dough temperature, dough formula and how are you managing the dough?

Just for the records, 1% CY is the typical CY level used in most pizza doughs.  
Tom Lehmann/The Dough Doctor  
1289

### **Dough Clinic / Re: Air Bubbles**

Can you please provide us a picture of the bubbles?

The shape of the bubble is important to know. Since you are sheeting a rather cold dough (only 1-hours tempering after CF) this might be where the problem is stemming from, but I really need to see a picture of the cut surface to tell. Best way to cut the crust is to invert and cut using a razor knife or VERY SHARP serrated blade, the photograph the cut surface across the entire diameter of the pizza.

Tom Lehmann/The Dough Doctor  
1288

### **Dough Clinic / Re: Air Bubbles**

Vertically, bottom to top.

Tom Lehmann/The Dough Doctor  
1287

### **Dough Clinic / Re: Yeast enough?**

Do you have a scale or access to a scale that can weigh in ounces? If so, portion each ingredient and weigh it. Do this three times and write down the weight each time. I'll figure the average ingredient weight for you and convert your "recipe" into a dough formula based on bakers percent. It's a LOT easier to review a dough formula than a dough "recipe". You might have a hard time figuring out the amount to leave as a tip now but in short time we'll have you working in bakers percent like a math major. :chef:

Tom Lehmann/The Dough Doctor  
1286

### **Dough Clinic / Re: Flour vs Oil**

Fermentation is a very important aspect when it comes to the dough, it both directly and indirectly affects the flavor of the finished crust and it has a significant impact upon how the dough handles and bakes too. This is why short fermentation times are not all that popular when making pizzas, especially if a flavorful crust is desired. Fermentation times of 8 to 12-hours can and certainly are employed when making pizza crust but the flavor really isn't all that spectacular, but then again it all depends upon what you're looking for in the crust. If you just want "pizza" you can make an emergency dough and be eating pizza within two hours of starting the mixer but if you want something a bit better than a "belly stuffer" it's going to take a bit longer. Unless a dough reducing agent is used in the dough as an ingredient (PZ-44 or dead yeast) short fermentation time doughs will tend to be more elastic than those made using a longer (24-hours +) fermentation time.

When it comes to fermentation you can get different flavors from room temperature fermentation than what you get from cold fermentation so the two

processes are not interchangeable from a flavor and aroma standpoint and which one you decide to use will be based on your own personal preferences. Because commercial bread is made using what might be described as a room temperature fermentation process many people equate the crust flavor obtained from a room temperature fermentation process as to being similar to that of "bread" while that from the cold fermentation process is best described as being more in-depth and complex and someplace down the road you might even want to try your hand at using a sourdough starter to develop a truly different/unique crust flavor profile resulting from the different micro-flora that are used to generate the leavening gas as well as the different acids, and quantity\of acids formed during the sourdough fermentation process.

Keep reading and learning and soon you'll be making truly great tasting pizzas and the beast part of it is that you will not have to share any of them with your tight lipped "friend"! When he comes a askin" just remind him that "what goes around comes around", but by all means do suggest that he join the family here at Pizzamaking.com, we'll be glad to help him. :chef:

Tom Lehmann/The Dough Doctor  
1285

### **Dough Clinic / Re: Air Bubbles**

It looks like it was cut from the top down? Or was it cut when still very hot which caused the cheese and toppings to draw down over the cut area obscuring much of the view of the crumb structure?

Also, see if you can get a picture up close.

Tom Lehmann/The Dough Doctor  
1284

### **Starters/Sponges / Re: My biga dough ball is big and lumpy**

The dough looks to be a bit under mixed. Did you mix it until it developed a smooth skin?

Tom Lehmann/The Dough Doctor  
1283

### **Dough Clinic / Re: Yeast enough?**

Here's what your dough formula looks like in bakers percent;

Flour 100% (800-ounces)

Yeast 0.625%

Sugar 2.125%

Salt 1.125%

Oil 1.625%

Water 57%

How it's done: Divide the ingredient weight by the total flour weight (800-ounces in this case) and multiply by 100.

Example: Yeast/ 5-ounces divided by 800 X 100 = 0.625 (0.625%)

Do this with the weight of each ingredient and you should get the same numbers that I got.

See, wasn't that easy? :-D

What am I looking at here?

Yeast: Too high for IDY and too high for ADY and too low for CY. What kind of yeast are you using?

Sugar: The percentage looks OK if you're using a deck or air impingement oven.

Salt: At 1.125% the salt level is too low for optimum flavor in the finished crust and the low salt level might be working against you if you are using ADY or IDY because low salt and high yeast makes for fast, uncontrolled fermentation rate.

Oil: Typical range for oil is 1% up to 10% (more typically 2 or 3% at the high end) nso the oil is OK.

Water: The dough absorption is 57% which would indicate that you are trying to make a thin crispy or pan style pizza. Typical dough absorption for this type of pizza ranges from 56 to 63% but there can be a lot of variability in dough absorption.

Possible issues experienced with a dough formulated such as shown;  
Possibility of blown dough.

Once dough is ready to open it doesn't last very long due to over fermentation. The dough might feel sticky in the mixing bowl and during the scaling/balling process.

Finished crust lacks "something" in flavor. Some might describe the flavor as "starchy" which is common for a low salt product.

Note:

Are you measuring and recording the finished (mixed) dough temperature for each dough you make? This will have a great impact on how the dough ferments. Unless the inside temperature of your shop is varying with seasonal changes if you control the finished dough temperature you will get the same rate of fermentation all year long, and even if your shop is 10 to 15F cooler or warmer due to seasonal changes controlling the finished dough temperature will eliminate much if not all of the temperature variation. Lastly, you are making doughs based on 50# of flour weight which means you are scaling and balling upwards of 83# of dough at a time. You must be able to get the entire dough processed (scaled, balled, boxed or bagged, and in the cooler) within 20-minutes. Are you achieving this? If not you are introducing a level of variability that most pizzerias find unacceptable.

We can work with you to address these issues.

Tom Lehmann/The Dough Doctor

1282

### **Dough Clinic / Re: Yeast enough?**

I don't understand your question about oiling the shells? Are you making par-baked shells too? Need more details on that one in order to answer.

The dough weights you are showing for the different size pizzas (are they all for the same type of pizza?) are all over the board weight wise for the sizes. Of the three sizes (10, 14 and 16-inch) and the weights shown for each 10, 18 and 23-ounces) which diameter and dough weight represents your best pizza? With this information I can calculate the dough weights for each of the other sizes.

To give you the desired dough temperature for YOUR dough I first need to see your entire dough management process, beginning to end, complete with all times and temperatures.

In view of your circumstances, I suggest that you please give me a call so that we can discuss some of this over the phone.

Please feel free to call me at 785-537-1037 (please e-mail me with date and time at <thedoctor@hotmail.com> we are in the central time zone).

Tom Lehmann/The Dough Doctor

1281

### **Starters/Sponges / Re: My biga dough ball is big and lumpy**

Try 2-hours before balling the next time, I think you'll get a better dough.

Tom Lehmann/The Dough Doctor  
1280

**General Pizza Making / Re: Large dough recipe:**

Here you go;

DOUGH: (In bakers percent)

Flour: 100%

Water: 65%

Poolish: 20%

Salt: 3%

Oil: 2.5%

IDY: 0.5%

POOLISH: (In true percent)

Flour: 49.76%

Water: 49.76%

IDY: 0.466

Note: While the above percentages should total 100% due to rounding the actual total is 99.986% (close enough for our work).

I have no idea of what your dough ball weight will be so you will need to do it yourself, here's how to do it.

1)  $4 \times$  desired dough ball weight = calculated dough weight.

2) Add 5% for dough loss = ACTUAL dough weight.

3) Add up the bakers percents in the dough and divide the sum by 100.

4) Divide the actual dough weight by #3 above. This will give you the new flour weight needed to make your 4 dough balls.

5) Calculate each ingredient weight using bakers percent and your new flour weight. (ingredient percent  $\times$  flour weight, press the "%" key and read the ingredient weight in the display. Note: Ingredient weight will be in the same weight units as the flour is shown in).

6) Repeat this for each ingredient and the dough has been completely resized.

Now for the POOLISH:

1) Using your calculator, enter the calculated poolish weight for the resized dough, then enter 49.76 and press the "%" key, read the amount of flour needed for the new poolish in the display.

2) Enter the calculated poolish weight for the resized dough, then enter 49.76 and press the "%" key, read the amount of water weight for the new poolish in the display.

3) Enter the calculated poolish weight for the resized dough, then enter 0.466 and press the "%" key, read the amount of IDY to be added to the new poolish.

DONE!

Tom Lehmann/The Dough Doctor  
1279

**Dough Clinic / Re: Biga percentages**

The pivotal question is how long are you fermenting your biga?

Tom Lehmann/The Dough Doctor  
1278

## [\*\*Chitchat / Re: Walmart meat\*\*](#)

Maybe she's of the opinion that only DEPLORABLES shop at Walmart? WM meats are what is referred to as "previously frozen" which some think of as not as good as fresh. Like you I see no difference. When we're shopping for steak (which is rare since we eat mostly venison), our "yum" factor doesn't even begin to kick in until we see a cut of meat that is over 1.25-inch in thickness. Many of the WM cuts are, in my opinion, too thin (to control the cost), my wife bought one of those 3/4-inch thick steaks many years ago and it is still serving me well as a replacement sole on one of my hunting boots, needless to say we didn't shop WM for meats again for several years, then we found that WM also carries thick cuts too (just like our local supermarket) so we tried it and it was as good as what we were getting from the supermarket as fresh meat.

Tom Lehmann/The Dough Doctor  
1277

## [\*\*Dough Clinic / Re: Biga percentages\*\*](#)

With that level of IDY in a biga that is fermented for 15-hours at 70F room temperature, plus the fact that the biga is increasing in temperature due to heat of metabolism the flour in the biga has been pretty well damaged by enzymatic activity as well as the acids formed by the fermentation process. For this reason I would not include the flour in the biga as part of the total flour. This is the same thing we do with a sour. It is impossible to tell just how much of the flour is still viable but my best guess would be 0 to 20% at the very most.

Tom Lehmann/The Dough Doctor  
1276

## [\*\*Dough Clinic / Re: Putting pizzas in the oven without a peel or screen in a pizzeria?\*\*](#)

If you are using your regular flour for a peel dust you might try using fine corn meal, semolina flour, rice flour, my personal favorite is a blend of equal parts of fine corn meal, semolina flour and my regular pizza flour.

There is also a little "knack" to peeling pizzas into the oven. You will want to shake the peel just before dressing the skin to make sure it's still free from the peel, then shake it again after dressing the skin (better to know the skin is sticking to the peel before the oven surprise).

One more thing, it's common to open the skin on the table and then pick it up and transfer it to the peel for dressing and peeling it into the oven as opposed to opening the skin right on the peel.

There has been a lot of discussion on how to peel a pizza into the oven here.  
Tom Lehmann/The Dough Doctor  
1275

## [\*\*Shop Talk / Re: Properly cleaning a spiral mixer with non-removable tub?\*\*](#)

Just pour in some very hot water (amount will vary with size of your mixer) no soap is needed. Cover bowl with a sheet of plastic and allow to steam for 15 to 30-minutes, then scrub using a plastic bristle pot brush, bail out the water and add clean warm water (100F+/-) to rinse, then add some sanitizer and wipe down.

Tom Lehmann/The Dough Doctor  
1274

## [\*\*Shop Talk / Re: Properly cleaning a spiral mixer with non-removable tub?\*\*](#)

Huh? Unless you're making VERY different doughs there is absolutely NO need to wash a mixing bowl between doughs. What is the reasoning behind this?

Tom Lehmann/The Dough Doctor  
1273

### **Chicago Style / Re: Baking powder dough?**

One of the biggest problems with using baking powder along with yeast is that the soda portion of the baking powder (BP) is neutralized by the acids formed during the fermentation period which results in the acid component being left without any alkali (soda) to work with. This results in a lighter finished crust color and depending upon the food acid used in the baking powder a "different" finished crust taste. In commercial practice a combination of both yeast and chemical leavening can/are used (examples include DiGiorno Frozen Pizza as well as many popular take and bake pizzas) BUT plain BP is not used, instead a coated/encapsulated chemical leavening is used. The trade name for this product is "Wrise" manufactured by Wright Enrichment Company. For home pizza makers you can make a version of this product by using Calumet Brand baking powder and regular Crisco. Use 2% BP and an equal weight of Crisco and work together VERY WELL in a small bowl using a table fork. The fat encapsulates the soda portion of the BP and prevents it from going into solution thus preventing it from reacting with the acids formed during fermentation until the fat is melted in the oven at which time it reacts to give enhanced oven spring. I've got a number of dough formulas for these combination leavened doughs posted in the RECIPE BANK at the PMQ web site <[www.pmq.com](http://www.pmq.com)>.

Flavor wise, 100% chemical/BP leavened crusts leave a whole lot to be desired flavor wise, reminds me of the old Chef Boyardee Pizza kits that we had when I was a kid back in the early 50's, empty the bag of dough mix into a bowl, add warm water and mix, allow to rest a few minutes, spread onto a cookie sheet, add the sauce and cheese and into the oven it went.

Tom Lehmann/The Dough Doctor  
1272

### **Shop Talk / Re: Properly cleaning a spiral mixer with non-removable tub?**

If you are making doughs infrequently during the day and have concerns over any dough in the bowl drying out (your 5-minute time limit doesn't suggest this though) all you need to do is to use a flexible plastic bowl scraper to scrape down the bowl after each dough.

Tom Lehmann/The Dough Doctor  
1271

### **Chicago Style / Re: Baking powder dough?**

That article sure brings back memories. :)

Tom Lehmann/The Dough Doctor  
1270

### **Chicago Style / Re: Baking powder dough?**

Peter;

It's interesting to note that the reason why I mentioned the Calumet brand baking powder is because it is one of the few that is based on soda and SALP (sodium aluminum phosphate). This is important as SALP has a slower reaction rate than the other food acids so it functions more like yeast in reaction rate rather than reacting very fast as many of the two stage baking powders do. It's also interesting to note that the residual acid component has a significant impact on finished crust flavor, SALP imparts what we call a "biscuit" like flavor (due to the use of SALP based leavening systems in biscuit mixes) that's why we associate the flavor with

biscuits, then there is GDL (glucano delts lactone), the residual GDL imparts a decided sweet taste to the crust, and SAPP (sodium acid pyro phosphate) is the leavening system of choice for use in cake donuts, in fact the flavor of a cake donut is that of SAPP. The next time you eat a cake donut run your tongue across the back of your teeth and you'll feel a roughness, this is a phosphate coating from the SAPP. Due to health concerns in Europe SALP is not on the approved food ingredient listing (it doesn't have an "E" number), so CAPP (calcium acid pyro phosphate) is used as a replacement. Aluminum is the issue, at one time aluminum was thought to be associated with Alzheimer's Disease but that was disproved many years ago. CAPP has not been widely available in the U.S. due to the availability of SALP and since they both perform in a similar manner why have two products? We are beginning to see more applications of CAPP though in specialized products where the biscuit like flavor is not desired so if you happen to see CAPP in the ingredient declaration this is the reason. We use SALP in the WRISE product because the biscuit like flavor imparted by any residual SALP is the least offensive in a yeast leavened product. With that said, some refrigerated doughs are made using GDL with the reason being the superior stability offered by the GDL over all of the other food acids. When you have a dough system that is 100% chemically leavened and the chemical leavening system is based on GDL and soda it is incredibly stable until it goes into the oven, the biggest down side to GDL is its low neutralizing value so you need to use significantly more of it to get the same performance you get from SALP and SAPP which in the end means a higher formula cost. In short, when you see GDL being used there has to be a very good reason for using it.

Tom Lehmann/The Dough Doctor  
1269

### [\*\*Dough Clinic / Re: Putting pizzas in the oven without a peel or screen in a pizzeria?\*\*](#)

The "blowing trick" while effective, doesn't always set too well with the customers in a pizzeria operation.

Tom Lehmann/The Dough Doctor  
1268

### [\*\*Shop Talk / Re: Cottage industry question\*\*](#)

In reviewing your attached material I'd venture a guess and say that pizza might not be permitted. However it should be very easy to get a final word on this, just contact the authorities and ask them about how they view pizza. While a plain cheese pizza is one thing that they might allow without refrigeration one with meat and or vegetable toppings is yet another. If you were to have an oven in which you would heat the pizza slice to a temperature above 160F (minimum temperature for a "kill" step) this might influence their opinion in a positive way for you.

Tom Lehmann/The Dough Doctor  
1267

### [\*\*Dough Clinic / Re: Putting pizzas in the oven without a peel or screen in a pizzeria?\*\*](#)

Peter;

I was once told that "perception is reality and reality is just a perception", perception and reality don't always go hand in hand though. You're right, blowing under a pizza to help release it from the peel is perceived as one thing (almost like coughing on the pizza to some) while blowing out birthday candles on a cake is yet another thing entirely (in this case the cake is more dangerous than the pizza due to lack of a post "blowing" kill step which the pizza will receive. Then too, how

many times have you seen someone wipe their hands on an apron or towel tucked into the apron ties (think Emeril Legasse), and then handle your food? BAD IDEA! Most people never give it a second thought but if you're in food safety it makes you cringe. Fifty years at AIB taught me a lot about food safety, but reality has taught me if it doesn't kill me it will only make me stronger, now if we can just convince our customers of that.

Tom Lehmann/The Dough Doctor  
1266

### [\*\*Dough Clinic / Re: Cook times and temps\*\*](#)

OK, let's start at the beginning, first you will need to WEIGH all of your ingredients, no more portion amounts (cups) as different individuals portion your ingredients differently, but 100-grams is ALWAYS 100-grams, regardless of who might weigh it.

Next, you're using the delayed oil addition mixing method but you are adding the oil way too late in the mixing stage, instead, mix the dough for just 2-minutes at low speed and then add the oil, mix one more minute in low speed and then mix 8-6-minutes in medium speed. Forget the window pane test, it's used only for bread making, not pizza as it is used to determine gluten development and we really want to MINIMIZE gluten development when making pizza dough. As soon as the dough has a smooth appearance it is done mixing.

Measure and record the finished dough temperature.

Take the dough directly to the bench and immediately begin scaling and balling the dough (this must be accomplished within 20-minutes or less of completion of dough mixing).

Lightly oil each dough ball and place into the fermentation container, take it IMMEDIATELY to the cooler (uncovered for 3-hours), then cover for the duration of time in the cooler.

When ready to use the dough remove from the cooler 2-hours before you open the dough balls into skins using your dough sheeter/roller.

Prepare the pans by greasing with Crisco.

Fit the sheeter dough piece into the greased pan(s).

Allow the pans of dough to rest at room temperature for 30-minutes (this time may be varied depending upon desired final crust thickness).

Cover the pans of dough and place in the cooler for storage until needed.

Give this process a try, it should provide a much greater level of consistency to your product.

Tom Lehmann/The Dough Doctor  
1265

### [\*\*Dough Clinic / Re: Putting pizzas in the oven without a peel or screen in a pizzeria?\*\*](#)

Pizza dough should not be sticky, it can be soft, very soft but not sticky. I have no problem peeling a pizza made on a 72% absorption dough into the oven using fine grind corn meal under it, I've done higher but seldom do I venture into that territory anymore. A common cause of a sticky dough is excessive diastatic malt or in some cases excessive fermentation, if neither of these seems to apply in your case try using an autolyse (1-hour) in your dough mixing procedure, it can help a lot.

Tom Lehmann/The Dough Doctor  
1264

## **Events Calendar / Equipment from AIB is now for sale online.**

The AIB On-Line Auction is still in progress. In anyone is located within a reasonable driving distance to Manhattan, Kansas you might want to take a look at the equipment which is for sale which includes mixers (right now there is a Artofex Twin Arm Dough Mixer which emulates hand mixing with a \$250.00 bid on it). There are also MANY 12 AND 20-quart Hobart mixers as well as larger mixers too. It looks like much of the pizza equipment is on pages 12 and 13 of the listing. To view the auction go to <[www.equip-bid.com/auction](http://www.equip-bid.com/auction)> 6096 (you may need to go into the current auctions to find it as I did). The auction closes on 11/25.

Tom Lehmann/The Dough Doctor  
1263

## **Dough Clinic / Re: Cook times and temps**

Yes, using a malted flour would allow him to reduce or eliminate the sugar but since he is using so much sugar I'm assuming he likes the sweetness imparted by the sugar and he'd lose that if he reduced or eliminated the sugar. The "00" flour and 460F are not an issue due to the sugar helping with the browning reaction.

Tom Lehmann/The Dough Doctor  
1262

## **Dough Clinic / Re: Correlation between hydration and cook temp and time**

Generally speaking, higher dough absorption performs better with higher baking temperatures and there comes a point where it's essentially mandatory or the dough will collapse in the oven when it should be experiencing oven spring. Lower absorption doughs are usually best baked at lower oven temperatures. Dealing with deck ovens a lower temperature means 450 to 525F and a higher temperature means 550 to 650F and more. Many deck ovens will not reach a sufficiently high temperature to effectively handle the truly high absorption doughs which will require a baking temperature of 700 to 900F. As the dough absorption rises the dough becomes softer and more extensible so it rises faster and a little sooner during the oven spring stage of baking, this is why you are seeing a more open cell structure, you should also get a more tender eating crust which is more crispy too. As opposed to many home ovens, any commercial oven should bake a better pizza at comparable temperatures due to the greater heat/temperature recovery of the commercial oven resulting in the pizza baking at a more constant temperature than non-commercial ovens which in many cases lack decent heat recovery, this is especially evident when baking multiple pizzas back to back.

Tom Lehmann/The Dough Doctor  
1261

## **Shop Talk / Re: Brick oven temp?**

Something between 500 and 550F should work well for you. All ovens are a bit different so you will need to experiment a little to see what temperature works best for your specific dough formula and dough management procedure. Hopefully you are planning on a dine-in with some DELCO as opposed to a DELCO store only in which case an air impingement oven would be a much better oven choice.

Tom Lehmann/The Dough Doctor  
1260

## **Focaccia Style / Re: Brine percentage**

We used to use 5-grams of salt in 90-ml of 100F/38C water, so your proportions are very close to what I've used in the past. We used to also sprinkle the dough with

flake salt too.

Tom Lehmann/The Dough Doctor  
1259

### **Dough Clinic / Re: 80% HD question**

I have personally never made a Detroit style pizza with more than 68% absorption, more typically I will use something closed to 65% depending upon the absorption characteristics of the flour I'm using at the time. I'm not familiar with Craig's Detroit dough formula but I see your notation regarding the flour. How does the KAAP flour differ from what Craig's formula calls for using? Flour is usually not one of those "one size fits all" things so using a different flour can really upset the apple cart. I don't know if that the case here or not.

Also, did you take into account the water content in the starter when calculating the dough absorption, if not that would have added about another 7% water.

Tom Lehmann/The Dough Doctor  
1258

### **Dough Clinic / Re: 80% HD question**

At anything above 70% I always use an autolyse (1-hour) and due to the very fluid nature of the dough the mixing time will be relatively long to get any gluten development in the mixer. With all of this being said, you should really be posting to Craig as he is the one most familiar with his dough formula and procedure.

Tom Lehmann/The Dough Doctor  
1257

### **Shop Talk / Re: Brick oven temp?**

What do you hope to achieve by a faster bake time? Remember that longer baking times help to develop a crispier pizza crust and also help to develop more crust flavor. If you want to have a buttery flavor why not use Butter Flavored Crisco? Works great!

Let's streamline your process:

Put water in mixing bowl, add salt and sugar, add the flour and Butter Flavored Crisco then add the yeast (you didn't mention it but I'll assume you using it).

Mix at low speed for 2-minutes then at medium speed for about 8-minutes or JUST until a smooth dough is formed.

Your desired finished dough temperature range should be 75 to 80F.

Take the dough immediately from the mixer to the bench for scaling and balling.

Place dough balls into dough boxes and lightly oil the top of each dough ball.

Immediately place in cooler cross-stacked for 2-hours or until the INTERNAL ball temperature reaches 50F, then down-stack and place a lid on the top box.

Allow to cold ferment for at least 24-hours (48-hours is better).

If dough is properly managed it will be good for up to 72-hours in the cooler.

To use, remove dough from cooler, allow to temper AT room temperature until the INTERNAL dough ball temperature reaches 50F, the dough balls are then ready to be opened into skins by your preferred method. Once you begin opening the dough balls they will remain good to use for up to 3-hours so be sure to pull only what you will need out of the cooler for not more than a 3-hour period.

Any dough not used in the 3-hour period should be opened, put onto wire pizza screens and placed into a wire tree rack in the cooler (cover with a plastic bag to prevent drying) and used during the next busy period. To use the pre-opened skins, remove from the cooler 20-minutes prior to use, remove from screen, re-stretch if necessary, dress to the order and bake. Do not save the opened skins from one day to the next.

Any unused opened skins can be added back to fresh dough at a rate not to exceed 15% of the fresh dough weight.

Tom Lehmann/The Dough Doctor  
1256

**Dough Clinic / Equipment from AIB is now for sale online.**

Take note: There is still some time left to bid on auction items, I was just there <[www.equip-bid.com/auction/6096](http://www.equip-bid.com/auction/6096)> and there are scads of pizza pans and screens, the pans are mostly Lloyd Pans with an average value of \$25.00 each right now bids are in at less than the cost of a single pan!!! Looks like Hobart 20-qt, bench top mixers went for around \$2,000.00 each and 12-qt mixers for around \$500.00 each.

Some really sweet deals there.

Tom Lehmann/The Dough Doctor  
1255

**Shop Talk / Re: Brick oven temp?**

Andy:

I wrote an entire article on this very topic some time ago as too many people don't choose the oven based on their store concept.

DELCO (delivery/carry out) pizzas need to be as dry as possible to reduce deterioration in the box due to excess moisture from the pizza toppings. Deck ovens are very poor at removing excess moisture from the top of the pizza as they have no forced airflow, air impingement ovens, on the other hand, can be set up/top profiled to provide the maximum amount of airflow to the top of the pizza for maximum/optimum dryness thus reducing the amount of steaming the pizza is exposed to in the box. Additionally, there is no chance of short baking a pizza during busy periods which can result in a tough, chewy pizza. To further address the chewy issue we have found that the use of a lower protein content flour (11.8 to 12.4% range) is also helpful in reducing the perceived toughness when the customer receives their pizza.

Tom Lehmann/The Dough Doctor  
1254

**Shop Talk / Re: Brick oven temp?**

Peter;

That's not the article I was referencing but it's still a good article ^^^  
I wrote that one after I had been contacted by a number of new operators who had bought used ovens and couldn't get them to bake a decent pizza (hence my closing comments). In one case the individual had an oven that was sold to him as a "pizza" oven but tracing the serial number back to the manufacturer showed that it had been built for a major seafood chain and it was still equipped with the proprietary seafood finger profile which looked nothing like a pizza profile. If I remember correctly I think I wrote the article for my column in Pizza Today Magazine.

Tom Lehmann/The Dough Doctor  
1253

**Dough Clinic / Re: Correlation between hydration and cook temp and time**

Nope, doesn't work that way, the lower the absorption the denser the dough is during baking due to restricted oven spring so it doesn't bake out as well hence requiring a longer baking time at a lower temperature.

Tom Lehmann/The Dough Doctor

1252

**[Shop Talk / Re: Brick oven temp?](#)**

Peter;

You found it! It's the May, 2011 article.

I'm looking for the location of the Lost Dutchman's Gold Mine, can you see if you can find it for me? :-D

Man! You're good!

Tom Lehmann/The Dough Doctor

1251

**[Dough Clinic / Re: Missing link?](#)**

With doughs in the 56 to 68% absorption range it is all done as a single step but with high absorption doughs (over 70%) allowing the dough to rest for about 10-minutes usually helps in shaping the dough.

In most references where they mention "rolling the dough" they are actually referring to the balling of the dough so depending upon a host of factors the rest period between rolling and opening can be anywhere from something measured in minutes to hours. In bread production this rest period is commonly referred to as "intermediate proofing". When making pita or Barbari the rest period is usually around 20-minutes.

Tom Lehmann/The Dough Doctor

1250

**[Events Calendar / Re: Equipment from AIB is now for sale online.](#)**

The auction closed this evening, Hobart N-50 mixers went for just over \$500.00 each and Hobart A-120 mixers went for just a tad more. The Hobart HL-200 mixers went for around \$3,000.00 each. Attachments for all sizes of mixers went REAL cheap as

did stacks of Lloyd Pans (many were brand new) which sell for \$25 to \$40.00 each. Hobart M-820 mixers went for about \$5,000.00 each which is a real deal considering they were like new and that's what a used one (a well used one) was selling for 10-years ago. The Marsal deck oven went for about \$1,800.00 and an XLT and Middleby-Marshall WoW (both air impingement ovens) went for a little over \$3,000.00, not a bad price for low mileage ovens. Pizza tools like dockers, cutters, Equalizers, etc. were nearly give aways as they were sold in groups.

The end of a 100-year era! :'

Tom Lehmann/The Dough Doctor

1249

**[Focaccia Style / Re: Brine percentage](#)**

It was applied to 500-grams of focaccia dough.

Tom Lehmann/The Dough Doctor

1248

**[Dough Clinic / Re: Correlation between hydration and cook temp and time](#)**

If you have ever made bread at home and had it collapse, even partially collapse in the oven, you might have noticed that the finished bread had a crumb structure that was similar to some form of an art gum eraser in the making. The open porous crumb structure allows for effective moisture migration towards the heat (the oven air) while a more dense crumb structure restricts the migration of moisture resulting in a higher moisture content in the finished product. So when the bread dough cited above collapses it becomes more dense and retains more

water/moisture in the finished product, in many cases this can dramatically change the entire character of the crumb structure. This is also one of the reasons why when a dough is opened 100% by sheeting, be it by machine or rolling/pastry pin, it is more difficult to obtain a finished crust that is as crispy as that from a dough that was opened by hand, and in many cases the crust formed by the sheeting process may not retain its crispiness as well as a hand opened dough. This is why in many cases we allow a skin formed by the sheeting process to proof for a few minutes after forming as this allows the dough to develop a better internal cell structure which is more conducive to removing moisture during the baking process.

Tom Lehmann/The Dough Doctor  
1247

### **Focaccia Style / Re: Brine percentage**

I use 1.75% salt in the dough (bakers %) and all of the brine solution goes onto the fully proofed dough after making a series of finger pockets to hold little puddles of the brine, then very lightly sprinkle with a little flake salt or sesame seeds.

Tom Lehmann/The Dough Doctor  
1246

### **Newbie Topics / Re: Basic hydration calculation**

All ingredients are calculated as a percent of the total flour weight.

Here's how its done:

using your calculator;

1) Enter the flour weight.

2) Press "X".

3) Then enter the ingredient percent you want the weight for.

4) Then press the "%" key.

5) Read the weight of the ingredient in the display. The ingredient weight will always be given in the same weight measures that the flour was shown in.

Tom Lehmann/The Dough Doctor  
1245

### **Focaccia Style / Re: Flour, water, salt, yeast - Quick question**

Very high absorption doughs are better hand mixed than machine mixed, the reason being that the high absorption doughs are so slack (soft/fluid) that it is difficult to get consistent gluten development unless special mixing attachments are used. Some home bakers will use a flat beater aka paddle to mix the dough until a reverse spiral dough arm can be used to complete the mixing process. As for incorporation of air during the mixing process it's about the same for both hand kneading and machine mixing. The reason why we often see those large bubbles in the hand kneaded dough is because the dough is actively fermenting during the kneading process, it's not the air that's being incorporated. Many home bakers of both bread and pizza like to machine mix the dough to a point where it comes together and then finish by removing the dough from the mixing bowl and hand kneading.

Tom Lehmann/The Dough Doctor  
1244

### **Dough Ingredients / Re: Cake yeast ?**

ADY, IDY and CY all smell the same after the ADY and IDY have been hydrated BUT keep in mind that it is perfectly NORMAL for CY to have the aroma of a very well used diaper pail (think of the wonderful aroma of ammonia), this can happen if the yeast hasn't been sufficiently washed prior to centrifuging and packaging. The

manufactures seem to pay a little more attention to this with their home consumer packages than they do with their 1-pound packages intended for the commercial baking industry. And above all, don't forget that it isn't the aroma of the yeast that provides those wonderful aromas and flavors in our baked goods, it's the by-products of the fermentation process combined with the baking process that are truly responsible for all that good stuff.

Tom Lehmann/The Dough Doctor  
1243

### **Focaccia Style / Re: Brine percentage**

Yes, but the perceived saltiness is greater due to the "pretzel effect".

Tom Lehmann/The Dough Doctor  
1242

### **Dough Clinic / Re: Mixing Times**

Your question is impossible for me to answer as I don't know anything about your flour, type of dough agitator, dough size/amount of flour used or dough formulation all of which will impact dough mixing time, and then for good measure let's add ability of the mixer to mix whatever the dough size is at a sufficiently high R.P.M. (stir) is not it, so I'm guessing you're either mixing at too slow of a speed or the mixer doesn't have enough Oomph to do the job at a higher speed with your dough size. All of that aside, you should be mixing your dough at something between 115 and 125 R.P.M. if you are trying to develop the gluten mechanically, at that speed it should take 8 to 10-minutes to achieve the desired smooth appearance (this is assuming you have a reverse spiral dough arm, if you have a straight "J" hook or "C" hook you will need to go to about 150 R.P.M. to get the dough to come off of the hook for decent mixing action.

May I suggest an easier mixing method?

Put water in mixing bowl.

Add salt and sugar (no need to mix).

Add flour and yeast (yeast on top of the flour unless ADY).

Mix at low speed just until you don't see any dry flour in the bowl, then add the oil.

Mix one more minute at low speed after adding the oil.

Mix at the highest speed possible (see above) until a smooth skin is developed on the dough.

Measure the dough temperature (70 to 75F).

Scale and ball.

Lightly oil.

Refrigerate 24 to 72 or more hours.

Tom Lehmann/The Dough Doctor  
1241

### **Dough Clinic / Re: Mixing Times**

The reason for developing the dough until it develops a smooth skin is to reduce the stickiness and amount of dusting flour required during the scaling and balling (rounding) process. Even at that level of gluten development the dough is still far from fully developed so there is little or nothing to be gained from mixing it any less. If you want to optimize an open cell structure you should concentrate on optimizing the dough absorption for the type of pizza you're making as well as the baking characteristics of your oven. For a less chewy finished crust I suggest using a lower protein, bread type flour with a protein content in the 12 to 12.8% range in conjunction with 48 to 72-hours cold fermentation time.

Tom Lehmann/The Dough Doctor  
1240

### **Neapolitan Style / Re: King Arthur Whole Wheat Flour Dough**

We have had significant discussion here on how to determine the absorption of whole-wheat flours, if you read back in the archives you should be able to find the procedure. Just a tip, the dough absorption of a whole-wheat dough will be close to 75% due to the delayed absorption properties of the bran.

Tom Lehmann/The Dough Doctor  
1239

### **Neapolitan Style / Re: Neopolitan with Stoneground**

The stickiness you noted is not due to damaged starch, instead it is due to unabsorbed water in the dough. The bran is slow and difficult to get fully hydrated and until it absorbs its share of the water the dough will be sticky. The best way to get around this is to use an autolyse (whole-wheat flour + all of the water) and allow this to set for at least 1-hour. If you do this in the mixing bowl all you need to do is to add the remaining dough ingredients and carefully incorporate at low speed for a minute or so, then complete the mixing process at a higher (medium) speed. The finished/mixed dough SHOULD feel tacky but not overly sticky. I think your observation on the fermentation of your dough was due to the dough becoming stiffer as the bran continued to hydrate during the fermentation process. If you are planning to allow the dough to ferment much more than 1-day you might want to think about providing some nutrient for the yeast in the form of adder sugar (1 or 2%) or 0.25% of a 20L diastatic malt powder). If your yeast is running out of nutrient to feed upon adding more yeast will just make matters worse.

Tom Lehmann/The Dough Doctor  
1238

### **Dough Clinic / Re: Tough cornicione/pizza**

The addition of any kind of fat to the dough formula will go a long ways towards making for a more tender eating crust, but what struck my interest was your comment on how the dough just gets more sticky as you allow it to rest/ferment (did I read this correctly?). If this is indeed the case you might be dealing with a flour with a high level of starch damage. There is just no way you can ferment a dough made with a high starch damage flour for more than an hour or so. You might look around to see if you can find a similar flour to that which is being used by Greenwich Pizza/Jolibee Foods Corp. The flour they had been using was made from U.S. hard red spring wheat milled there in the Philippines.

Tom Lehmann/The Dough Doctor  
1237

### **Neapolitan Style / Re: King Arthur Whole Wheat Flour Dough**

Whole-wheat dough = 100% whole-wheat flour.

Wheat dough = any blend of whole-wheat flour and white flour.

Most people find it a lot easier to make a wheat crust than a whole-wheat crust but you can make a pretty decent whole-wheat crust if you want to go to the effort of finding the correct dough absorption to use for your specific whole-wheat flour.

Tom Lehmann/The Dough Doctor  
1236

### **Dough Clinic / Re: poor oven spring/texture after 3 day ferment**

Just an observation, 0.3% IDY and 3% salt is a bit of a mismatch for optimum yeast

performance. There is a distinct possibility that the high salt level is suppressing the yeast activity/fermentation enough to affect the oven spring characteristics of the dough. A quick test for this would be to re-run the dough but reduce the salt to 2% to see if that improves the oven spring characteristics.

Tom Lehmann/The Dough Doctor  
1235

**[Dough Clinic / Re: Dough Doctor's Basic Dough Recipe](#)**

Actually, the dough really doesn't look to be all that bad. The reason for the dough being soft and a bit sticky is most likely due to the use of an all purpose flour. There is no standard to which all purpose flour is held such as there is for bread and pizza type flours. All purpose flours can contain anything from a low of 9.2 to as much as 11% protein content, even worse we have found that some all purpose flours are made from varieties of soft wheats as opposed to the more commonly used hard wheat varieties. My standard (go to) flour is a strong bread type flour with 12 to 12.8% protein content. You are correct in assuming that vegetable oil can be substituted for the olive oil with the only difference being in flavor.

Tom Lehmann/The Dough Doctor  
1234

**[Dough Clinic / Re: Naughty words - dough roller...and hydration rates...](#)**

Partially opening the dough using a sheeter or rolling/pastry pin and then finishing the opening process by hand to full diameter is a procedure which we developed a good number of years ago as a teaching aid for those who were deemed to be "toss challenged". The process is now used in a number of pizzerias. I have a video on the process. If you would like to view the video just send me an e-mail at <thedoughdoctor@hotmail.com> requesting the video and I'll be glad to send it to you. The procedure is also very useful when one is having a problem opening the dough by hand and continually getting a very thin center section to the opened skin. We've discussed this procedure many time here in the past.

Tom Lehmann/The Dough Doctor  
1233

**[General Pizza Making / Re: When to add the oil](#)**

Most of the time the "stir" speed is slower than necessary when mixing just to hydrate the flour prior to the addition of the oil.

Tom Lehmann/The Dough Doctor  
1232

**[Newbie Topics / Re: Is it safe to put dough back on the fridge?](#)**

Depending upon the dough formulation it may or may not survive. Don't worry, it'll be safe to eat but it may not turn out as well as you hope. Just putting the dough back into the fridge will not quickly stop the fermentation process, it may continue for days in some home refrigerators. What to do? What to do? On the morning that you plan to make pizza later in the day re-ball the dough. Don't try to ball it tight, just get it into a ball shape, lightly oil it and place it back into the fermentation container. Pull the dough out of the fridge about 3-hours before plan to open it into a skin.

Some issues you may face:

- 1) The yeast ran out of nutrient and began cannibalizing itself resulting in a wet, sticky dough with little oven spring.
- 2) The dough has become excessively acidic making the pizza difficult to bake properly.

- 3) The yeast has consumed all of the sugar normally used for crust color development making the pizza difficult to bake properly.
- 4) The dough becomes over fermented with all of the good things associated with an over fermented dough such as a dough that feels like putty, difficult to open without tearing, sticky, lacking oven spring, etc.

Tom Lehmann/The Dough Doctor  
1231

### [\*\*Dough Clinic / Re: Tough cornicione/pizza\*\*](#)

Some flours exhibit a slow hydration rate (this is also common to coarse ground flours too) which would explain why the dough seems to dry up as it ferments. You can easily get around this by using an autolyse as part of your dough making process, this is also beneficial if you are hand mixing your doughs too.

Tom Lehmann/The Dough Doctor  
1230

### [\*\*Dough Clinic / Re: Dough Doctor's Basic Dough Recipe\*\*](#)

A strong bread type flour will be best for that application.

Tom Lehmann/The Dough Doctor  
1229

### [\*\*Newbie Topics / Re: Flour, sourdough loaves v. pizza\*\*](#)

Most breads and rolls are going to be moulded/shaped by a rolling or folding process and any excess flour on the outside of the dough ball will be incorporated into the shaped dough piece resulting in large, undesirable holes and tunnels, pizza crusts, on the other hand, are formed by flattening the dough through a stretching process so no flour gets incorporated into the shaped dough so there is no issue with excess dusting flour on the dough and during the shaping process most of the dusting flour that is applied to the dough ball is removed by handling of the dough during the shaping process.

Tom Lehmann/The Dough Doctor  
1228

### [\*\*General Pizza Making / Re: When to add the oil\*\*](#)

Probably either the #4 or #6 speed, but in the end it will be the fastest that your mixer will easily handle the dough at.

Tom Lehmann/The Dough Doctor  
1227

### [\*\*Dough Clinic / Re: Dough Doctor's Basic Dough Recipe\*\*](#)

While Kamut flour is similar to wheat flour and it has a high protein content but it is lacking in the ability to produce a strong gluten matrix like wheat flour. For this reason it is almost always included in a blend with wheat flour usually at 25% or less of the wheat flour.

It typically exhibits a higher absorption value than many wheat flours due to its high protein content (it is the protein which carries a great deal of the water, however as this type of flour is usually more like a whole grain flour the presence of the bran (fiber) also exerts a great influence on the absorption properties. Defatted soy flour, which has roughly 51% protein content, will typically carry its weight in water (100% absorption) is great for supplementing something with protein but it has no gluten forming proteins in its composition so it is also used in much the same manner where the amount used does not exceed much over 25 or 30% of the total wheat flour weight.

Tom Lehmann/The Dough Doctor  
1226

### [\*\*Dough Clinic / Re: Dough Doctor's Basic Dough Recipe\*\*](#)

You "might" be able to push the 40 to 50% mark but keep in mind that vital wheat gluten is very tough and rubbery so it has to be used judiciously. For each 1% VWG you add you will increase the protein content of the flour by 0.6%. It is generally accepted that 10% VWG is about the maximum you will want to add, and at that level you want to make sure the dough receives plenty of fermentation to help mellow the gluten making opening the dough a lot easier. One other thing, for each 1% VWG added you will need to increase the dough absorption by about 1.25%. ALWAYS be sure to disperse the VWG into the dry flour before allowing it to come into contact with any water.

Tom Lehmann/The Dough Doctor  
1225

### [\*\*Newbie Topics / Re: CF Bulk vrs Balled\*\*](#)

Travis;

We've had a fair amount of discussion here on fermentation in ball form v/s bulk. A big piece of the puzzle is how big of a dough are we talking about. Look at it like this, if the bulk dough weighs 600-grams and the dough ball weighs 600-grams there will be little to no difference in the amount of fermentation the dough receives, assuming all things equal. If we have a 10-pound dough ball and bulk ferment it heat of fermentation/metabolism will increase the temperature by approximately 1F per hour of fermentation time but if you were to divide that dough into 1-pound pieces and ferment as dough balls the heat of fermentation/metabolism would be more easily dissipated in the smaller dough mass, plus it would show a greater response to the environment, warming faster in a warm room or cooling faster in a cold room. So, as you can see you need to know all of the details of the scenario in order to fully answer your question.

Tom Lehmann/The Dough Doctor  
1224

### [\*\*Dough Clinic / Re: Dough Doctor's Basic Dough Recipe\*\*](#)

Visually, the dough balls look pretty good to me. The question is, do they open easily? Do they provide you with the finished crust you are looking for?

Tom Lehmann/The Dough Doctor  
1223

### [\*\*Newbie Topics / Re: Is it right formula??\*\*](#)

This is precisely why I always tell people to use the "difference" in diameter as a percentage when pricing their pizzas. For example, a 12-inch pizza has 113-square inches of surface area and a 14-inch pizza has roughly 154-square inches, the difference being 41-square inches. If you divide 41 by 113 and multiply by 100 you get 36.28% which simple means that the 14-inch pizza is 36.28% larger than the 12-inch pizza. If you follow this simple math you won't fall victim to the size v/s cost issue shown in the video, remember that the underlying reason for being in business is to make money. Many of my followers have heard me ask a very basic question: "Why do you want to make different size pizzas?" The correct answer to this question is "so my customers can have more of the same pizza by ordering it in a larger format". If you can buy one 12-inch pizza pan for \$10.00 but want two, the cost will be \$20.00, it should be the same when buying pizza, unless you opt to make the classic blunder of discounting the price of your pizzas, that's a whole

different story though.

Tom Lehmann/The Dough Doctor  
1222

### **Dough Clinic / Re: How do you know a dough recipe will be good?**

Steve;

Much of what you are asking can be found in the function of ingredients located in another section of this web site. As you have probably already noticed we don't like to deal with "recipes" more than we have to since a recipe is based on volumetric portions and as such are rather imprecise, whereas "formulas" are based on weight measures and are very precise and repeatable, additionally formulas are usually expressed in "bakers percent" where flour is always expressed as 100% and each ingredient is expressed as a percent of the flour weight. This allows for easy checking of the formula to determine if it is in correct balance and to see if any ingredient might be sufficiently high to impact the dough, dough handling or any of the finished product quality characteristics. Bakers percent also allows for very simple manipulation of the size of the dough while keeping all of the ingredients in correct proportion to the flour weight.

As to why we "tweak" formulas, it can be for a number of reasons such as, to better fit into our specific dough management procedure, to achieve a specific end product (crust) characteristic, to allow the dough to be better opened by a particular method, or to be better baked in a specific type of oven or specific oven conditions.

When I was teaching pizza classes I always told my students that knowing the function of ingredients allows you to effectively steer the dough or finished pizza to the characteristics that you are looking for. Take salt, for example, if the amount shown in bakers percent is less than 1.5% and the complaint is that the pizza crust has a bland or starchy taste the first action to take would be to increase the salt to at least 1.75% and probably not more than 2.5% (this is the normal range for salt addition in a pizza dough). On the other hand, if the yeast level is low and the salt level is high (3 to 3.5%) and the complaint is that the dough is difficult to open (too elastic) the problem is most likely due to the high salt level slowing the rate of fermentation so in the end the dough is not getting sufficient fermentation to properly condition the dough/gluten for easy opening into skins. It's just like steering a car, you know that turning the steering wheel changes the direction of travel we do the same thing with our doughs only in this case our knowledge of the function of ingredients is the steering wheel while the dough and finished crust characteristics are the direction of travel.

If I remember correctly, I believe it was Pizza Today Magazine in which I wrote an entire article devoted to the function of ingredients, maybe Peter can find it in the Way Back Machine?

Tom Lehmann/The Dough Doctor  
1221

### **Dough Clinic / Re: Air Bubbles**

Is the bubble formed inside the crust or under it? What does the bottom of the pizza look like?

Tom Lehmann/The Dough Doctor  
1220

### **Dough Clinic / Re: Dough Doctor's Basic Dough Recipe**

Sure, that's how you optimize the dough absorption for a specific dough formula and management procedure.

Tom Lehmann/The Dough Doctor  
1219

### [\*\*Dough Clinic / Re: Air Bubbles\*\*](#)

And when you bake your pizzas remember to prevent any char on the crust as that has been shown to have some potential health issues too. Might as well stop breathing the air too or move to a mountain top home where the air is cleaner. Moderation, everything in moderation.

Tom Lehmann/The Dough Doctor  
1218

### [\*\*Newbie Topics / Re: Is it right formula??\*\*](#)

Wow! With an 18-inch pizza being 26% larger than a 16-inch pizza an 18-inch pizza selling for only a dollar more than the 16-inch is quite buy! Better keep that one under your hat. ;D

Tom Lehmann/The Dough Doctor  
1217

### [\*\*Dough Clinic / Re: Sauce running through dough\*\*](#)

I think your problem is due to the way you are opening the skin. You are opening it with thin spots rather than a relatively uniform thickness across the entire diameter of the skin. You might try partially opening the skin using a rolling pin or pastry pin, open the skin to within about 2-inches of full diameter and then finish opening the skin to full diameter by table stretching. Not knowing your dough weight there is also a possibility that your dough weight is too light for the 12-inch pizza. Typically we see dough weights of 10 to 12-ounces used for 12-inch thin crust pizza skins. Remember, thinner does NOT make for a crispier finished crust. You might try using 12-ounces dough weight just to see if it helps resolve the issue, if it does you can fine tune the dough weight for the type of pizza you're making.

Tom Lehmann/The Dough Doctor  
1216

### [\*\*Dough Clinic / Re: Mixing Times\*\*](#)

CT;

An autolyse probably won't help much if any in this case.

Do Not Mix To Temperature! Instead, mix the dough just until it becomes smooth, then measure the dough temperature. Adjust the finished dough temperature of following doughs by manipulating the water temperature up or down as needed to give you a finished dough temperature in the 70 to 75F range. When adjusting the water temperature move it in 5F increments.

DO NOT allow the dough to warm to room temperature, instead, allow it to warm AT room temperature until it reaches 50 to 60F. If you allow the dough to warm to a higher temperature (like room temperature) the dough will easily become almost too soft to easily work with, sound familiar?

Tom Lehmann/The Dough Doctor  
1215

### [\*\*Dough Clinic / Re: Mixing Times\*\*](#)

An IR works fine at the mixer but you will need to use a dial/stem type thermometer to measure the internal dough ball temperature prior to opening.

Tom Lehmann/The Dough Doctor  
1214

### [\*\*Dough Clinic / Re: Sauce running through dough\*\*](#)

I also just "crunched" your numbers. Your 10-inch skin has 2.80-grams of dough for each square inch of surface area while the 12-inch skin has 2.74-grams. So, if the 10-inch is OK your dough weight for the 12-inch should be 316-grams + change (I'd call it 320-grams), not a big deal, but possibly a contributing factor.

Tom Lehmann/The Dough Doctor

1213

### [\*\*Dough Clinic / Re: Correlation between hydration and cook temp and time\*\*](#)

While not technically the same (Absorption is a characteristic of flour to take up and retain water or other liquid, expressed as a percent of the flour weight) while (Hydration is the ability of flour to absorb water or other liquid, there are two aspects to hydration, 1) Total amount of liquid absorbed and 2) The rate at which it is absorbed) the two terms are used interchangeably by home bakers.

Tom Lehmann/The Dough Doctor

1212

### [\*\*Dough Clinic / Re: Mixing Times\*\*](#)

No, because you are just pushing the top of the dough down so you're still reading the temperature at the top of the dough, plus the area that the IR thermometer is reading (collecting data from) is larger in diameter than a finger poke thus leading to an incorrect reading. The only way we were able to get consistently accurate internal ball temperature using an IR thermometer was to actually cut the dough ball in half and measure the temperature of the center portion. This was the only way we could get meaningful data on frozen dough balls too when we were doing studies on freezing of different type of dough and had to accurately measure the internal ball (core) temperature. The solidly frozen outer shell of the dough ball prohibited us from using a dial/stem type thermometer. We once used a drill to drill an entry hole to insert the stem into, this worked but it was a real pain. Ultimately we used a meat cleaver and a chopping block to split the dough balls in half allowing us to measure the temperature more quickly using the IR thermometer.

Tom Lehmann/The Dough Doctor

1211

### [\*\*New York Style / Re: streching and luching methods\*\*](#)

Your pizzas are not round? Nothing wrong with this but it might be indicative of an underlying dough or formulation issue? Is your dough soft and extensible at opening, or does it tend to fight you (too elastic)?

Tom Lehmann/The Dough Doctor

1210

### [\*\*New York Style / Re: Describing the feeling of finished Dough\*\*](#)

As soon as the dough has a smooth appearance you're done with the mixing process. Biochemical gluten development will take care of the rest for you during the fermentation process.

Tom Lehmann/The Dough Doctor

1209

### [\*\*New York Style / Re: Describing the feeling of finished Dough\*\*](#)

Peter:

I'd almost forgotten about that video. What a trip down memory lane! That's an excellent video on the entire dough mixing process as well as dividing and balling/rounding the dough. Can you put the video into the "tool box" for easy

future reference? I'm really glad that we got all of our pizza research done when we did, AIB is no more, and I don't know of any research facility that is doing or has interest in doing both basic and applied research on pizza.

Tom Lehmann/The Dough Doctor  
1208

### **Dough Clinic / Re: Mixing Times**

Josh;

Many home type mixers are actually pretty efficient at mixing dough so don't count them out as inefficient, also we can make up the difference in time by mixing at a higher speed (more r.p.m.). While mixing is important from a commercial point of view in that it allows for faster, easier handling of the dough (a sticky dough really bogs things down in a pizzeria when we're trying to scale and ball the dough) it is not nearly as critical when making pizzas at home as we are dealing with only a few pizzas at a time. Remember, the main reason for mixing to get that dry, smooth skin is to facilitate dough handling only. If you don't mind putting up with a sticky or tacky dough you could actually stop mixing as soon as the dough forms a ball that doesn't look like "brain matter" about 5-minutes into the mixing process after adding the oil.

We teach a true no-knead mixing process to home bakers and it involves mixing with a wood spoon, no kneading or anything else. The resulting dough looks like oatmeal, it is transferred to an oiled bowl, the dough itself is lightly oiled, it is then covered with a piece of plastic and allowed to room ferment for 2 to 3-hours, it's turned out of the bowl, kneaded a few times and balled then placed back into the oiled bowl for another 3-hours. It is then turned out of the bowl and divided into multiple pieces for our pizzas or made into a single pizza depending upon the dough size. The resulting crust eats quite tender and has an open, porous crumb structure. Not too shabby for pizza made at home from a dough that didn't need any kneading. The process also makes great bread too, I normally make round loaves from this dough.

Your proposed method for measuring the temperature in the refrigerator is the same that we used except that we used oil instead of water since it doesn't support microbial growth.

Tom Lehmann/The Dough Doctor  
1207

### **Dough Clinic / Re: Dough Doctor's Basic Dough Recipe**

Your problem could be due to insufficient yeast, excessive salt, insufficient sugar for the dough management procedure being used and probably a few other things too but I could do a much better job of answering your question if I could see your entire dough formula as well as dough management procedure.

By the way, when mixing large doughs like that we typically have to use 65 to 70F water temperature. A quick and easy way to find the desired water temperature is as follows: 145 minus flour temperature = water temperature for a finished dough temperature in the 80 to 85F range.

Tom Lehmann/The Dough Doctor  
1206

### **Dough Clinic / Re: Dough Doctor's Basic Dough Recipe**

What is the dough weight that you're using for that pizza and what is the diameter? After the CF period are you allowing the dough balls to come up to at least 50F before opening them?

It appears that you are opening the dough using a sheeter, is this correct?

The pan shown appears to be a 1-inch deep pan, what is the target thickness for the finished crust?

I have an idea of what the issue is but I just need a little more information.  
Tom Lehmann/The Dough Doctor  
1205

### **Dough Clinic / Re: Dough Doctor's Basic Dough Recipe**

I think your problem stems from the use of a sheeter to open the dough. The sheeter at least partially degasses the dough and at the very best creates a small, bread like cell structure in the dough (in fact, this is exactly how we get that nice, small/fine crumb structure in white sandwich bread). There are a few things that you can do to achieve the characteristics that you are looking for, first is to optimize the dough absorption. To do this begin increasing the dough absorption by 5% (from the appearance of your dough it appears to be a bit low in absorption for what you are trying to achieve) then make 2% adjustments after that if necessary. The softer dough will more readily expand during the proofing period and during the oven spring phase of baking. If your final proofing time is still too long (more than 75-minutes) increase the amount of IDY to 0.4%. I don't know what you are looking for in the finished crust but for a pan style pizza your dough looks to be kinda thin in the pan so you might also want to experiment with trying a heavier dough weight in combination with the above recommendations. I'd suggest trying a couple pizzas each with a dough weight of 18, 20 and 22-ounces. With the heavier dough weight you will get a more pronounced raised edge during the baking process if that's what you are looking for.

By the way, when I make deep-dish pizza my dough scaling weight for a 12-inch pan is 16-ounces which is a dough loading of 0.14159 (ounces of dough per square inch of pan surface area), based on this I would use 21.8-ounces of dough in a 14-inch pan.

Tom Lehmann/The Dough Doctor  
1204

### **Dough Ingredients / Re: Sourdough Bread Machine Flour Mix**

It appears to be an inactive sour which is designed to provide a flavor only (hence the need to add yeast). We recently had some discussion here on a similar product from Red Star.

Tom Lehmann/The Dough Doctor  
1203

### **New York Style / Re: Describing the feeling of finished Dough**

If the dough is over fermented you will find that the dough is too extensible, it may also be sticky and it can collapse under the weight of the topping ingredients resulting in a tough, chewy finished crust. If the dough is REALLY over fermented it will become "bucky" (difficult to stretch without it tearing), it may also exhibit excessive memory characteristics at opening resulting in the dough continually snapping back, note that under fermentation will impart a lot of the same characteristics as excessively over fermented, the main difference being that the under fermented dough generally doesn't tear as readily.

Tom Lehmann/The Dough Doctor  
1202

### **New York Style / Re: Describing the feeling of finished Dough**

John;  
Do you mix to temperature or time?

Tom Lehmann/The Dough Doctor  
1201

**[Pizza News / Re: Local opinion piece, bleached vs unbleached](#)**

It would read better if he/she knew what the hell he/she was talking about!

1) Need to study up on why bleached flour became popular in the U.S.  
2) KBRO<sub>3</sub> is indeed a known carcinogen but it is converted to bromide (which is safe) during the baking process and KBRO<sub>3</sub> was never detected, then in the 1970's the Japanese perfected a test procedure that could detect KBRO<sub>3</sub> in ppb (parts per billion) not ppm (parts per million) as previous tests could detect. They found trace amounts (ppb) of residual KBRO<sub>3</sub> and it was immediately banned in many countries. Today the legal limit for KBRO<sub>3</sub> is 15-ppm at which level residual even at ppb cannot be detected.....argument: "but that doesn't mean it isn't there". By that logic I guess we should stop eating eggs and ground meat since both are assumed to be E-coli positive (now you know why you should not eat raw/uncooked hamburger or eggs, yes that includes cake and cookie batter too (no more licking the bowl). But wait, doesn't cooking kill the bacteria? Yes it does, but does it kill 100% of it? You won't know for sure unless you test what you are about to eat, so lets just avoid eating ground meat and eggs as well as anything made with them. This seems absurd to me, in view of what is in our drinking water, in the pure city air which we breathe, in the city swimming pool (speak of chlorine), how about the mercury in the ocean fish that we eat? It just goes on and on and on, I for one, decided a long time ago to cut my losses and stop worrying about the foods that I eat, I believe in redeeming social value, by this I mean I select foods that are known to be more nutritious such as whole wheat breads/flours, etc. and I really don't care much about the "additives" in them, I eat potatoes but always order with the skin on if possible, I never peel an apple (not even when making apple pie), I drink juices with the pulp (fiber is good for us). Worrying about too many things will give you high blood pressure or an ulcer and in my world those are also dangerous and should be avoided too.

Eat and drink in moderation and be merry!

Tom Lehmann/The Dough Doctor

As for being banned in Europe, true, it is, but then so is aluminum as it pertains to any kind of food. Why? Because a researcher found aluminum in the brains of persons who had died with Dementia so aluminum (yes pots and pans too) were immediately banned. We've all seen pock marked aluminum pots and pans, now you know where all that aluminum went! False! It doesn't quite work that way, and the aluminum found in the brain matter was discovered to be normal

1200

**[New York Style / Re: Describing the feeling of finished Dough](#)**

How in the world do you come up with 130F water temperature? 145 minus flour temperature (45F) = 100F water temperature. If you are using flour right out of the fridge you might be better off bringing it out the day before you plan on using it and putting it in a bowl to warm to room temperature. The warmer flour will hydrate much better and more quickly during the mixing process which is better suited to the high speed mixing of a food processor.

Tom Lehmann/The Dough Doctor  
1199

**[Dough Ingredients / Re: Sourdough Bread Machine Flour Mix](#)**

Just guessing, 0.375% IDY and 62% dough absorption.

Tom Lehmann/The Dough Doctor

1198

### **Dough Clinic / Re: Is my dough still good**

Don't worry about the black spots, if anything the dough actually looks to be a bit under fermented.

Tom Lehmann/The Dough Doctor

1197

### **New York Style / Re: Describing the feeling of finished Dough**

So? where did the numbers come from?

The formula of 140 minus flour temperature = water temperature is correct for doughs having a targeted finished dough temperature in the 82 to 88F range. It comes from the Red Star "Directions for Use Guide doe Instant Yeast".

The 130 minus flour temperature = water temperature is correct for use with doughs having a targeted finished dough temperature in the 70 to 78F range. As there are so many variables involved with mixing a dough one has to keep in mind that these formulas are not precise but they will get you close to the temperature range you want your finished dough temperature at. This will allow you to easily adjust the water temperature (in 5F increments) for following doughs to zero in on the exact water temperature needed to give you the desired/targeted finished dough temperature you want for YOUR specific dough formula mixed in YOUR mixer in YOUR kitchen/shop.

Tom Lehmann/The Dough Doctor

1196

### **Pizza News / Re: Local opinion piece, bleached vs unbleached**

I was in charge of the Experimental Baking Group at AIB when the bromate thing hit the fan and we all had a good idea of what was to follow so we embarked on a rather lengthy study both in-house and through collaboration with the baking and allied industries to find an acceptable substitute for potassium bromate. The study continued for several years and during that time we all learned a lot about how different dough strengtheners work both by themselves and when used in combination with other dough strengtheners. Today we (the baking industry) have some excellent oxidative enzyme type dough strengtheners to work with as a replacement for potassium bromate but for the most part they are only used in very specific applications such as frozen dough and some specialty breads and are not generally in wide use for a couple of reasons such as:

1) We found that bromate really wasn't needed except in continuous mix bread aka batter whipped bread (common in the 50's and 60's), instead it was being used as a crutch to help maintain product quality with less than stellar performing flours available at the time.

2) Wheat breeders were developing new and stronger wheat varieties for the then popular continuous mix bread processes BUT as continuous mix bread fell from popularity (rightfully so) by the early to mid 70's the baking industry had flour being supplied to it by the millers that was too strong for the bread making process which replaced continuous mix bread, the sponge and dough bread making process. In some bakery plants they used a flour brew process where 30 to 40% of the flour was fermented in the liquid brew (think biga), in this case the new flour created even more issues as the brew flour could not be increased above 40% due to gluten separation so the finished breads were always showing signs of excessive strength (too much volume/height and wild break and shred) were critical issues as the faults interfered with high speed bagging of the bread.

3) Issue #2 above was of the highest critical nature to the baking industry at the

time (we also worked on that too as we began researching ingredients known as "reducing agents") which included things like L-cysteine, glutathione aka dead yeast, various vegetable powders (onion and garlic), potassium sorbate and a few others). With #3 resolved, the baking industry seemed to settle down and began making decent bread once again and with the stronger flours available they soon learned that bromate really wasn't all that necessary so when the bromate replacers became available they were pretty well met with a yawn except for a few specialized applications like the frozen dough previously mentioned.

4) Due to the growing consumer concerns over the use of bromate most bakeries readily deleted bromate from their dough formulas with no ill affects to finished product quality.

Today flour can still be had that is bromated but there are strict Federal guidelines limiting how much bromate (in total) can be used. For the most part we can buy flour in 50# bags that is either bromated or non-bromated, your choice. As a side note, Interstate Brands Corporation Bakeries began producing a white pan bread which they called "Grandma's Bread" this bread was unique for the time in that it was made with a non-bleached flour, this means the flour had a natural creamy/yellowish color and the finished bread had a corresponding yellowish crumb color, they opened the gap on their sheeting rolls at the moulder for a slightly more open crumb structure and a whole new direction was created for white pan bread, that was one of "old fashion", like grandma used to make. From that point on most flour being shipped to bakeries was now un-bleached. This still exists to this day.

It's really fun and interesting to see all of this unfold especially when you're in the thick of it and in some way you realize that history is being made before your very eyes and you're a part of it.

How sad to see AIB go the way of the DODO BIRD as no one will ever be able to have such great exposure in the future.

That's our trivia lesson for the day.

Tom Lehmann/The Dough Doctor  
1195

### **Dough Clinic / Re: Is my dough still good**

That's my kinda pizza! Looks GREAT!

Tom Lrhmann/The Dough Doctor  
1194

### **Dough Clinic / Re: Blitz Pastry method?**

Sure, Any regular dough formula will work for this WITH the following changes;

- 1) Increase fat content to 10% in the form of butter or margarine (Danish butter works far better than any other type of butter).
- 2) Freeze the butter and cut into peanut size pieces (keep frozen).
- 3) Mix the dough as you normally would (just until smooth), then add the butter and mix in just until the butter pieces are incorporated into the dough). In don't mean as a part of the dough, you just want to have the butter pieces incorporated as pieces in the the dough).
- 4) After mixing, turn the dough out of the bowl and sheet the dough using a rolling or pastry pin to about 1/2 to 3/4-inch thickness and give it a 4-fold (Google it if you don't know how), then cover with a sheet of plastic for 20-minutes and give it a 3-fold and wrap in plastic and refrigerate for 24-hours.

Remove dough from fridge and allow to warm to 55F, then sheet out to desired thickness (3/16 to not more than 1/4-inch thick, unless you're making a pan style

pizza, then sheet it to 1/2-inch thickness) cut to desired diameter, dock with a blunt dough docker, dress and bake.

This will give you a crust similar to the old Tony's Italian Pastry Style Crust (frozen pizza).

Tom Lehmann/The Dough Doctor  
1193

**Dough Clinic / Re: Considerations when adding chia, flax, other seeds to dough?**

For bread you are going to have a tough time with a 50/50 mix, I suggest starting with a 65/35 blend (35% being the seeds). You will need to pre-hydrate the seeds prior to addition to the dough. If you will go back into the archives you will find where I've provided instructions on how to find the optimum absorption for the multi-grain blend of a multi-grain dough. It's important to get this right as it will have a huge impact upon the finished bread quality as well as the quantity of seed that can ultimately be incorporated into your dough. Remember to develop your seed blend first, then do the absorption determination, if you change the seed blend composition the absorption will change and you will need to find the absorption of the new blend.

You will also want to keep your total dough fermentation time on the short side (6-hours?) and is adding a sour don't get too heavy handed as both fermentation and the sourdough starter will weaken the dough making it more difficult to carry the seeds without collapse.

Tom Lehmann/The Dough Doctor  
1192

**Dough Clinic / Re: Is my dough still good**

3 to 4-days is what one might refer to as the suggested optimum, it can still be good to use for some time after that. It all depends upon how well the dough was refrigerated as well as the freshness of the CY and the strength of the flour.

Tom Lehmann/The Dough Doctor  
1191

**Dough Clinic / Re: Mixing Times**

Measure the internal dough ball temperature at the time of opening, by doing this you will be able to temper the dough ball to this same temperature any time of the year, regardless of room temperature and the dough will always perform/handle in a similar manner. Most pizzerias allow the dough ball to reach 50F before opening but many home pizza makers will allow it to reach a higher temperature with 60F being a pretty common temperature, just remember that the higher the dough temperature the more difficult it can be to open if you are not proficient at opening a dough ball into a skin.

Tom Lehmann/The Dough Doctor  
1190

**Dough Clinic / Re: Is my dough still good**

It certainly can as the diastatic malt will convert starch into fermentable sugars but 2% is a high dose of diastatic malt, if you are experiencing stickiness of the dough it is most likely due to the high malt level, in that case just begin backing it down to eliminate the stickiness.

Tom Lehmann/The Dough Doctor  
1189

## [Neapolitan Style / Re: Recipe for dough with 100% biga](#)

Please excuse me for my confusion, but a "biga" made with 45% absorption, wouldn't it be a sponge rather than a biga? I normally think of a biga as being made with 60% absorption or more.

You mention adding water until the dough is 65% hydrated but what is the total dough absorption? For example, if the total dough absorption is 68% and you add water until it is 65% hydrated wouldn't you be adding just 65% of 68 or 44.2% absorption? Or maybe the use of the word "hydrated" is incorrect in this instance and maybe you mean 65% absorption? To answer your question regarding the yeast amounts we would need to know at what temperature you plan on fermenting the biga at.

Tom Lehmann/The Dough Doctor  
1188

## [Dough Clinic / Re: Considerations when adding chia, flax, other seeds to dough?](#)

No, it's not just in your head. You are spot-on. Anytime non-gluten forming flours are added we always use a sufficiently strong flour to make up for the dilution of the gluten by the non gluten forming flour(s).

Tom Lehmann/The Dough Doctor  
1187

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Hut pan specifications](#)

We used to have a bunch of old P.H. pans at AIB. They were nesting pans with a horizontal line indented in the pan about 5/8-inch above the bottom of the pan, this was the height to which they would proof the dough to.

Tom Lehmann/The Dough Doctor  
1186

## [Pizza Cheese / Re: Grande Cheese \\$25 for 5lbs? Is it worth it?](#)

As a reference most pizzerias are paying around \$3.00 plus change per pound for Grande shredded.

Tom Lehmann/The Dough Doctor  
1185

## [Starters/Sponges / Re: Need help with biga dough](#)

Nothing if the picture is of the biga, if it is of your dough its under mixed.

Tom Lehmann/The Dough Doctor  
1184

## [Neapolitan Style / Re: Recipe for dough with 100% biga](#)

You have a biga and you have a dough, I will assume that you want to use all of the flour in the biga and none in the dough side. I will also assume that you want to ferment the biga for 24-hours at room temperature/ambient (whatever that might be), based on these assumptions I would suggest using 0.25% CY in biga #1; 0.15% in biga #2 and 0.1% in biga #3. For IDY use only 40% as much IDY as you did CY.  
Tom Lehmann/The Dough Doctor

1183

## [Stones/tiles/steel, Pans & Accessories / Re: Pizza Hut pan specifications](#)

It's a straight sided pan. The deeper pan allows for better protection of the toppings from getting scorched during baking. You might also want to get a deep pan gripper while you're at it too. A 1-inch wide flexible blade cake decorating

spatula is the preferred tool to use for running around the side of the pizza and to help glide the pizza out of the pan. DO NOT USE A KNIFE!

Tom Lehmann/The Dough Doctor  
1182

**[Starters/Sponges / Re: Need help with biga dough](#)**

Please share your entire dough mixing process.  
Tom Lehmann/The Dough Doctor  
1181

**[Dough Clinic / Re: Using oil to intentionally weaken dough](#)**

The purpose of adding oil is not to hinder gluten formation but instead to provide flavor both directly (flavor of the oil) and indirectly (oil holds/retains flavors). It also lubricates the dough for improved expansion properties as well as coating the cell structure for improved gas retention both of which result in better oven spring. Oil also exerts a tenderizing effect upon the crumb resulting in a less chewy finished crust which is achieved through the lubricating effect as mentioned above.

Old school is to add the oil to the water and mix together (why?) it will not form an emulsion. The oil immediately separates from the water and floats to the top of the water, when the flour is added the oil is absorbed into the flour rendering a portion of the flour incapable of forming gluten which leads to perceived inconsistencies in dough absorption and very real differences in dough handling properties. By using the delayed oil addition mixing method the water is added first (salt and sugar can be added to the water if desired) and then the flour is added along with the yeast, it is then mixed until no dry flour is observed in the bottom of the mixing bowl, the oil is then added and incorporated while mixing at low speed, once the oil is incorporated at low speed the dough is mixed at a higher speed to develop the gluten to a point where the dough takes on a smooth, somewhat satiny appearance. This is all the gluten development needed or desired for pizza dough production that will be further subjected to a period of fermentation. Putting oil into an autolyze is, in my opinion counter productive since the function of an autolyze is to achieve better hydration of the flour, this is especially so when high dough absorptions are employed.

Tom Lehmann/The Dough Doctor  
1180

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza Hut pan specifications](#)**

I just checked my pans, you are correct. The pans are tapered.  
Tom Lehmann/The Dough Doctor  
1179

**[Starters/Sponges / Re: Need help with biga dough](#)**

Try this, after allowing the biga to ferment overnight add the remainder of the water to the mixing bowl along with the salt (no need to mix), then add the remainder of the flour (all of it), and mix at low speed until the biga and flour are incorporated, then mix at a higher speed for at least 5-minutes. Let me know what the dough looks like.

Tom Lehmann/The Dough Doctor  
1178

**[Dough Clinic / Re: Using oil to intentionally weaken dough](#)**

But, keep in mind that when using the delayed oil addition method of mixing the gluten development isn't impaired.

Tom Lehmann/The Dough Doctor  
1177

**Dough Clinic / Re: Blitz Pastry method?**

Whereas Danish butter is relatively pliable even when taken right out of the fridge and it doesn't melt like our regular domestic butter does. The Lakpur brand is what we have available to us here in Manhattan, KS. Once you try it in pastries you will never use domestic butter again.

Tom Lehmann/The Dough Doctor  
1176

**Dough Clinic / Re: In cold fermentation, does it matter when I ball the dough?**

It is impossible to fully answer your question without knowing a lot more about the dough in question which is probably why you have had a problem finding a definitive answer, and even then the answer will be specific only to YOUR dough. The factors which would influence the answer to your question would include such things as;

Dough formulation.

How and how much the dough has been mixed.

The finished dough temperature.

Size/weight of the total dough as well as the weight of the individual dough balls.

Type of container(s) used to ferment the dough as well as the dough balls in.

The strength of the flour.

Actual room temperature.

Tom Lehmann/The Dough Doctor  
1175

**General Pizza Making / Re: When to add the oil**

JPChicago;

The delayed oil mixing method was not used in bread production during the time your father was employed in the baking industry as the type of fat used in wholesale bread making at the time was either a plastic fat (shorthening) or liquid bread shortening both of which really don't require a delayed addition like vegetable oil does. Today vegetable oil is much more commonly used and it is metered into the horizontal mixer at the end of the first minute of mixing.

As a side note, I'm also from Chicago (far south side) Tinley Park. During the very early 60's I worked in the Jewel Tea Bakery, 1955 W. North Avenue, Melrose Park, IL. There was also Burney Bros. Bakery, Sara Lee Bakery, Gonella Bakery and a sweet goods/pastry bakery whose name I don't remember anymore as well as two bun plants which made buns for McDonalds. Just out of curiosity, can you share with me what years and which bakery your father worked at?

Tom Lehmann/The Dough Doctor  
1174

**Stones/tiles/steel, Pans & Accessories / Re: Cant Decide between rocker knives**

From personal experience I personally like the Rocker Knife (PKR20) because it seems to work better with deep-dish pizzas than the (PPK17) and it cuts all the way through the edge crust better on thin crust pizzas but in the end I think it all comes down to personal preference.

Tom Lehmann/The Dough Doctor  
1173

## [\*\*Dough Clinic / Re: Correlation between hydration and cook temp and time\*\*](#)

The research that we did at AIB indicated that a dough which expands more during baking (increased oven spring), for whatever reason (including increased dough absorption) will produce a crispier finished crust. In a deck oven or stone hearth oven the crust is being baked at a much higher temperature than the toppings due to the evaporative cooling effect of moisture in the sauce and toppings.

Tom Lehmann/The Dough Doctor

1172

## [\*\*Dough Clinic / Re: In cold fermentation, does it matter when I ball the dough?\*\*](#)

Please refer back to my above post.

Tom Lehmann/The Dough Doctor

1171

## [\*\*Dough Clinic / Re: In cold fermentation, does it matter when I ball the dough?\*\*](#)

The benefits of bulk fermentation are essentially non-existent with such a small size dough. You could just as easily scale and ball the dough right after mixing and I'm betting you would get the same results. Your IDY percent is OK for up to about 3-days cold fermentation. Try this, after mixing, scale and ball the dough, cold ferment for 3-days, remove from the fridge and allow to warm until the internal temperature of the dough ball reaches 60F/15.5C before you begin opening it into a skin.

Tom Lehmann/The Dough Doctor

1170

## [\*\*Off-Topic Foods / Re: Your favorite Instant Pot recipes\*\*](#)

From the title of the post I was expecting this to go in a totally different direction.

:D

Tom Lehmann/The Dough Doctor

1169

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Sicilian, Detroit and Chicago deep dish pans in Germany\*\*](#)

The non-stick finish on the Lloyd's Pans WILL NOT come off. We used them for MANY years and never had a problem with the finish, I used to demonstrate the durability of the finish (you can do this yourself) by rubbing the edge of a quarter briskly across the pan, the quarter would be abraded as demonstrated by a flat spot where it was rubbed on the pan but absolutely NO damage to the pan or its finish. I can also show you pans that have been in commercial (pizzeria) use daily for over 10-years and the finish is still intact. If you want some pans without any finish on them you might look into cake pans, these are usually available in steel or aluminum, remember though that you will need to season these pans prior to use and you will need to be highly protective of the seasoning by never soaking the pans in soapy water or allowing them to remain wet for any length of time, failure to do this will result in the seasoning coming off of the pans like a bad sunburn, you will then need to strip all of the seasoning off of the pan and start all over again. One last thing, with the Lloyd's pan, it will need to be washed (soapy water will not harm it) prior to the first use, it should then be lightly oil for the first bake, after that the use of oil in the pan is optional. We always use a light application of oil for the deep-dish pizzas but never oil the Lloyd's disks for thin crust pizzas. To clean

the pans and disks just wipe them off using a clean towel and they're ready for the next use.

Tom Lehmann/The Dough Doctor  
1168

**Dough Clinic / Re: In cold fermentation, does it matter when I ball the dough?**

Only if the total dough weight is 20-ounces or more.

Tom Lehmann/The Dough Doctor  
1167

**Neapolitan Style / Re: Over fermentation issues (CY or Flour issue?)**

With 0.5% CY and 60% dough absorption and less than 24-hours total fermentation time the dough should not be over fermented however that doesn't mean that the flour/flours that you are using have sufficient fermentation tolerance to allow the dough to be fermented for more than about 12-hours. A quick way to test for this is to replace your existing flour blend with 100% bread type flour, if the dough performs better you will know what the issue is. This is based on the assumption that you have the finished dough temperature under control in the 75 to 85F range, if the dough is any warmer than this it can accelerate the fermentation rate resulting in the potential for dough collapse.

Tom Lehmann/The Dough Doctor  
1166

**Chitchat / Re: Mini lightbulb question**

Matt;  
Go to Bulbtown@bulbtown.com/<[www.bulbtown.com](http://www.bulbtown.com)> to see what they have in their very vast inventory of bulbs. In addition to a huge selection their prices are very good too, we buy all of our landscape light bulbs from them.

Tom Lehmann/The Dough Doctor  
1165

**Neapolitan Style / Re: Almost same formula, 5 times the amount of yeast. Am I missing something ?**

Can you provide us with a photo of the over proofed dough balls? Too bad the video didn't show a fast forward of the dough balls after 6 to 8-hours.

Tom Lehmann/The Dough Doctor  
1164

**Dough Clinic / Re: Can I fix a dough with too much yeast?**

We need to know what your finished dough temperature was, and yes 1% IDY was too much yeast. I would have suggested using 0.25 to not more than 0.3% IDY for a 72-hour fermentation period. You also want to use the SAF (RED LABEL) yeast, NOT the GOLD LABEL, as stated, the gold label is a high sugar tolerant form of IDY BUT it also has a very low tolerance to salt. Typically we see a slowing of fermentation rate when salt levels above 1% are used with this type of yeast. My guess is that your finished dough temperature was too high which would explain the fermentation rate which you were experiencing, a good finished dough temperature to target is 70 to 75F/21.1 to 23.8C.

Tom Lehmann/The Dough Doctor  
1163

**Neapolitan Style / Re: Almost same formula, 5 times the amount of yeast.**

## [Am I missing something ?](#)

Not too shabby! :chef:

Now you can begin experimenting with the dough formula to achieve the characteristics you're looking for which will make it "YOUR" pizza.

Tom Lehmann/The Dough Doctor

1162

## [Neapolitan Style / Re: Over fermentation issues \(CY or Flour issue?\)](#)

Are you saying that the dough balls represented in the picture are over fermented?

Tom Lehmann/The Dough Doctor

1161

## [Neapolitan Style / Re: Over fermentation issues \(CY or Flour issue?\)](#)

With regard to weighing the yeast, if your scale will not weigh 1-gram then try this, weigh 5-grams and put it into 50-grams of water, stir well to suspend the yeast in the water and then weigh 11-grams of the suspension. Within that 11-grams of yeast suspension will be 1-gram of yeast. Discard the remainder of the suspension or make some bread with it.

Tom Lehmann/The Dough Doctor

1160

## [Dough Clinic / Re: In cold fermentation, does it matter when I ball the dough?](#)

I'd go with 0.15 to 0.2% IDY with your dough management process. Using my dough management process I normally use 0.3%.

Tom Lehmann/The Dough Doctor

1159

## [Prep Equipment / Re: Refurb Commercial KitchenAid 8Qt](#)

That metal clicking, like "tink, tink, tink" is the agitator hitting the bottom of the bowl. With the bowl in the fully raised position run the mixer through each of the gears, if you get the same tinking sound you will need to adjust the bowl to agitator clearance, if you don't get the tinking sound with an empty bowl but only when there is dough in the bowl the bowl tabs aka "ears" are worn and not locking the bowl down securely allowing the pull of the dough to lift the bowl slightly which allows the agitator to contact the bowl bottom. Try holding the bowl down securely in place while mixing a dough, if the tinking sound goes away you know what the problem is. A little bit of this isn't a big issue for now, but over time the bowl locking pins will wear and the problem will get worse eventually leading to the bowl jumping off of the arms while a dough is being mixed. I've seen this on any number of mixers over the years, the only real solution to the issue is to either replace the pins or get a new bowl, or both. Some of the smaller mixers (N-50) used to be equipped with a locking mechanism to lock the bowl onto the pins (all of the large mixers have them but many of the smaller mixers don't). The locking mechanism used on the small mixers differs from those used on the large mixers in that it is shaped like a flat hook which is fastened to the bowl arms and moves laterally so as to swing over the top of the bowl tabs thus locking the bowl down. Your mixer may have once had them or it may be possible to retrofit these locks onto your mixer thus preventing further wear.

Tom Lehmann/The Dough Doctor

1158

## [Starters/Sponges / Re: Need help with biga dough](#)

The dough looks like it can take another 2 to 3-minutes of mixing, but what you have is indeed much improved.

Tom Lehmann/The Dough Doctor

1157

### **Dough Clinic / Re: Pizza aerobics**

However, if you are asking about how the factors involved in making dough for consumption which can be tossed as seen in the video, the factors are:

2 to 2.5% salt.

Flour with a high protein content.

Optimum dough absorption, NOT MAXIMUM, probably in the 58 to 60% range.

Optimum dough fermentation for the yeast level employed.

It is interesting to note that in the video we see the dough balls being partially opened using a pastry pin prior to hand tossing, this is important as it provides a more uniform thickness dough skin, without thin spots, which makes it MUCH easier to toss without tearing. You have heard me advocate this many times for those who might be "toss challenged".

The real key here is to mix the dough just until it develops a smooth appearance and then allow biochemical gluten development to develop the gluten for you. This results in a strong and extensible gluten structure as opposed to mixing which develops a more elastic gluten structure.

Tom Lehmann/The Dough Doctor

1156

### **Shop Talk / Re: Opening a NY Style Sliceshop**

Why not just place a full size deck oven right behind the counter, you will have greater capacity, more consistent temperature and in my opinion it will look more "professional". I've seen this done many times with great success.

By the way, Marsall deck ovens would be a an option to look at for this application as they have a thick deck for storing a lot of latent heat which you will need for quick reheating of the slices. I'd also go with gas if at all possible, as it's much more efficient and actually gives a better bake.

Tom Lehmann/The Dough Doctor

1155

### **Starters/Sponges / Re: Need help with biga dough**

A huge risk that is run by following the above "edit" note is that of washing (separating) the gluten from the starch (this is how we "wash" gluten from the flour). If the gluten is even partially separated from the flour it is impossible to re-incorporate it thoroughly and the end result is a dough that has a lumpy appearance which is somewhat weaker too. We ran into this very issue in the bread and bun industry when using the brew process (essentially a biga) where the gluten would be separated during agitation (only 1-r.p.m. sweep agitation) resulting in dough weakness, this eventually lead to the industry, for the most part reverting back to the sponge and dough process (the sponge is essentially a 50 to 55% absorption biga) which after the fermentation period is placed into the mixer and mixed with all of the other ingredients at the same time to produce the desired dough characteristics.

Tom Lehmann/The Dough Doctor

1154

### **Newbie Topics / Re: Are American Pizzas (New York etc) made with hard or soft wheat?**

In the U.S. as well as Canada durum wheat is a different type of wheat than the hard red wheats used for making strong flours. The durum wheat produces gluten that is very tough and elastic which is excellent for pasta production which is why we typically reserve durum for use in making pasta, it is also widely used in making oriental noodles. The types of wheat used for milling into flour for bread and roll production are varieties of hard red winter, hard red spring, or hard white wheat. We also have varieties of soft wheat which can be either soft red or soft white wheat varieties. The soft wheats are typically lower in gluten forming proteins which also produce a softer, more extensible gluten characteristic. In the U.S. and Canada soft wheat flours are reserved for use in making pastries, cookies and biscuits which is why they are referred to as "pastry flours".

Tom Lehmann/The Dough Doctor  
1153

### [\*\*Starters/Sponges / Re: Need help with biga dough\*\*](#)

I believe that I've mentioned this before that high absorption doughs are the one weakness of spiral mixers, they just don't handle them quite as well as planetary mixers do. Holding back a portion of the water is the only realistic way to mix high absorption doughs in a spiral mixer. When we did it we used to add 70% absorption to the dough right up front and then gradually add the remainder of the water after the dough was partially developed. This worked well for us too.

Tom Lehmann/The Dough Doctor  
1152

### [\*\*Newbie Topics / Re: Are American Pizzas \(New York etc\) made with hard or soft wheat?\*\*](#)

While I can't prove it, my thoughts have always been that the Italian "00" flours probably contained a portion of U.S. or Canadian hard wheat to give it the longer fermentation tolerance that we see in some of the newer flours. I don't follow the Italian wheat varieties or the wheat breeding programs associated with developing their wheat so I have to plead total ignorance but I have seen what the breeders can and have done with U.S. wheat varieties so it wouldn't surprise me at all if they have developed soft wheat varieties with decent fermentation tolerance. To give you an example, wwaayy back in the 70's it was said that hard red winter wheat could not be developed with much more than about 16% protein content, the breeders proved that to be wrong, very wrong as then developed a couple of varieties with protein contents approaching 25%, yes! 25% protein content! I was able to test some of the flour from those super high protein content wheat varieties and boy were they ever STRONG! They were so strong that we couldn't over mix them in our mixers and fermentation tolerance was through the roof! Those characteristics were so diametrically opposed to what was desired that further work on those varieties was stopped and needless to say seed was never released for planting, no one wanted to run a risk of any of that stuff getting mixed into the normal HRW crop, and there was a fear that the DNA of the protein might be different too which could potentially open a Pandora's Box with all other wheat varieties. Moral of the story: Never challenge a wheat breeder, and never tell them that it can't be done!

Tom Lehmann/The Dough Doctor  
1151

### [\*\*Shop Talk / Re: Opening a NY Style Sliceshop\*\*](#)

By us the code requires that ALL ovens be totally under a hood, gas, electric or otherwise! Best to check with your codes department AND be sure to get their

opinion in WRITING prior to purchasing your oven/ovens. Gas ovens will exhibit superior and faster baking properties due to the higher concentration of moisture in the air within the baking chamber due to moisture/water being a byproduct of combustion, in an electric oven the air is much drier so heat transfer is not as good and baking/reheat times are longer (about 20%). If you opt to go electric be sure to get an estimate of operating cost from your local utility company. I'd still opt for a full size electric deck over a couple of the smaller ovens if space permitted.

Tom Lehmann/The Dough Doctor

1150

### [\*\*Neapolitan Style / Re: Biga - so many questions and so many things to learn!\*\*](#)

A biga is nothing more than a pre-ferment for use when making dough. In the baking industry a plastic biga is referred to as a "sponge" to be used with the sponge and dough process of making bread, if the biga has sufficient water to make it a liquid it is referred to as a brew in the baking industry. The purpose of these is to condition the gluten in a portion of the flour and to develop a level of flavor through fermentation in that flour.

A biga will usually contain from 30 to 50% (though sometimes more) of the total formula flour with an absorption of between 50 and 60% (again, it can be greater than this).

The fermentation time for a biga is usually in the 12 to 24-hour range with yeast levels (as compressed yeast, though any type of yeast can be used at correct substitution levels) of 1% for the shorter times and 0.25% for the longer time, but this should only be used as a guide as the amount can/will change with factors such as flour strength and temperature in the fermentation area.

To start a biga place the water (75F) in an appropriate size container, add the yeast and stir to suspend the yeast, then add the flour and mix in until the flour has been fully hydrated, that's all the mixing that is required. Note the temperature of the biga as well as the room temperature. lightly cover the biga (I just drape a piece of plastic over the container) and allow to ferment for the desired time. Then transfer to a mixing bowl, add the remainder of the flour and the other ingredients as well as the water (cold/45F), mix the dough in your normal manner just until it takes on a smooth appearance. At this point some prefer to bulk ferment the dough, my own preference is to scale and ball it at this time, and cold ferment for 24-hours or allow the dough balls to ferment at room temperature for about 6-hours for use on the same day as the dough was mixed. You can adjust the amount of flour in the biga, the amount of yeast or the fermentation time to vary the flavor of the crust.

Tom Lehmann/The Dough Doctor

1149

### [\*\*Dough Clinic / Re: Joe Heffernan/The Independent, Seattle/ChefSteps dough recipe\*\*](#)

I can't say much about your dough process as you don't include the finished dough temperature, but I can say that 20-minutes for the dough to warm to 50 to 60F (NOT ROOM TEMPERATURE) is mmuucchh too short, instead use a thermometer to measure the internal dough ball temperature to determine the time for your specific conditions.

To replace your bread flour with Caputo "00" flour is totally possible but I would advise you to select a flour with a long fermentation tolerance if you plan on following your present procedure. Any oven that will bake at 700F or higher will handle the "00" flours just fine.

Also, be aware that all flours are different so you may need to adjust the dough

absorption with the new flour.  
Tom Lehmann/The Dough Doctor  
1148

**[Dough Clinic / Re: Pizza aerobics](#)**

Optimum dough fermentation for a straight dough is best defined as first full rise + 25% of first full rise time. However since the straight dough procedure is seldom used when making pizza and instead a hybrid procedure is more commonly used employing different fermentation conditions there is no hard and fast rule for determining optimum fermentation, the best definition I can give you is optimum fermentation is that fermentation time which provides the best overall dough handling properties at the time of opening the dough balls into skins by whatever method you opt to use. Forget bread dough technology, it doesn't apply to pizza dough. The only real way to determine optimum fermentation is through experimenting under CONTROLLED conditions, this means that you will need to strive to maintain those factors which affect the fermentation rate as a constant, think finished dough temperature, dough absorption, type, amount and freshness of the yeast, room temperature, refrigeration temperature, internal dough ball temperature at the time of opening (50 to 60F). In other words, Effective Dough Management.

Tom Lehmann/The Dough Doctor  
1147

**[Newbie Topics / Re: Are American Pizzas \(New York etc\) made with hard or soft wheat?](#)**

Your assumptions about refrigerating the dough are absolutely correct. In addition to allowing the dough to be held for days rather than hours it also provides for much improved dough consistency and financial return, just ask Papa John's if it's any cheaper to provide refrigerated dough from a commissary once a week as opposed to making fresh dough every day at each store.

Tom Lehmann/The Dough Doctor  
1146

**[Dough Clinic / Re: Joe Heffernan/The Independent, Seattle/ChefSteps dough recipe](#)**

Hang with us and you'll be making great pizzas in short order. Parallei's advice is spot-on. I have a Dough Management Procedure posted here that you might try, it's easy to follow and makes a good pizza too, then once you have mastered that you can begin experimenting with variations to the formula or dough management procedure to satisfy your curiosity or make a pizza that is more specific to your likes.

The most important thing is to have fun of your pizza journey!  
Tom Lehmann/The Dough Doctor  
1145

**[Dough Clinic / Re: Humidity in oven.](#)**

Your idea is sound but your timing is off, instead of pouring the water when you place the pizza in the oven you should do it several minutes prior to placing the pizza in the oven. You should not be trying to flood the oven with steam as you would when making certain types of breads, instead you just want to add a little moisture/humidity to the oven. The amount of water added needs to be measured so it is all evaporated at about the same time the pizza is done baking. I'm not sure the use of lava rocks is the best idea either as it increases the surface area for

evaporation which puts a lot of moisture in the oven all at once (this is called "flooding" the oven with steam, instead you want as little area for surface evaporation as possible. Think a 2" diameter piece of pipe, 6-inches long (automotive tailpipe comes to mind) with a flat piece of steel welded to one end so it will hold water and stand upright in the oven, experiment with the amount of water added to the pipe. The issue that you will need to work out is when you add the water to the pipe it will be very hot thus releasing steam rapidly into the oven (not what you are looking for). Maybe pour boiling water into the room temperature pipe and place it into the oven a minute or so prior to placing the pizza in the oven would work better? Like I said, this will be the challenge.

Tom Lehmann/The Dough Doctor  
1144

### **Shop Talk / Re: Opening a NY Style Sliceshop**

Most shops will use a separate oven for reheating since the oven will be opened constantly as slices are reheated. Also, it's not very efficient to have the oven reheating the slices "out back" in the kitchen. Most shops have it right in front of the customer. Remember, the reheat time will likely only be a minute or so.

Tom Lehmann/The Dough Doctor  
1143

### **Shop Talk / Re: Opening a NY Style Sliceshop**

When we did the work on gas v/s electric ovens we had identical ovens of gas and electric. There was a Blodgette deck (gas and electric as well as an XLT (gas and electric) and the gas always gave a faster bake. We even went so far as to work with XLT to modify the electric air impingement oven to see if we could get it on par with its gas counterpart, we changed finger configurations to and bottom and worked with the fan speed then replaced the fan with new ones having moving more air, when all the dust had settled we couldn't get the electric oven to bake the same as the gas oven.

Tom Lehmann/The Dough Doctor  
1142

### **Newbie Topics / Re: Dough ball questions**

Actually, after you take the dough out of the fridge you are not proofing it, instead you are tempering it. The ideal temperature to allow the dough ball to come to before you begin opening it into a skin is in the 50 to 60F range. As a newbie you may not be very proficient at opening the dough so you may find it a bit easier to open the lower end of the temperature range (50 to 55F), remember, this is the INTERNAL dough ball temperature so you will need to have a dial aka stem type thermometer to measure the temperature.

Tom Lehmann/The Dough Doctor  
1141

### **Newbie Topics / Re: Dough ball questions**

Dough that is opened and used at a temperature under 50F exhibits a strong propensity to bubble during baking and dough that is much above 60F is beginning to ferment at a faster rate so it is becoming increasingly gassy which can also result in large bubbles in the finished crust as well as the fact that the dough as it ferments becomes increasingly more difficult to open and shape into a pizza skin.

Tom Lehmann/The Dough Doctor  
1140

## [\*\*Dough Clinic / Re: Blitz Pastry method?\*\*](#)

Rolls is correct with the name of the butter "LURPAK". I am sure that there are other butter brands that will work equally as well. You want to have a butter that will NOT be incorporated into the dough during mixing, shredded butter should work OK if it is a coarse shred. As for dough absorption I think 50% is too low, I'd go with 55% or a little more. If you cut the finished dough with a sharp knife you MUST be able to see the pieces of intact butter in the dough. The larger the pieces of butter the more predominant the flake will be.

Tom Lehmann/The Dough Doctor  
1139

## [\*\*Dough Clinic / Re: Blitz Pastry method?\*\*](#)

But puff pastry dough doesn't contain any yeast.

Tom Lehmann/The Dough Doctor  
1138

## [\*\*Dough Clinic / Re: 20" \(50cm Pies\) im up to 24oz \(700g\) dough balls to get up to size\*\*](#)

John;  
From the looks of the pizzas in your pictures I'd say your pizzas are somewhat thicker than a typical New York pizza, however it's YOUR pizza and YOUR version of a New York pizza so it is what it is. If your customers like it....go for it. Case in point, we have AJ's New York Pizza, Google: AJ's New York Pizza, Manhattan, Kansas. As the name indicates we sell a New York style pizza (by the slice) but the pizza is different from a true New York slice in that it is crispy (more of a New Haven style pizza), so crispy that one can pick a slice up by holding just the edge (something you could NEVER do with a true New York slice) but yet people just love it (five awards for best pizza in 10-years) and three stores, so Adam is doing something right. You HAVE to play to the preferences of YOUR audience! A true N.Y. slice would never sell here as it is much too soft, so we made it crispy and people HERE love it. If 700 or 750 grams of dough works for whatever size you are making and people like it.....go for it!!!! Never over think success, just accept it.

Tom Lehmann/The Dough Doctor  
1137

## [\*\*New Forum Members / Re: Living in Japan forces the necessity to learn to make NY Pizza\*\*](#)

Bruce;  
Welcome to the site!

The next time you make your N.Y. style pizza take some pictures, top, bottom, and a cut slice showing the internal crumb structure and send it over with a list of what you like and dislike about the pizza, also be sure to give us your dough formula as well as the entire dough management procedure including all temperatures and times. Baking conditions will also help. With this information there are many of us here who can help you achieve the characteristics you are trying to get in your pizza. You might go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and view some of the videos I have posted there on making New York style pizza.

Tom Lehmann/The Dough Doctor  
1136

## [\*\*General Pizza Making / Re: When to add the oil\*\*](#)

Your dad should have known Don Kinstrand?  
Tom Lehmann/The Dough Doctor

1135

**Neapolitan Style / Re: Over fermentation issues (CY or Flour issue?)**

If your dough rises and then collapses this is what is referred to in the bread making circles as the first full rise which represents about 60% of the total amount of fermentation the flour used in the dough will tolerate before complete break down. In a case like that all you need to do is to re-ball the dough and wait for the dough balls to ferment sufficient to be opened into skins, which depending upon temperature, amount of yeast, amount of salt and flour strength can take anything from 90-minutes to several hours.

Tom Lehmann/The Dough Doctor  
1134

**Dough Clinic / Re: adding yeast to dough, does order really matter?**

JD;

Well, it all depends if you are mixing your dough by hand or using a mechanical mixing device. If you are mixing the dough by hand the IDY must be suspended in warm (100F) water prior to addition. The best way is to add it to the dough water in the mixing bowl, however, if you are using a mechanical mixing device where the total mixing time will be 5-minutes or more the preferred way to add the IDY is to just add it (dry) right on top of the flour when you begin mixing. If the total mixing time will be less than 5-minutes it is recommended that the IDY be first suspended in 100F water and mixed into the dough water prior to beginning the mixing process.

Tom Lehmann/The Dough Doctor  
1133

**Dough Clinic / Re: Using all purpose flour when shaping dough**

Not to worry, even though your dusting/bench flour might be malted the malt will not convert any starch to sugar as there is not sufficient time for that to happen when used as a dusting flour.

Tom Lehmann/The Dough Doctor  
1132

**Prep Equipment / Re: Doughmate Dough Trays**

For bulk fermentation it is generally considered better to use a fermentation container that is smaller in diameter and deeper in depth than a rectangular shaped shallow box. The reason for this is because the smaller diameter X deeper container allows less surface area for evaporative cooling and drying which means the dough ferments at a more constant rate (as a bulk dough) ASSUMING WE ARE TALKING ABOUT A REAL "BULK" DOUGH SIZE. If you are referencing 20-ounces of dough as a bulk dough for all practical purposes it is really nothing more than a large size dough ball and it acts as such during fermentation. For home bulk dough fermentation I've found that a pasta pot works extremely well when I'm fermenting several pounds of dough. Save the dough boxes for cold fermenting your dough balls (be sure to follow the cross-stack procedure) to avoid disappointment when you open the boxes to use the dough balls.

Tom Lehmann/The Dough Doctor  
1131

**Pizza News / Re: East Coasters Mock Chicago Square Cut Pizzas**

And I remember very well back in the late 1970's and early 80's when Chicago pizza patrons were sending pizzas back to the kitchen from some of the new pizza

places because the pizzas were "burnt". It was kind of a culinary shock to Chicagoans that anyone would actually eat a burnt pizza! One has to remember that it's the huge amount of variation/difference between pizzas made in different regions, even cities and towns across this great country (and now you can add "the world") that has driven pizza to the pinnacle of culinary enjoyment that it has achieved. All of the things that make those pizzas different are the very things that have driven and continue to drive the popularity of pizza. Long Live Pizza!

Tom Lehmann/The Dough Doctor

1130

### **Dough Clinic / Re: Cinnamon rolls**

For cinnamon rolls we want a sweet tasting roll not necessarily a well fermented flavor so for this reason I normally like to target a finished dough temperature between 70 and 75F/21.1 and 23.9C, in some cases I will target a finished dough temperature of 80F/26.7C and ferment the dough at room temperature for only 2 to 3-hours before using it to make my cinnamon rolls.

The reason why I am A.R. on temperature is because it is the temperature of the dough that drives fermentation and as I've always said "Without temperature control you cannot have effective dough management" Without effective dough management you cannot have consistency from one dough to the next.

By far, the best way to judge a pizza dough to determine if it has been sufficient mixed is by its appearance. If you stop your mixer after each minute of mixing you will be able to see the dough progressively becoming smoother. As soon as the dough has taken on a smooth (not lumpy) appearance, it has been sufficiently mixed. With just a little time you will be able to look at the dough as it is mixing and see it take on the desired smoothness, once you see that, you're done mixing. As a rule, with pizza doughs as well as pastry doughs it is better to error on the under mixed side of the equation than to over mix the dough. The reason for under mixing a pastry dough is because it will receive significant gluten development during the following rolling and/or folding/forming procedures.

It is impossible to answer your question regarding your mixer as all mixers are different but suffice it to say that low speed should only be used to combine the ingredients together prior to mixing the dough at a higher speed where gluten development will actually take place, with most home type mixers I'm guessing that this will be either speed #2 or #3 but in the end it will be the highest speed at which the mixer will mix the dough without showing strain or overheating the motor.

If you don't have a spiral design dough arm on your mixer you will most likely need to periodically stop the mixer to pull the dough down off of the top of the "C" hook aka "J" hook. If your mixer has a spiral design dough arm you will not need to do this as the design of the arm pushes the dough down to the bottom of the bowl rather than allowing it to climb up the hook.

Tom Lehmann/The Dough Doctor

1129

### **Dough Clinic / Re: Complications with dough management**

First of, after the CF period you should allow the dough to warm to 50 to 60F (internal dough ball temperature, NOT external). Since you are getting a lot of sweating in the fermentation containers I'm guessing that your finished dough temperature might be excessively high, you don't mention what it is but I'd suggest targeting 70 to 75F for the finished dough temperature (after mixing). As you are having some issues with opening the dough I'd also suggest reducing the dough absorption from your present 66% to possibly 62% as this will make the dough

easier to handle both during opening and on the peel, then as you become more proficient you can begin to increase the absorption incrementally (66% may be too high for your specific flour, dough management procedure or skill level).

Remember that the ideal absorption is that which provides the best dough handling properties for YOU. It is NOT recommended that you oil your wood peel, this only makes the dough more difficult to slide off, instead, just use it as it is after lightly sanding and NEVER wash a wood peel, just wipe it down with a damp towel. Lastly, you don't say what the dough weight is for the size pizza you are making so we can't determine if your dough weight is correct or not. If you are not using sufficient dough weight you might be stretching the skin too thin which will significantly increase the tendency for the skin to adhere or exhibit poor release properties from the peel.

Tom Lehmann/The Dough Doctor  
1128

#### **Prep Equipment / Re: Doughmate Dough Trays**

Allow the boxes to remain cross-stacked until the internal dough ball temperature reaches 50 to 55F. If targeting a 3-day C.F. you can go with 55F but if targeting a longer C.F. go with 50F. Once the targeted dough ball temperature is reached you can apply the lid/down-stack. After the C.F. period remove the box from the cooler and place at room temperature and allow the dough to warm to 50F but not more than 60F (internal temperature) before using the dough. Note: Most pizzerias use 50F as it allows for a longer window of time to use the dough. One other thing, be sure to lightly oil the top of the dough balls as you place the box in the cooler, this will prevent excessive drying of the dough during the cross-stack period. DO NOT oil the box.

Tom Lehmann/The Dough Doctor  
1127

#### **Dough Clinic / Re: adding yeast to dough, does order really matter?**

The "I" in IDY stands for INSTANT as in instant hydrating (actually just fast/rapid hydrating), so if you put the IDY in cold water the water will enter into the yeast cells and remove the glutathione from the cells before the cell walls can swell to seal in the glutathione. The 100F water promotes rapid swelling of the cell wall to limit loss of glutathione from the yeast cell(s). When glutathione is flushed from the cells the yeast isn't killed but its ability to ferment is seriously impaired PLUS glutathione is a serious reducing agent which will make a dough soft and extensible to the point where it's difficult to handle (think "dead yeast" which is used as a more consumer friendly form of L-cysteine/PZ-44).

Tom Lehmann/The Dough Doctor  
1126

#### **Dough Clinic / Re: Complications with dough management**

You will want to use a dial aka stem type thermometer to measure the internal dough ball temperature. Yes, a cold dough can/will promote sticking to the peel as a small amount of condensation can form at the interface of the peel and the dough while the skin is being dressed. If your dough is still lumpy/knotty after kneading it sounds as if you may not be kneading the dough enough, yes, this can result in holes in the skin during opening. Cold dough is definitely harder to open than warm dough. As for your dough weight, it's actually a little more than what I personally use for a 10" skin, I use 7-ounces/roughly 200-grams.

Tom Lehmann/The Dough Doctor  
1125

## **Dough Clinic / Re: adding yeast to dough, does order really matter?**

Scott;

Once the IDY has been hydrated or the ADY has been hydrated and activated either one can be added directly into cold water without any problem (remember, it's the hydration process that causes the problems here), once hydrated they are both just like compressed yeast/CY.

Compressed yeast/CY, since it is already hydrated, can be put directly into cold water without any problems at all.

Note:

ADY takes about 10-minutes to fully hydrate, during that time it will also activate. IDY only takes about 3 to 5-minutes to fully hydrate so you will not see any activation during that time. This is why we say that ADY is both hydrated and activated prior to addition but IDY only needs to be suspended. When the IDY is added in this manner its performance is essentially identical to that of CY, however if you are replacing ADY with IDY you might want to both hydrate and activate the IDY prior to addition to retain the same performance/fermentation characteristics. This is really not much of an issue with regular doughs but it can be an issue with very short time doughs such as no-time dough or emergency dough.

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

1124

## **Dough Clinic / Re: Complications with dough management**

I see your problem already. A 10 to 20-minute rest (fermentation period) after mixing is WWAAYY too short. Change your 10 to 20-minutes to 2-hours (or more) and I think you will find you will get a smoother dough. You need to allow time for biochemical gluten development to develop some of the gluten before the kneading process, or if you want to develop biceps like the village blacksmith you can develop the gluten through energy input (like a mechanical dough mixer does) but it will take an hour or more of continuous dough kneading to do so. I don't know about you but my biceps are just fine and I've got better things to do with my time so I always opt to let biochemical gluten development do the hard work of gluten development for me, allowing me to save my strength for dressing, baking and eating those pizzas :-D

Tom Lehmann/The Dough Doctor

1123

## **Dough Clinic / Re: Complications with dough management**

Give it a try and let's see how it works out for you.

Tom Lehmann/The Dough Doctor

1122

## **Newbie Topics / Re: Newbie looking for a basic beginner recipe for home oven**

If you will go to the PMQ web site at <[www.pmq.com](http://www.pmq.com)> and go to the Recipe Bank, and use "pizza dough" for your search words you will find a home made pizza dough "recipe" that I have posted there. This is a well proven dough formula and procedure and will serve to get you started making pizzas from which you can build upon.

Tom Lehmann/The Dough Doctor

1121

## [\*\*Dough Clinic / Re: adding yeast to dough, does order really matter?\*\*](#)

Almost NONE of the yeast cells reproduce during dough fermentation, if they did we would have what is known as run away fermentation, think of it like a nuclear explosion of yeast cells, 1 becomes 2, 2 becomes 4, 4 becomes 8, 8 becomes 16, 16 becomes 32, you see the trend. Yeast cells divide by a process known as budding, within the yeast that we add there are mature cells as well as budded cells (cells partially budded with "daughter cells") as well as recently divided cells. During the fermentation process the mature cells DO NOT bud, some of the already budded cells will mature and divide but neither will reproduce, the recently budded cells may mature but they will not reproduce. Any damage done to the yeast cells due to improper hydrating will actually impact the number of cells capable of participating in what we call fermentation.

Tom Lehmann/The Dough Doctor

1120

## [\*\*Newbie Topics / Re: Newbie looking for a basic beginner recipe for home oven\*\*](#)

Humm, I must have been side tracked, didn't know you were looking for second level dough formulas.

You might give this one a try:

Flour: 100% (Strong bread type flour)

Salt: 1.75%

Sugar: 2% (optional)

Oil: 2%

IDY: 0.375%

Water: 62% (70F/approx.)

Target finished dough temperature: 75 to 80F

Procedure:

- 1) Put water in mixing bowl.
- 2) Add salt and sugar (if used).
- 3) Add flour then add the IDY on top of the flour.
- 4) Mix at low speed just until you don't see any dry flour in the bottom of the mixing bowl.
- 5) Add the oil and mix another minute at low speed.
- 6) Mix at the highest speed possible just until the dough takes on a smooth appearance.
- 7) Take the dough directly to the bench for scaling and balling.
- 8) Lightly oil each dough ball and place into individual plastic bread type bags (NOT Zip Lock type bags).
- 9) Twist the open end into a pony tail to close and tuck it under the dough ball as you place it into the cooler/fridge.
- 10) Allow the dough to cold ferment for a minimum of 24-hours (48-hours is the "sweet spot") but dough can CF for 72-hours.
- 11) Remove dough ball(s) from fridge and allow to warm AT room temperature until the internal temperature reaches 50 to 60F.
- 12) Roll bag down around the dough ball and invert over a floured surface allowing the dough ball to fall free from the bag.
- 13) Flour both sides of the dough and open into a skin by your preferred method.
- 14) The pizzas can be baked on a stone, steel or in a pan/disk.
- 15) Baking temperature in a home oven is 500F.

Many readers here have used this dough formula and procedure with good success. The formula and procedure are designed to mimic that used by many pizzerias as

well as some of the larger pizza chains. Once mastered, it can be modified to provide whatever characteristics you desire in your finished pizzas.

Tom Lehmann/The Dough Doctor  
1119

**Neapolitan Style / Re: Tiny Bubbles on the crust**

Thank you for the picture, those aren't the tiny bubbles I was at first thinking of but those are the result of baking at a very high temperature, above 850F.

Tom Lehmann/The Dough Doctor  
1118

**Dough Clinic / Re: adding yeast to dough, does order really matter?**

Sourdough starters are not yeast based, instead they are bacteria based and we all know, or should know how rapidly bacteria can multiply under a myriad of conditions. Yeast requires a lot of oxygen to get it to reproduce but once you get it reproducing it multiplies very fast.

Tom Lehmann/The Dough Doctor  
1117

**Newbie Topics / Re: Bulk ferment in big ball or unshaped?**

Agreed, with small amounts of dough it matters not.

Tom Lehmann/The Dough Doctor  
1116

**Dough Clinic / Re: Can I swap out a dough for a different type of pizza**

What you will get will most likely be more like a thin crispy style of pizza, go ahead and do it, I promise you nothing bad will come of it and it will serve as a learning experience for you too.

Tom Lehmann/The Dough Doctor  
1115

**Dough Clinic / Re: adding yeast to dough, does order really matter?**

Peter;  
Your second reference is EXCELLENT! That's a good one for the "LIBRARY".  
You never fail!  
Tom Lehmann/The Dough Doctor  
1114

**Dough Clinic / Re: Sauce filled calzone problem**

Try this;  
DO NOT brush the skin with oil, instead just brush the bottom and two side edges with water, then apply your filling, fold the top half of the skin down over the bottom half aligning the edges, crimp the edges using finger pressure, transfer the calzones to a baking sheet, cut or tear a vent hole in each calzone, brush with melted butter and bake at 450/ 232C until golden brown. Because of the moisture content of the fillings calzones do not fry well at all. The only exception to this is when the calzones are fried and then finished in the oven.

Tom Lehmann/The Dough Doctor  
1113

**Dough Clinic / Re: Different Stages of a Par Baked Crust**

Mo;  
The shelf life of par-baked pizza crusts stored at ambient room temperature (70 to

85F) will depend to some extent upon the method by which it was made (the dough that is). A crust that was made from a dough that was cold fermented for 24 to 48-hours will typically have a shelf life of about 4-days before mold rears its ugly head, if the fermentation period is more along the lines of 5-days you can add another 12 to 24-hours to this but if it was made using a sourdough method where the pH of the finished crust is down around 4.2 or lower you might get an additional 2 to 3-days (possibly more). With refrigerated storage (34 to 38F) it's entirely possible to double these numbers and with frozen storage mold is no longer the issue, instead we are now concerned over things such as oxidative rancidity, freezer burn (a MAJOR issue in home freezers with automatic defrost cycles), with frozen storage periods of more than 45-days there can also be oxidative flavor changes which can render the crust bland/tasteless, even when reheated. In most home freezers with auto defrost we see moisture migration from the crust (freezer burn) within the first two to 3-weeks with it becoming progressively worse as time progresses. By the time the crust has been in the freezer for 60-days or less it is so bad that the crust warps and checks or cracks, because of these potential issues with frozen storage we don't recommend storing crusts or other yeast leavened baked foods for that matter, more than 3 to 4-weeks.

Note:

With the above cited mold issues the appearance of mold will also be influenced by the level of inoculation/amount of exposure to mold.

The issues related to frozen storage are largely related to the crust temperature at time of freezing, the rate at which the crust is frozen and the characteristics of the packaging material used to package the crusts in. Commercial manufacturers also use a gas flush packaging to address the oxidative issues.

Tom Lehmann/The Dough Doctor  
1112

#### **Dough Clinic / Re: Different Stages of a Par Baked Crust**

No, DO NOT EVER vacuum package pizza crusts or tortillas! Both are prone to clostridium which can be (usually is) deadly. There is a track record for clostridium growth in tortillas (two cases that I'm aware of) out of Canada. Gas flush packaging uses either carbon dioxide or nitrogen with about 0.5% oxygen to prevent growth of clostridium. The material you are thinking of is a marine colloid such as Xanthan or Carrageenan gum for increasing moisture retention in baked products. Balchem is a company specializing in these ingredients and they have a product that they call Ticaloid Lite which I've personally used in this application and it works very well.

Tom Lehmann/The Dough Doctor  
1111

#### **Shop Talk / Re: All Trumps Unbromated/Unbleached - Inconsistencies?**

Which A.T. flour are you using: #50143; #50121; or #50111?

Tom Lehmann/The Dough Doctor  
1110

#### **Shop Talk / Re: All Trumps Unbromated/Unbleached - Inconsistencies?**

In your dough formula, what type of yeast are you using and how are you adding it.

Tom Lehmann/The Dough Doctor  
1109

#### **Dough Clinic / Re: Cold prove leading to loss of elasticity**

Unless you're making bread, ditch the "window pane" test for gluten development,

instead, just mix until the dough "just" takes on a smooth appearance. Your mixer will think kindly of you and you will get a finished crust with a more open crumb structure with better bake-out properties. You don't mention anything about your finished dough temperature or how you are cold fermenting your dough, but you should be looking for a finished dough temperature in the 70 to 75F range and either cross-stacking/leaving containers open until dough reaches 50F internal dough ball temperature or plastic bagging (preferred). Failure to do any of these can lead to a weak dough condition, especially after 3 to 5-days in the fridge. Also, you don't mention which "00" flour you are using but do be aware that some of the Caputo flours are not designed for more than about 12-hours of fermentation time while others are designed for longer fermentation times and might be better suited to your application.

More information would be helpful.

Tom Lehmann/The Dough Doctor  
1108

### [\*\*Dough Clinic / Re: Cold prove leading to loss of elasticity\*\*](#)

Here is what I'm suggesting:

Lightly oil each dough piece as you place it into the individual dough boxes, leave the box(es) open until the internal dough ball temperature reaches 50F, then lid the boxes for the duration of cold fermentation. When you want to use the dough, remove from the fridge and KEEP COVERED/LIDDED, allow the dough to set AT room temperature until the internal dough ball temperature rises to 50 to 60F (anything in that temperature range will work OK), then remove the dough from the container and proceed to open into a skin by your usual manner. DO NOT RE-BALL the dough.

Tom Lehmann/The Dough Doctor  
1107

### [\*\*Dough Clinic / Re: Cold prove leading to loss of elasticity\*\*](#)

By "cross-stacking" you will also prevent the development of excessive condensation in the individual containers which results in a wet dough. The biggest benefit to cross-stacking is that it is conducive to achieving a consistent fermentation rate which results in more consistent finished dough performance.

Tom Lehmann/The Dough Doctor  
1106

### [\*\*Dough Clinic / Re: Cold prove leading to loss of elasticity\*\*](#)

Absolutely! This is why I encourage those not as skilled at opening a dough ball to open the dough at a colder temperature. Also, the type of flour can have a great impact, a weak flour may be very soft and extensible at anything but a cold temperature, but for most folks, using a "typical" U.S. pizza type/bread type flour, a cold dough right out of the fridge will be excessively tough and elastic to open easily, in addition, there is also a possibility that the dough will be cold as it goes into the oven which dramatically increases the probability of severe bubbling or in some cases taking on more of the appearance of pita than pizza in the oven. :('

Tom Lehmann/The Dough Doctor  
1105

### [\*\*Dough Clinic / Re: All Trumps High Gluten, bromated v unbromated dough diffs\*\*](#)

Mike;

Yes, to the best of my knowledge, bromated flour is still the flour of choice in NY

and NJ pizzerias. Bromate (a carcinogen) is converted to bromide (not a carcinogen) during the baking process and as long as the residual bromate is at 20ppb (parts per billion) or less it is deemed to be safe. At one time (back in the 60's and early 70's it was thought that all of the bromate was converted to bromide during the baking process as tests of the time couldn't detect levels as low as 20-ppb. The Japanese developed a test that could detect such low levels and the newspaper headlines were "Bromate found in baked bread" OMG! We're all going to die of cancer! The amounts being detected were in the single digit ppb range. Because of this bromate was taken off of the approved food ingredient list in many countries. The truth is that the air you breathe or the water you drink is more dangerous than the small amount of bromate residual in bread products. The U.S. set a limit of 20-ppb for residual bromate with a maximum limit of 50-ppm in bromated flour. Most bromated flours made today incorporate bromate at less than 15-ppm (BUT it COULD be as high as 50-ppm). At the commonly accepted <15-ppm level you probably won't see much difference in flour performance until you really begin to stress the flour out at around 4 to 5-days (CF) or 2 to 3-days RF. NOW, if the level used is higher, all bets are off the table as bromate is a VERY EFFECTIVE DOUGH STRENGTHENER. As for flavor, the tests that we did at AIB many years ago showed no impact on finished product flavor until the bromate level exceeded 75-ppm. As for crumb structure, bromate tends to promote a closer/tighter crumb structure, especially at higher levels >20-ppm. Unless the dough is subjected to very long fermentation times or the flour is weak or a composite flour (multi-grain) bromate levels much above 40-ppm will restrict dough expansion during baking leading to a condition known as "scalping" in white pan bread production where the top crust separates from the loaf and is then pulled off at the vacuum depanner.

We used to refer to bromate as a "crutch", it was seldom ever really needed and it was used more as a precautionary measure than as an essential ingredient, with the consumer health safety concerns over potassium bromate new dough strengtheners were developed aka bromate replacers, these for all practical purposes, are just as effective as bromate but without any of the health safety implications associated with bromate and are commonly used today to help strengthen otherwise weak or highly stressed doughs.

Probably more than you wanted to know.

Tom Lehmann/The Dough Doctor

1104

### **Dough Clinic / Re: Cold prove leading to loss of elasticity**

The only time you proof the dough after opening it into a skin is if you want to make a thicker finished crust (like a thick crust pizza), otherwise, for a thin crust pizza you open the dough ball into a skin, dress it and bake it.

As to those high absorption doughs, they usually use an autolyse to help the flour absorb the water, they also require specialized handling (we recently had a good video here showing how it's done, maybe Peter can find it for you). Save those high absorption doughs for making AFTER you gain good proficiency making lower (60 to 65%) absorption doughs for now. As for opening the dough while still cold, I can't say if that will work for you or not, you will need to try it to find what works best for YOU with YOUR dough made with YOUR dough management procedure.

Tom Lehmann/The Dough Doctor

1103

### **General Pizza Making / Re: When to add the oil**

It sounds like your dad was the last of a breed, they don't make real bakers

anymore. Those working in bakeries today are seldom, if ever educated in the trade, they're human robots just doing what they're told to do without any knowledge of why they're doing it. It used to be that when I went into a bakery and asked people how long they had been in the baking industry I'd get answers with two digits, now if I get two years I've found an "old timer", most are measured in months. Sadly, It's JUST a job anymore. Now with the closing of AIB there isn't anyplace for the baking industry to send people for formal training anymore either, and the price is being paid in high employee turnover just like many other industrial companies.

Tom Lehmann/The Dough Doctor  
1102

### **Neapolitan Style / Re: Help me with a hybrid dough**

How about this;  
50% Power Flour  
50% KABF Flour  
2% Salt  
1% Sugar  
0.375% IDY  
62% Water (65F)  
2% Oil

Mix just until smooth using delayed oil addition mixing method.  
Immediately after mixing scale and ball.

Lightly oil dough balls and place into individual plastic bread type bags (follow normal procedure for cold fermenting in plastic bags).

Remove bagged dough balls from fridge about 90-minutes prior to opening into skins.

Roll bag down around dough ball, invert over a floured surface, flour dough ball on both sides and open into a skin.

Dress and bake.

Note: For a crispier pizza bake at 550F.

Tom Lehmann/The Dough Doctor  
1101

### **Dough Clinic / Re: All Trumps High Gluten, bromated v unbromated dough diffs**

Those bubbles are perfectly normal. When your flour has been over fermented it will begin to break down and become sticky, very extensible and oven spring will be reduced, after that it just keeps getting worse until you can pour the dough. No chance of reviving it either as the gluten has been severely degraded. You won't get any "off" flavors or aromas, just a more intense fermentation flavor and aroma which some might call "off". At some point you will get off flavors and aromas but that point will be after the dough breaks down and is unmanageable so it's kind of a moot issue.

Typically, the higher the protein content the more fermentation the dough will tolerate before breaking down (assuming U.S./Canadian flours).

Tom Lehmann/The Dough Doctor  
1100

### **General Pizza Making / Re: When to add the oil**

Peter;  
It didn't used to be that way. I made a very good living when I went to work for

Jewel Tea Bakery in Melrose Park, Illinois in 1962, by 1964 I had worked up to a line supervisor on the second shift and I was making about \$11,000.00 a year with full benefits. Like I said, today nobody really wants to work, much less go the extra effort so the baking industry has gravitated to the position that everyone is expendable and that position is now reflected in the pay scale. To give you an idea of how much that \$11,000.00 yearly income was, when I took my first position at the AIB in 1965 my salary was \$6,200.00 a year. During those first few years I went to night school and took every opportunity to learn as much as possible, I started my first group in 1967 and continued to grow it right up to the time when AIB made the move from Chicago to Manhattan, Kansas (1976/77). I continued to grow the Experimental Baking Group in Manhattan and finally split myself off from it to allow me time to teach classes and develop the Bakery Assistance activity which I was Director of when I finally retired 5-years ago.

In the end I can say that I was blessed with good decision making and a desire to succeed, I was rewarded with a job (I don't like to call it that, it was really participation in a very professional family of true experts in all subjects related to food and baking). I ALWAYS looked forward to the challenges each day would bring and I was rewarded well for my efforts. Here's a stat you don't hear much of, during my nearly 50-years at AIB I only took 7 sick leave days, total! (I could have taken 14 each year). Four of those days were used when I got my pacemaker and three were used when I almost died from food poisoning in St.George, Utah. Granted, there were days when I probably should have stayed home but I didn't. Point is, most of us have the opportunity to make our lot in life, one just has to "work" to find it.

Tom Lehmann/The Dough Doctor  
1099

#### [\*\*Dough Clinic / Re: New pivetti flour\*\*](#)

No, I have not worked with that particular flour. I have never heard of a semi-whole-wheat flour. When the outer layer of the wheat berry is removed (that is what we call bran) the remainder is endosperm aka white flour after milling. There is such a thing as long extraction flour which contains a bit more bran as well as ash content but it is a long call from being "semi-whole-wheat".

Whole wheat flour contains roughly 20% bran, do you have any idea of the bran content of this flour? Since they say it contains bran it will require a higher dough absorption, my guess might be in the 70 to 72% range? To allow for hydration of the bran I would advise using an autolyse with this flour. Just all of the flour + all of the water, mix together and allow to hydrate for 1-hour, then add remainder of ingredients and mix together as a dough, be sure to mix it JUST until it starts to smooth out, DO NOT OVER MIX THE DOUGH as doughs containing high levels of bran do not tolerate over mixing well at all.

Tom Lehmann/The Dough Doctor  
1098

#### [\*\*Dough Clinic / Re: All Trumps High Gluten, bromated v unbromated dough diffs\*\*](#)

Failure to cross-stack or allowing the dough to warm up to long after CF can also result in bubbles like that but those aren't too bad so I really wouldn't worry about them unless they were part of a bigger or different problem.

Tom Lehmann/The Dough Doctor  
1097

#### [\*\*General Pizza Making / Re: Cold fermenting in plastic bags.\*\*](#)

The procedure is very simple, immediately after mixing scale and ball the dough, lightly oil each dough ball and drop into individual plastic bread/bread type bags (DO NOT USE ZIP LOCK BAGS), pull the bag snug to the dough ball, twist the open end to form a pony tail and tuck the pony tail under the dough ball as you place it in the fridge. When ready to use, remove from fridge and allow to warm AT, repeat AT, NOT TO, room temperature until the internal ball temperature reaches 50 to 60F, then roll the bag down around the dough ball and invert it over a floured surface, the dough ball will fall free from the bag inverting the bag as it does so. Flour the entire dough ball and open by your preferred method. Used bags can be stored in a container or another bag in the fridge and reused many times if desired.

Tom Lehmann/The Dough Doctor

1096

### **Newbie Topics / Re: Basil and olive oil**

Assuming you mean fresh basil leaves. Wilted they are great, charred, not so great, so I always put mine on IMMEDIATELY after removing the pizza from the oven and let the latent heat of the pizza wilt the basil and release the wonderful aroma, in some cases I may pull the pizza out but leave it on the peel, apply the basil leaves and put the pizza back in the oven holding it towards the top of the oven to quickly wilt the basil, then apply a drizzle of EVOO to the pizza, slice and serve.

With some more heavily topped pizza I've been known to add the basil leaves on top of the sauce so they are covered by the cheese and other toppings thus protecting them from the high oven heat.

Tom Lehmann/The Dough Doctor

1095

### **Dough Clinic / Re: New pivetti flour**

It sounds as if they might also be including the wheat germ too, if this is the case I would highly recommend keeping the flour refrigerated or frozen as germ oil will rancidify rather quickly. This can also be true for whole-wheat flours too.

Tom Lehmann/The Dough Doctor

1094

### **Dough Clinic / Re: Cold prove leading to loss of elasticity**

Doktah;

I'm not exactly sure what you mean in your second paragraph about re-ball the dough.

Tom Lehmann/The Dough Doctor

1093

### **Dough Clinic / Re: Complications with dough management**

Your pizza looks great! :drool:

If you want to do some experimenting now you might try reducing the yeast level, maybe in 0.1% increments to see that improves the dough prior to opening (you indicated that it was getting big, but that's a pretty subjective term).

Tom Lehmann/The Dough Doctor

1092

### **Pizza News / Re: East Coasters Mock Chicago Square Cut Pizzas**

I haven't seen that for a long time now. Just something different to be sure.

Tom Lehmann/The Dough Doctor

1091

## [\*\*General Pizza Making / Re: When to add the oil\*\*](#)

Amen to that! When we love what we do it shows in our work. I'd rather spend 50 years doing what I love to do than 1-hour doing something that I don't like doing.  
Tom Lehmann/The Dough Doctor  
1090

## [\*\*Dough Clinic / Re: Complications with dough management\*\*](#)

Why more dough absorption?  
Tom Lehmann/The Dough Doctor  
1089

## [\*\*Neapolitan Style / Re: Help me with a hybrid dough\*\*](#)

Bags will be much better for this application.  
A lower temperature will allow for a longer bake, a longer bake is conducive to a crispier crust as well as a crust that retains its crispiness.  
Yes, if you bake at your proposed temperature or above 550F you will want to reduce or eliminate the added sugar.  
Tom Lehmann/The Dough Doctor  
1088

## [\*\*Newbie Topics / Re: Basil and olive oil\*\*](#)

Always remember though that those wonderful aromas coming from the oven while the pizzas are being baked will never be enjoyed by those eating the pizza, they are lost forever, it's only the less volatile aromas that the consumer gets to enjoy, sorta like comparing EVOO to Pomace grade olive oil. In the final end though you are absolutely correct, whatever YOU like the best is the way for YOU to go.  
Tom Lehmann/The Dough Doctor  
1087

## [\*\*Dough Clinic / Re: Complications with dough management\*\*](#)

A higher dough absorption will make for a softer dough consistency which will expand even more in the bowl than your present dough, I thought that was what you were trying to control. If you want to add some tenderness to the finished crust you can also add some fat to it.

Tom Lehmann/The Dough Doctor  
1086

## [\*\*Dough Clinic / Re: Complications with dough management\*\*](#)

Remember, change only one thing at a time!  
Tom Lehmann/The Dough Doctor  
1085

## [\*\*Dough Clinic / Re: purpose of oil\*\*](#)

It can/will both inhibit and prevent gluten development if added too soon. It prevents it by soaking into the flour before the flour hydrates, once the flour absorbs oil before water that portion of the flour which has become oil soaked cannot form gluten, we found that this is what led to everyone thinking that the weather influenced how much water the dough would absorb. This was when everyone was putting the water and oil in the bowl at the same time, the oil would float to the top of the water, then the flour was added and the oil soaked into a portion of the flour, this impacted how the dough felt (when more flour was oil soaked the dough felt soft (less gluten development) so flour was added to the dough, is less flour was oil soaked the dough felt firmer due to more gluten being

developed sometimes leading to more water being added to the dough. This was blamed on the outside weather, now you know the truth, Mother Nature was found innocent. By using the delayed oil mixing method the flour is allowed to hydrate prior to the addition of the oil and dough consistency is restored.

Tom Lehmann/The Dough Doctor  
1084

### [\*\*Starters/Sponges / Re: Need help with biga dough\*\*](#)

Does your mixer have a reverse spiral dough arm? If not sure please include a picture of it. If it does have a reverse spiral dough arm you will need to reduce the total dough size/weight which will allow you to mix the dough at a higher speed for improved development/mixing action.

Tom Lehmann/The Dough Doctor  
1083

### [\*\*Newbie Topics / Re: How to combine/reportion dough balls after some cold ferment\*\*](#)

Been there, done that many times!

Scenario:

I have four dough balls that are all under scaled/too light in weight and they are ready to be opened.

Corrective Action:

- 1) Determine how much additional weight has to be added to each dough ball.
- 2) Set aside one dough ball as a sacrificial dough ball which will be used to provide the additional dough needed to bring the other three dough ball up to desired weight.
- 3) Cut a piece of dough from the sacrificial dough ball slightly larger/heavier than needed, using your scale trim the weight of the dough piece back to the target weight.
- 4) With MINIMAL handling add the trimmed dough piece to the bottom of one of the under weight dough balls (cut side facing the bottom of the dough ball) thus bringing it up to the desired weight.
- 5) When adding the trimmed dough piece just place it on the bottom (under) the dough ball, it will meld into the dough ball within a few minutes and nobody will be any the wiser of your error.

Note: The dough remaining as the sacrificial dough ball can be used to make a smaller pizza or it can be further subdivided to make bread sticks. If you plan on making another pizza from it cut the dough pieces from it around the sides of the dough ball thus retaining a somewhat round shape to it. Oh yes, those cut pieces that you trimmed off of the piece cut from the dough ball, just gather them up and place under the sacrificial dough ball, then open that dough ball last as this will allow more time for all of those scrap pieces to meld into the dough ball.

This was one of the things we used to demonstrate to our students in our pizza seminars.

Tip: A scissors is a great specialized tool for trimming those cut dough pieces to exact weight. Place the cut dough piece on the scale pan and cut to weight on the scale pan using the scissors, works like a charm! :chef:

Tom Lehmann/The Dough Doctor  
1082

### [\*\*Chitchat / Re: Jewelry and Food Preparation????\*\*](#)

When we did our pizza seminars at AIB we told our students that proper attire was required of ALL persons in the shop. No open toe shoes, aprons or lab coats had to

be worn, ALL jewelry that was worn and visible above the waist had to be removed (the rest we didn't want to know about) ;D regarding rings, a plain band was OK but if it was more than just a plain band it either had to be removed or covered with a plastic glove, everyone was also required to wear a hair net too and while on the topic of hair, if hair was worn below the collar it had to be restrained under the hair net (above the collar). It totally gives me the shivers when I see someone with unrestrained long hair working close to a mixer or a dough sheeter.

Regarding those TV personalities, don't you just love to watch them constantly wiping their hands on the towel they wear at their waist? It's a petri dish of bacteria! The mystery to me is why a chef's coat has a breast pocket or arm pocket designed to hold a pen or thermometer? It violates EVERY food safety rule in existence!

Tom Lehmann/The Dough Doctor  
1081

### **General Pizza Making / Re: Torn dough surface question gt**

Don't worry, that's perfectly normal. The dough will become smoother and stronger as it's worked and given more fermentation.

Tom Lehmann/The Dough Doctor  
1080

### **Dough Clinic / Re: Dough Management Problem**

From what you have described and from the appearance of the dough balls, especially the last picture, I'm guessing that the dough is over fermented. Is there any chance that you can use it after 24-hours rather than 48-hours? The other option is to try reducing the yeast level 20-grams in 4Kg. of flour is 20 divided  $4,000 \times 100 = 0.5\%$  Note: All of your percentages shown are incorrect. You don't say what kind of yeast you are using so I can't add anything more about the yeast except that you might try reducing it by 20% to see if that helps. Additionally, you say you are adding an "improver" can you provide a list of the ingredients in that improver, many times these improvers are a cocktail of ingredients, all of which may not be compatible with long fermentation times as they were designed and intended for use in bread formulas incorporating much shorter fermentation times, usually only just a couple of hours as opposed to days for a pizza dough.

Tom Lehmann/The Dough Doctor  
1079

### **Dough Clinic / Re: Dough Management Problem**

I forgot to add that the salt level is 1.9% not 0.019% as indicated ( $76 \div 4,000 \times 100 = 1.9\%$ ) In view of the potentially weak dough you have it might be beneficial to increase the salt level to 2.5% ( $4000 \times 2.5$  (press the "%" key) and read the new salt weight in the display window. (100-grams is the new salt weight).

Tom Lehmann/The Dough Doctor  
1078

### **Dough Clinic / Re: Delayed egg method**

No, none at all. Whole egg = 35% solids + 65% water, of the 35% solids about 12% is yolk which is 33% fat so the total fat being contributed by the whole egg is (10% (35% o 10% = 3.5% and 12% of 3.5% = 0.42% and 33% of 0.42% = 0.1386% total fat contribution in bakers percent from the 10% added whole eggs.

Tom Lehmann/The Dough Doctor  
1077

## [\*\*New York Style / Re: Made a few pies with Tom Lehman dough recipe in my home oven\*\*](#)

You did well! Great lookin' pizza! :drool:  
Tom Lehmann/The Dough Doctor  
1076

## [\*\*Neapolitan Style / Re: Big amount of recipes\*\*](#)

When you remove the dough balls from the cooler BE SURE to allow them to warm to 50F/9.9C internal dough ball temperature (not higher than this), this will give you a full 3-hour window of time to open all of the dough balls into skins without too much/excessive difference in quality between the finished pizzas. This is what essentially all of the big U.S. box chains and a good many pizzerias do.

Tom Lehmann/The Dough Doctor  
1075

## [\*\*Neapolitan Style / Re: Big amount of recipes\*\*](#)

Sure, on the morning of the event open all of the dough balls into skins, place on pizza screens and store in a vertical wire tree rack(s) in the fridge, they will keep all day this way, to use just remove from the cooler 20-minutes prior to dressing and baking, turn off of the screen and re-stretch a little then dress to the order and bake. This is a similar method as used by many of the fast casual pizza places. You're still going to need a cooler of some type, as holding dough between 27 and 34C for what essentially amounts to all day is going to result in more than just a little change from the first to the last of the pizzas.

Tom Lehmann/The Dough Doctor  
1074

## [\*\*Dough Clinic / Re: Diastatic malt vs sugar\*\*](#)

If you are referencing sucrose then the answer is sucrose.  
Tom Lehmann/The Dough Doctor  
1073

## [\*\*General Pizza Making / Re: Check my method please\*\*](#)

May I suggest an improved procedure?

Put water in mixing bowl first, add the yeast suspension, then add the salt and sugar immediately followed by the flour. Using a wooden spoon, mix the dough until it can no longer be mixed without fear of breaking the spoon, remove the spoon, add the oil and mix by hand until the oil is incorporated into the dough, turn the dough out of the bowl onto a lightly oiled surface, scrape the bowl clean and lightly oil it, knead the dough a few times (1 or 2-minutes), form into a ball and place back into the oiled bowl, lightly oil the top of the dough ball and cover with a piece of plastic (DO NOT SEAL OR COVER TIGHTLY), allow the dough to ferment at room temperature for about 3-hours, then turn the dough out of the bowl onto a floured surface and knead the dough for about 5-minutes or until it begins to look somewhat smooth. Lightly oil the bowl again and place the dough ball back into the bowl for 30-minutes, turn the dough out of the bowl and scale to desired weight pieces, form each piece into a ball, lightly oil each dough ball and place into individual plastic bread type bags (DO NOT USE ZIP LOCK BAGS), twist the open end of the bag into a pony tail and tuck it under the dough ball as you place it into the fridge. Allow dough balls to cold ferment in the fridge for 24 to 48-hours. To use, remove dough balls from fridge and allow to warm AT (NOT TO)room temperature until the internal dough ball temperature is in the 50 to 60F range (about 60 to 90-minutes, then roll the bag down around the dough ball and invert

the bag over a floured surface allowing the dough ball to fall free from the bag, flour both sides of the dough ball and open into a skin by your preferred method. We have recently had discussion on this vert topic.

Tom Lehmann/The Dough Doctor  
1072

### **Neapolitan Style / Re: Big amount of recipes**

Vertical wire tree racks are wire racks designed to hold pizza pans, screens and disks stacked vertically, some racks are designed to be free standing, like on a counter top while others are designed to be suspended from a wall, still others are constructed on wheels so as to be able to be easily moved about you can see these if you Google "wire pan pizza support racks". If you go to American Metalcraft at <[www.amnow.com](http://www.amnow.com)> and search "Pizza Racks"you can see pictures of the free standing racks that many stores use.

Tom Lehmann/The Dough Doctor  
1071

### **General Pizza Making / Re: Check my method please**

For IDY I would go with 0.4%, because the dough is mixed by hand it has to be hydrated by suspending it in a small amount of warm (100F) water before addition to the dough water. As for finished dough temperature I would suggest targeting 75F, which will put the dough water temperature at about 70F.

When I was teaching pizza making to local families I found that I could take almost any pizza dough formula and plug it into this procedure and get decent results, not spectacular, but everyone reported that it was an easy procedure to follow, didn't take a lot of attention (farm families have other things to do too) and always allowed them to make pizza as well as bread that their family really enjoyed. This is why I always revert to this procedure for someone just learning to make their first pizza, when you can sit at the table with your family and enjoy the fruits of your labor the incentive is pretty great to go on and make more and even better pizzas.  
:chef:

Tom Lehmann/The Dough Doctor  
1070

### **Dough Clinic / Re: Diastatic malt vs sugar**

With short fermentation time the sucrose wins with longer fermentation time the diastatic malt powder wins.

Tom Lehmann/The Dough Doctor  
1069

### **Dough Clinic / Re: Diastatic malt vs sugar**

Yes, omit the sugar, what temperature are you baking at?

Tom Lehmann/The Dough Doctor  
1068

### **General Pizza Making / Re: Oregano before or after bake?**

We did a study on herbs as it pertains to the flavor of pizza some years ago and what we found was very interesting. Oregano (dried) is the most over used herb on pizza, it also has the most dominant and identifying flavor, and is also responsible for the heart burn many older individuals complain about after eating pizza. In an effort to increase the flavor of their pizzas many operators just keep pouring on the dried oregano, then in short order they begin asking if anyone else has noticed the lack of flavor in the mozzarella cheese lately. Our tests showed that the dried

oregano was over powering the delicate flavor of the cheese (mozzarella cheese by definition has a VERY mild flavor). We also found that our sensory panelists consistently associated the basil flavor with pizza. We then looked at the difference between fresh and dried basil. The fresh oregano (micro-leaf) was consistently preferred over the dried oregano by our panelists and when presented to individuals who limited their consumption of pizza due to the heart burn issue they reported back to us that they didn't suffer the usual heartburn. At the time we were doing two major pizza shows a year so we presented our finding at the shows for two years in a row, the results were always the same, there was a much greater preference for fresh oregano over dried oregano and as a side study we began reducing the amount of cheese used on the pizzas in conjunction with the use of fresh oregano. We asked our audience what they thought of the pizza they were given (we did not prompt them in any way), the most frequently asked question was "What brand of cheese did you use?" "This pizza has a great cheese flavor". The pizzas were made using 3.75-ounces of shredded Grande WM mozzarella on a 12-inch pizza. The oregano used was fresh micro-leaf oregano adjusted to give a very mild but yet readily identified oregano flavor. The audience had a hard time believing that we got that level of cheese flavor from just 3.75-ounces of just mozzarella cheese. This led us back to our sensory panel for another look at dried oregano, we presented them with samples of pizza made with dried oregano at levels which were typical to that being used by the industry and then asked them to identify the flavor used in other pizza samples, what we found was that the dried oregano appeared to "wipe out"/over power their taste buds to the point where they were not able to readily distinguish different flavors which led us to think about the cheese comments as well as a growing trend in the industry to use ever increasing amounts of cheese to get a decent cheese flavor in the pizzas, it's not a change in the cheese, in my opinion, it's the excessive use of dried oregano that's at fault here.

Tom Lehmann/The Dough Doctor  
1067

#### **Dough Clinic / Re: Diastatic malt vs sugar**

Too hot for sugar in the crust!  
Tom Lehmann/The Dough Doctor  
1066

#### **Neapolitan Style / Re: First Margherita**

The next time you make it try making one with sliced fresh (RIPE) tomato rather than sauce, it really makes the red pop and contrast with the white and green. If you can't get fresh ripe tomatoes try Stanislaus 74/40 Tomato Filets (drained for 20-minutes), they're superb!

Tom Lehmann/The Dough Doctor  
1065

#### **Neapolitan Style / Re: Big amount of recipes**

If you are in a restaurant you will have access to a cooler? Why not just stagger the times that you remove dough balls from the cooler so as to have a continuous supply of dough balls to work with during the entire 12-hour day? I'm not sure I can help you with a dough that is fermented for 16-hours at ambient and then still be able to provide a consistent quality pizza over an additional 12-hour period of time during which the pizzas will be made. A lot of changes can/will take place in a yeast leavened dough over that 12-hour period at ambient.

Tom Lehmann/The Dough Doctor

1064

**Dough Clinic / Re: Diastatic malt vs sugar**

Fahrenheit (F).

Tom Lehmann/The Dough Doctor

1063

**Neapolitan Style / Re: Rubber band dough**

Using that kind of water temperature the dough was very warm and most likely over fermented becoming what is commonly referred to as "bucky". This is a condition where the dough is VERY elastic and difficult to impossible to open into a skin without the dough tearing.

Try making the dough again but use only 70F water. Use only a very small amount of water at 100F to hydrate the IDY in.

Tom Lehmann/The Dough Doctor

1062

**Neapolitan Style / Re: Big amount of recipes**

Once you remove the dough balls from the cooler you will need to allow them to warm to an internal temperature of 50F/10C (about 90-minutes) before opening them into skins, once the dough balls reach 50F/10C they will remain good to use for up to 3-hours at room temperature. Any dough balls not used in that period of time should be slightly flattened, placed on a lightly floured pan, covered to prevent drying (or you can place back into the dough box), then remove them from the cooler and allow to warm for only 30-minutes before you open them into skins.

Tom Lehmann/The Dough Doctor

1061

**Dough Clinic / Re: Dough Management Problem**

The addition of sugar in this case is for crust color, so if you are satisfied with the finished crust color continue using sugar as you are.

I also suggest that you get the balled dough into the cooler within 20-minutes from the time the dough is finished mixing.

Keep us posted on the results.

Tom Lehmann/The Dough Doctor

1060

**Shop Talk / Re: Putting a Deck Oven in a Food Truck?**

The rule is to allow at least 1.5 X the oven depth as free/open space in front of the oven for the oven tended to work in. Failure to do this typically leads to wishing you had.

Tom Lehmann/The Dough Doctor

1059

**Dough Clinic / Re: Diastatic malt vs sugar**

It wasn't in this thread was it? I think in that particular instance the individual had both flours and the KABF was more readily available, otherwise 100% of either flour would be just fine.

Tom Lehmann/The Dough Doctor

1058

**Dough Clinic / Re: Dough Management Problem**

I was referencing the 20-grams of yeast in the dough formula shown so 80% of 20-

grams would make it 16-grams in 4-Kg of flour or 8-grams in 2-kg. flour.

Tom Lehmann/The Dough Doctor

1057

### **Dough Clinic / Re: Diastatic malt vs sugar**

A malted flour will always provide more crust color development with a fermented dough and since protein is a participant in the browning reaction the higher the protein content of the flour the more it will contribute to crust color development. It can safely be said that the impact of flour protein content is significantly less than that of a malted v/s non-malted flour, or inclusion of sugar in the dough formulation.

Tom Lehmann/The Dough Doctor

1056

### **Dough Clinic / Re: Hidden dangers of old starters?**

Don't worry about clostridium, the environment is too acidic, about the only thing to worry about is a change in the micro-flora resulting in a different flavor profile, if smells OK go ahead and proceed to activate it and make some dough with it, if the dough is OK and there is nothing strange about the flavor of the finished crust you're good to go.

Tom Lehmann/The Dough Doctor

1055

### **Starters/Sponges / Re: Starter with ADY trouble**

I agree with Craig, also the ADY should be activated in 100F water with just a small amount of sugar (actually, a pinch is sufficient), put the rest of it in the dough. What is the finished dough temperature? Ideally, it should be around 75F, if the dough is warmer than this it will further accelerate the rate of fermentation making matters even worse. Can you provide the weights for your salt, sugar and ADY as opposed to volumetric portions?

Tom Lehmann/The Dough Doctor

1054

### **Shop Talk / Re: Switching from Grande cheese**

I'd suggest that you also post this on the PMQ web site (Think Tank).

<[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor

1053

### **Newbie Topics / Re: Percentages**

Here is a working example:

Flour weight: 800-grams

Ingredient percent: 0.375%

The math using your calculator:  $800 \times 0.375$  (press the "%" key and read the ingredient weight in the display (3-grams) NOTE: Ingredient weight will ALWAYS be in the same weight units (pounds, grams, kilograms, etc.) that the flour is shown in.

To find the total dough weight:

Find the sum of all of the ingredient percentages, then divide by 100. Multiply the flour weight by this number.

Example: Flour: 100% (800-grams), Salt: 2%, IDY: 0.375%, Water 60%, Oil 2%

The sum is: 164.375% divided by 100 = 1.64375

Multiple flour weight by 1.64375. 800 X 1.64375 = 1315-grams/1.315-Kg.

If you want to put a dough formula based on weight measures into bakers percent. Flour is ALWAYS 100%.

Divide the weight of each ingredient by the weight of the flour and multiply by 100. Example: 800-grams flour weight and 450-grams ingredient weight. 450 divided by 800 X 100 = 56.25% do this for each ingredient and you will have put your dough formula into bakers percent.

Ain't math great!

Tom Lehmann/The Dough Doctor  
1052

### **Newbie Topics / Re: Opinions regarding cornicione of the pizza**

That's the best part of making your own pizzas at home, you can make them the way YOU like them, and remember, if YOU don't like it you know who to blame. :-D

Tom Lehmann/The Dough Doctor  
1051

### **Dough Clinic / Re: Diastatic malt vs sugar**

In loaf bread bleached flour produces a brighter, whiter crumb color, but in pizza the crumb structure doesn't lend itself to seeing this since it is so thin and more open/porous as well as most of the time being smeared with sauce and/or toppings due to cutting. So for all practical purposes it can be said that bleaching has no impact on pizza dough or the finished crust.

Tom Lehmann/The Dough Doctor  
1050

### **Starters/Sponges / Re: Starter with ADY trouble**

Your salt level is low too at just 1.368%. A better salt level would be something in the 2 to 2.5% range. Since salt helps to control the fermentation rate as well as strengthen the dough this would be a step in the right direction too.

Tom Lehmann/The Dough Doctor  
1049

### **Neapolitan Style / Re: Large Pizza Party - prebaking pies?**

Try par-baking with 1/2 of the sauce, then remove from oven and place on screens in a wire tree rack to cool. Does not need refrigeration. At the event all you need to do is to apply the remainder of the sauce and dress to the order, you can do that faster than the pizzas will bake and you will get the freshest pizza. Reheating a par-baked pizza is OK at best.

Tom Lehmann/The Dough Doctor  
1048

### **Dough Clinic / Re: Complications with dough management**

There are some good charts here that will allow you to predict the amount of yeast needed for specific room temperature fermentation, if you cannot control the room temperature your only other option, in this case, is to adjust the yeast level based on the room temperature. But be aware that there are short comings to this too in that a reduced yeast level can affect the oven spring, especially if your pizzas tend to be heavily loaded.

Tom Lehmann/The Dough Doctor  
1047

## **Off-Topic Foods / Re: Problem of yeast donut - many bubbles**

You want the frying fat at 365F and the donuts will look better after the frying fat has some age on it. New/fresh frying fat doesn't do much for the appearance of the donuts. This is why those in the business of making donuts always seed their new frying fat with 15% of the old fat.

Tom Lehmann/The Dough Doctor  
1046

## **Chicago Style / Re: Mimicing whole-sale cracker thin-crust dough**

TNT Crusts makes their own hot presses but they are copied after the AM Manufacturing commercial hot presses, if you want to see how the crusts are formed just Google (Am Manufacturing dough presses), there are a number of links to look at but one has a video that you might be interested in seeing. I won't go into much detail but these dough receive almost no fermentation and they do use a reducing agent (RS-190) aka dead yeast to facilitate pressing, after pressing the shins are par-baked to set the structure, it is then important to allow the crusts to age for at least 24-hours before using.

The chemical leavening (SALP and SODA) are in the form of a fat encapsulated chemical leavening system which we have previously discussed here and I've written an article or two on it also. The commercial name for this product is "Wrise", manufactured by Wright Enrichment Company.

Tom Lehmann/The Dough Doctor  
1045

## **Chicago Style / Re: Mimicing whole-sale cracker thin-crust dough**

When the crusts are commercially made on a wholesale basis the entire skin is subjected to the heat of the hot press (about 300F bottom and 250F top). The dough will need to be very soft and extensible, remember that it has to go from a ball to a fully formed skin in something between 1 and 2-seconds. Better than your cast iron pan approach might be to try a couple of Pyrex pie plates, using a rolling pin, open the dough ball to about the diameter of the bottom of the pie plate, then place the top plate on the dough and carefully press the dough between the two pie plates, leave it set for a minute or so (commercially the dwell time is only about 5-seconds) but you're not holding it under 800 p.s.i. pressure under heat so you need to work outside of the box, when the dough has been pressed between the two plates (dwell time) long enough it will release from the plates without too much difficulty and have a slightly glossy appearance, then it goes directly to the oven for par-baking.

I think you might be plowing a virgin field so please keep us posted on your progress.

Tom Lehmann/The Dough Doctor  
1044

## **Chicago Style / Re: Mimicing whole-sale cracker thin-crust dough**

That's the key here, whatever is used to press form the skins needs to be able to maintain that temperature for the duration of the dwell time.

It might be as easy as two thick steel plates placed into the oven to pre-heat and then placing the partially opened skin onto one of the plates (don't forget to oil it first) and immediately placing the second (oiled) plate on the skin and pressing down on it for a count of 5 or more seconds, then removing the plate and peeling the formed skin off of the bottom plate. I've personally never ventured into this territory as I've always had access to a multitude of different hot and cold presses

to work with. The first thing to do is to study the different hot presses available (AM-Manufacturing) and I think Dough-Pro also has one with both a heated head and platten, though I may be wrong?

In my mind this is what I see, two steel plates of desired diameter, bottom plate is 1/2-inch thick and top plate is 3/8-inch thick. Top plate has two sturdy handles welded onto it to allow it to be evenly pressed with full upper body weight down onto the bottom plate (with the dough trapped between them), after the dwell time the top plate is lifted off of the dough and the skin is manually lifted from the bottom plate. Will it work? Only one way to find out.

Tom Lehmann/The Dough Doctor  
1043

### **Chitchat / Re: My First Car was .....**

A 1954 flathead V-8, then a 1956 Ford Crown Victoria V-8, then a 1960 Ford Thunderbird, Then a 1964 Ford Sprint with the 289 V-8 crate engine option, after that it was a 1966 Ford Thunderbolt 427, then a 1969 Shelby Cobra, after that I grew in a different direction and it was a 1972 International Scout II, then a 1979 Jeep Renegade, then a 2001 Dodge 2500 Pickup (which I still have) and presently also have a 2014 Jeep Patriot. In addition, in 2005 I bought a Dodge Dakota as my daily driver (a real piece of CrXX) plagued by engine, electrical, body rust and mechanical issues its entire life, three years ago it gave up its life to save mine when I hit a patch of unseen black ice on the Interstate, it was replaced by the Patriot which has served me VERY WELL. I can also tell you about all of the cars my wife has had too including the 1967 VW Beetle that I retrofitted with a 20-gallon gas tank up front (it got an honest 40 m.p.g.) giving it tremendous range during the gasoline shortage years.

Cars are just one of those things us guys don't ever forget.  
Tom Lehmann/The Dough Doctor  
1042

### **Chicago Style / Re: Mimicing whole-sale cracker thin-crust dough**

You're not going from 500 - 550F to room temperature, you are only going from the suggested platen and head temperatures of around 250 to 300F and pressing for +/- 5-seconds.

RS-190 aka dead yeast is available from Red Star Yeast/Lesaffre. Contact Sandi Cazalet at <[s.cazalet@lesaffre.com](mailto:s.cazalet@lesaffre.com)> / <[www.lesaffreyeast.com](http://www.lesaffreyeast.com)>.  
Tom Lehmann/The Dough Doctor  
1041

### **Chitchat / Re: My First Car was .....**

Paulrevere73;  
Here in Kansas we call that camouflage. :-D  
Tom Lehmann/The Dough Doctor  
1040

### **Chitchat / Re: My First Car was .....**

The Thunderbolt was a "plain Jane" Ford Fairlane with a 4-speed and just a single bucket seat, no passenger seat or back seat, battery was located in trunk over right rear wheel (Ford still didn't have a decent locking rear end). I took off all of the 427 badges and replaced them with 289 badges. I ended up putting in a second bucket seat and replaced the driver's harness with a lap belt and then add a rear seat. Spent a lot of time under the hood adjusting valve lash. Spark plugs were a bear to replace so I added a Delta Electronics C.D. ignition system, aside from that it was

"stock". Can't tell you how many 289 Mustangs and 289 H.P. Fairlanes got "dusted" by it, even did the number on some "goats" (Pontiac 389 GTO's), even did in a 396 Nova SS and my buddy's 383 Plymouth. The most expensive part of that car was the cost of tires! Ran Blue Streaks on the rear for traction in the summer and usually went through at least two sets every summer. Tire rotation on the rear was done every two weeks.

The beast made the Shelby Cobra look very refined!

1039

**Sicilian Style / Re: Serving up pan pizza - soggy crust woes.**

Be sure to remove the pizza from the pan IMMEDIATELY after you remove the pizza from the oven and place it onto a wire cooling rack for a minute or so to allow the toppings to set-up, then transfer to a cutting surface and cut into desired slices, serve immediately.

Additionally, can you share your dough formula as well as the dough management procedure and baking procedure with us? Perhaps there is something there that we can help you with to achieve a crispier crust.

Tom Lehmann/The Dough Doctor

1038

**Sicilian Style / Re: Serving up pan pizza - soggy crust woes.**

You might try this for your mixing procedure, put water in mixing bowl first (65F), then add the flour and all of the dry ingredients and mix at low speed just until you don't see any dry flour in the bowl, add the oil and mix at low speed for 1-minute, change to the highest speed your mixer will handle the dough at and mix 8 to 10-minutes, or until the dough just begins to look smooth. then scale/ball and cold ferment for 24 to 48-hours, after CF allow the dough to warm to 55F at room temperature (this is the INTERNAL dough ball temperature), it will take about 90 to 120-minutes. Then proceed with your usual process. Keep us posted.

Tom Lehmann/The Dough Doctor

1037

**Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

Using flour with too low of a protein content can result in an overly tender finished donut, deleting the whole egg will reduce the richness of the finished donut. 0.8% IDY should work OK.

Remember that powdered sugar is made from dextrose, not sucrose which is why powdered sugar exhibits a cooling effect in the mouth and the flavor isn't overly sweet.

Tom Lehmann/The Dough Doctor

1036

**General Pizza Making / Re: How long can proofed dough sit at room temperature.**

In a scenario like that the dough will continue to ferment but because it's warmer and continuing warm (due to heat of metabolism) the fermentation rate will also continue to increase. The result will soon be a dough that is difficult to shape as it becomes overly extensible and in a severe case it will become very weak making opening it into a skin without having it tear or develop holes all but impossible. In most cases dough balls that have been allowed to ferment too long can be salvaged by re-ballng them BUT remember that it may take several hours for the dough to relax sufficient for it to be opened again. A much better option (one that is commercially practiced) is to go ahead and open the dough balls into skins before

they reach this point, place the opened skins onto pizza screens and store in the cooler/fridge (covered to prevent drying) until 20 to 30-minutes prior to time of use. To use, remove from the cooler (keeping covered) and allow to warm AT room temperature for 20 to 30-minutes, remove from the screen and touch-up the dough skin, then dress and bake to the order. A lot of pizzerias do this to enable them to keep up with the rush periods when they tend to fall behind on opening skins.

Tom Lehmann/The Dough Doctor  
1035

**Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

That is a VERY LOW temperature (130C/266F) for frying donuts at. The lowest I've ever seen used was 340F/171C.

Tom Lehmann/The Dough Doctor  
1034

**Dough Clinic / Re: Diastatic malt vs sugar**

When dealing with un-malted flours you will typically see a slightly greater tendency towards developing more crust color with a higher protein flour than a lower protein flour due to the fact that protein participates in the browning reaction.

Tom Lehmann/The Dough Doctor  
1033

**Dough Clinic / Re: Best Practices for Pizza by the Slice: Food Safety & Taste**

Most will fully bake the pizzas, hold in a temperature/humidity controlled cabinet and reheat for the customer. I like to add a little additional cheese for flavor and appearance, but that's just me. In the end you will want to develop a plan and then pass it by your food safety inspector the his/her blessings, after all, in the end they will have the final say in the matter.

Tom Lehmann/The Dough Doctor  
1032

**Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

That would be my recommendation. Yeast raised donuts are final proofed at 85 (29.4C) to not more than 90F (32.2C) at between 70 and 75% relative humidity for 40 to 60-minutes. Total frying time will be just under 2-minutes total for both sides.

Tom Lehmann/The Dough Doctor  
1031

**Dough Clinic / Re: Six Inch Individual Pizzas**

Sure, here's how it's done.

A good dough weight for a 12-inch pizza is 10-ounces. The surface area of a 12-inch circle is Pi X R squared (you might remember that from high school math), so  $3.14 \times 36 = 113.04$ -square inches. By dividing dough ball weight by surface area we get the dough loading per square inch (10-ounces divided by 113.04 = 0.08846-ounces per square inch).

A 6-inch pizza has ( $3.14 \times 9 = 28.26$ -square inches) Now all we need to do is to multiply the surface area of the 6-inch pizza by the dough loading (0.08846) to find the weight of the dough ball needed to make our 6-inch pizza ( $28.26 \times 0.08846 = 2.4998$ -ounces) We can round that off to 2.5-ounces.

Each dough ball should weigh 2.5-ounces to make a typical 6-inch thin crust pizza skin.

Can the dough ball have a different weight? Sure it can, it's YOUR pizza so you can

make it whatever you want but I think 2.5-ounces is a reasonable starting point that will make a finished crust about the thickness of a Domino's thin crust.  
Tom Lehmann/The Dough Doctor  
1030

**[Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat](#)**

And don't forget to put a wet towel in the oven too, otherwise just heating the air will drive the R.H. down allowing a crust to form on the dough (something you don't want).

It is very easy to make your own donut proofer too, all you need is a box, a light bulb and a wet towel, use a pair of stem type thermometers for measuring R.H. with a couple of ventilation holes cut into the box to control temperature and humidity you're good to go.

Tom Lehmann/The Dough Doctor  
1029

**[Sicilian Style / Re: Serving up pan pizza - soggy crust woes.](#)**

Thickness Factor/Dough Loading = dough weight divided by pan surface area in square inches.

15.5 X 12 = 186

22-ounces divided by 186 = 0.1182795

Dough Loading Factor: 0.1182795 or to put it another way, you have 0.1182795-ounces of dough per square inch of pan surface area.

Tom Lehmann/The Dough Doctor  
1028

**[Dough Clinic / Re: Diastatic malt vs sugar](#)**

If baking on the deck, about 650F, even at that the crust might develop color too quickly for some pizzas.

Tom Lehmann/The Dough Doctor  
1027

**[General Pizza Making / Re: On stretching and folding wetter doughs](#)**

I also like to do it out of the bowl using a scraper in one hand to help lift the dough and stretch it for folding.

Tom Lehmann/The Dough Doctor  
1026

**[New Forum Members / Re: New member and malt powder question](#)**

Non diastatic malt is nothing more than "malt sugar" while diastatic malt is enzyme active alpha amylase primarily but other enzymes are also present which hydrolyze wheat starch into maltose which is then further hydrolyzed into glucose by the enzyme (maltase) in the yeast which is then metabolized by the yeast as a nutrient to support fermentation/yeast activity. Too much malt and a wood fired oven baking at very high temperatures is generally not considered a match made in heaven as the crusts have more than a slight tendency to burn. If baking at less than 650 to 700F this may not be as much of a problem.

A typical use level for 20L dry malt powder is 0.25% in an un-malted flour.

Tom Lehmann/The Dough Doctor  
1025

**[Dough Clinic / Re: Diastatic malt vs sugar](#)**

We did all of our research on a stone deck in a combination wood and gas fired

commercial pizza oven that was a full 6-inches thick. I can see where different deck materials as well as different deck thickness would affect this. Good point.

Tom Lehmann/The Dough Doctor  
1024

**[Dough Clinic / Re: Best Practices for Pizza by the Slice: Food Safety & Taste](#)**

The key here is to make sure it gets reheated to a temperature above 160F which isn't always the case on the top of the slice. This can be a pretty good case for a small air impingement or IR oven for reheating those slices especially if you are having a hard time dealing with a FSI.

Tom Lehmann/The Dough Doctor  
1023

**[Dough Clinic / Re: Diastatic malt vs sugar](#)**

If you didn't put any yeast in the dough you might be disappointed. :-D  
Tom Lehmann/The Dough Doctor  
1022

**[Dough Clinic / Re: Chicago tavern style needs improvement](#)**

One of the very first things I'd do to address the flavor issue is to increase the salt level to 2%, then at the same time change the dough mixing procedure by putting the water in the mixing bowl first, then the salt and sugar (no need to stir) followed by the flour and IDY. Mix at low speed just until you don't see any dry flour in the bottom of the bowl, then add the oil gradually, mix 1 additional minute after all of the oil has been added, then go to the next highest speed and mix for 8 to 10-minutes. You don't say anything about the finished dough temperature, this is a critical aspect of effective dough management. I'd suggest targeting 75 to 80F for 48-hours CF.

Tom Lehmann/The Dough Doctor  
1021

**[General Pizza Making / Re: "San Francisco" style cornmeal attempt](#)**

If you are looking for more of a "corn" flavor in the finished crust try replacing 50 to 100% of the corn meal with Masa Flour/Maseca.

Tom Lehmann/The Dough Doctor  
1020

**[Dough Clinic / Re: Chicago tavern style needs improvement](#)**

djenks;

I'm not sure I fully understand your question, but I do suggest increasing the salt and shoot for the targeted finished dough temperature. Then go straight from the mixer to the bench for scaling and balling, then bag and into the cooler.

Here is another option for a truly outstanding Chicago style crust.

Put water in mixing bowl (70F).

Suspend the IDY in a small amount of 95F water then add to the water in the bowl, no need to activate, just hydrate.

Add salt and sugar IMMEDIATELY followed by the flour.

Mix at low speed for approximately 1.5-minutes (yes, you read that right). The "dough will look very shaggy" with lots of dry flour present.

The dough is properly mixed when you can grab a hand full and press it together to form a crumbly ball (it will NOT be cohesive).

Scale to desired weight, form into "puck" shape as you would if making a pie crust. Place into individual plastic bags as you presently do.

Cold ferment for 24 to 48-hours.

Remove from cooler, allow to warm to 50F (internal ball/puck temperature).

Turn out of the bag (the dough will be much more cohesive now). Do not re-ball, just flatten and begin forming.

Form into a skin using a dough sheeter or rolling/pastry pin.

Dress to the order and bake.

NOTE: This dough has no added oil.

I discussed this procedure quite some time ago here if you want to research it.

Tom Lehmann/The Dough Doctor

1019

### [\*\*Dough Clinic / Re: Chicago tavern style needs improvement\*\*](#)

QJ;

Sometimes it's also the BTU of the burner or the way the flame is adjusted that can result in this issue.

Tom Lehmann/The Dough Doctor

1018

### [\*\*New York Style / Re: pizza dough for ny style piza\*\*](#)

Traditionally, All Trumps flour is used but the truth is that just about any good bread type flour will work well. Here is a good starting dough formula:

Flour: 100%

Salt: 1.75%

Olive oil: 2%

IDY: 0.375%

Water: 63% (70F)

My Dough Management Procedure is presently posted here in an active thread, I suggest using the plastic bag procedure with a cold fermentation period of 48-hours.

Tom Lehmann/The Dough Doctor

1017

### [\*\*Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat\*\*](#)

If the donuts were wet coming out of the proofer the relative humidity was too high in the proofer, remember that you only want a R.H. in the 75 to 80% range (favoring 75%) at this humidity the proofed donuts will have a dry but soft outer skin on them.

Tom Lehmann/The Dough Doctor

1016

### [\*\*Dough Clinic / Re: Diastatic malt vs sugar\*\*](#)

How about the time I set a series of experimental doughs and then went to lunch with aspirations of conducting the baking experiments that afternoon after lunch, upon my return I got everything ready and pulled the first dough only to find it looking much like it did in the morning, OMG! Are they all like this? Yep, everyone. Forgot to add the yeast.

Almost as bad as the time when I set sponges in the morning and went over to the lake (Michigan) as AIB was located only 200-yards from Ohio Street Beach, I was watching the kids playing on the shore and my eyes got heavy, very heavy, when I woke up it was quiet, the kids were gone and it was almost 4:00 p.m. Oops! Those sponges, well lets just say that they were very well fermented and yes, there was a mess to be cleaned up as they all over flowed their containers.

Tom Lehmann/The Dough Doctor  
1015

**General Pizza Making / Re: Dough sticking to dough pans**

It's my experience that this is a pretty common issue with aluminum fermentation pans. I used them when I was at AIB and we always had to scrape the dough off of the pan. Plastic, in my opinion, is a much better alternative.

Tom Lehmann/The Dough Doctor  
1014

**Dough Clinic / Re: Flat Pizza balls**

Saying that you use Caputo "00" flour really doesn't help very much as there are different types of Caputo "00" flour, perhaps you are using one which isn't designed to tolerate more than 12-hours of fermentation? It would be good to know the actual finished (mixed) dough temperature as well as exact ingredient weights or amounts in bakers percent. What kind of mixer are you using? When you bulk ferment, what kind of dough weight are we talking about?

Tom Lehmann/The Dough Doctor  
1013

**Neapolitan Style / Re: Neapolitan pizza goes Tough and rubbery after 15 minutes?**

Yep, it's the "nature of the beast" to get soft VERY soon after exiting the oven. If you are baking the pizzas at home and also happen to be the Chief Cook, Bottle Washer, CEO, CFO, and President of pizza making endeavors you can do whatever you want and deviate from the classical Neo type pizza to something that better fits YOUR likes (that's actually the best part of making pizzas at home), so by simply reducing the oven temperature and baking longer you can introduce a more crispy nature to the finished crust and the crust will retain the crisp for a longer period of time, this is the experimentation that we all find so interesting. The more you experiment the more you understand about pizza and the more experimenting you will want to do (it's an endless cycle) but you will find few here who are complaining about it.

Tom Lehmann/The Dough Doctor  
1012

**Pizza Ovens / Re: Commercial oven for garage, gas vs electric?**

Even with an electric oven it is highly recommended that you have some kind of ventilation in your garage or eventually you're going to find everything covered with a sticky layer of goo. You might be surprised to find out what goes up the stack in an electric oven.

Tom Lehmann/The Dough Doctor  
1011

**Sicilian Style / Re: Serving up pan pizza - soggy crust woes.**

Gotta admit, that's a good lookin' pizza! :drool: :drool: :drool:  
Tom Lehmann/The Dough Doctor  
1010

**Off-Topic Foods / Re: Baking soda and Pretzel**

Yael;  
When making pretzels you don't need to use an egg wash for color. The alkaline wash will give you both color and shine, the stronger the alkaline wash the greater

the color. We typically used a 2% sodium hydroxide solution (which is what is used commercially). One might say that the only real difference between a bagel and a pretzel is alkalinity of the water in which the bagel is "kettled" in. When pretzel crusts were all the rage we made them by brushing the edge of the skin with the 2% sodium hydroxide solution and then applying a light application of coarse pretzel salt just prior to baking. We made the pretzel buns by the exact same manner.

Tom Lehmann/The Dough Doctor  
1009

### **Dough Clinic / Re: Diastatic malt vs sugar**

I'm assuming your malt powder was non-diastatic?

When using honey remember that the darker the color the more robust the flavor will be. In the baking industry we use honey that is as dark as black coffee.

Tom Lehmann/The Dough Doctor  
1008

### **General Pizza Making / Re: Dough sticking to dough pans**

Try using shortening rather than oil but be aware that the dough will still cling to the shortening, most pizzerias use the plastic dough boxes which don't pose this problem.

Tom Lehmann/The Dough Doctor  
1007

### **Dough Clinic / Re: Cinnamon rolls**

Rather than using "melted" butter, just use "softened" butter, putting melted butter in the fridge is counter productive. As for achieving the targeted finished dough temperature just use colder water, some use water that has been stored in the fridge overnight while others find that they need to use a little crushed ice in the water too. I don't know how else to explain the appearance of the dough when it has been properly mixed except to say that it is just mixed until the dough has a smooth appearance which is a very good visual indicator that the dough has been sufficiently mixed when you are going to use 18 to 24-hours of cold fermentation. It is impossible for me to speculate what speed to mix the dough at using your specific mixer except to say that you should use the highest speed possible without fear of over working your mixer.

Tom Lehmann/The Dough Doctor  
1006

### **Dough Ingredients / Re: Yeast storage and longevity**

We have addressed this question before, when storing either ADY or IDY in the refrigerator or in the freezer it is HIGHLY recommended that the yeast be removed from the fridge or freezer and allowed to come to room temperature BEFORE opening the container. Moisture will lead to early loss of the yeast so opening the container ONLY after it has reached room temperature will reduce the condensation issue thus reducing the moisture accumulation on the yeast and result in better long term storage of the yeast. By the way, it is NOT recommended to remove the yeast from the original packaging if using only a portion of the yeast, instead, fold the packaging down tightly to the yeast, secure with tape or rubber band and refrigerate or freeze. Air will also cause the yeast to deteriorate and this eliminates much of the air in the package.

Tom Lehmann/The Dough Doctor

1005

**Dough Ingredients / Re: Yeast storage and longevity**

The manufacturers used to have a 2-year shelf-life on it at 70F storage temperature but a number of years ago they rolled it back to 1-year, I think the reason being that it was too difficult for merchants and users to keep track of the age over such a long storage period. Unopened, you should be good for 2-years at 70F.

Tom Lehmann/The Dough Doctor

1004

**Dough Clinic / Re: Diastatic malt vs sugar**

Brent;

That's exactly the same as for honey. ^^^

Tom Lehmann/The Dough Doctor

1003

**Dough Clinic / Re: Chicago tavern style needs improvement**

Please define "higher absorption" in bakers percent.

Tom Lehmann/The Dough Doctor

1002

**Dough Clinic / Re: Diastatic malt vs sugar**

It only takes 0.25% of a 20L malt powder to replicate the level of malting flour receives at the flour mill, anything over that will be converting a significant amount of starch to maltose sugar which is why you found it necessary to use less malt powder than sugar, the downside to it thought is the inherent stickiness of the dough due to the formation of excess maltose.

Tom Lehmann/The Dough Doctor

1001

**Off-Topic Foods / Re: Baking soda and Pretzel**

A number of years ago one of the major pretzel manufacturers got the lye solution too concentrated which resulted in residual lye on the surface of the pretzels and caused a recall of the product as consumers were complaining of a burning sensation on their lips after eating the pretzels. Every once in a while you will experience this same burning sensation when eating perfectly "normal" pretzels, this is due to the water in the lye solution evaporating to cause a slightly too concentrated solution having the same results but to a much lesser degree. The most concentrated lye solution purchased by bakeries is 20%, in the dry form it is much too dangerous due to its propensity to dust into the air while being transferred/scaled.

Tom Lehmann/The Dough Doctor

1000

**Dough Ingredients / Re: Yeast storage and longevity**

Let me see, August 11, 2018 to August 11, 2019 = 1-year and August 11, 2019 to August 11, 2020 = 2-years, yep, just as I guessed, it's still good. Your observation is correct in that as the IDY ages it loses its potency and you need to continue adding more and more of it. From a commercial application point of view this is totally unacceptable but for home use it isn't necessarily a game changer. Once you open the package all bets are off the table when it comes to shelf life as there are just sooooo many contingencies that might impact the shelf life.

When I was running the bake lab at AIB we made it a habit to NEVER hold an

opened package of IDY for more than 5-days, the reason for this is because we saw a difference in performance already at the 7-day mark. I believe most manufacturers will suggest holding an opened package no more than 14-days, but this again is for commercial application, not for home application. There are huge differences in performance expectations between experimental/research, commercial and home applications.

Tom Lehmann/The Dough Doctor  
999

### [\*\*Off-Topic Foods / Re: Baking soda and Pretzel\*\*](#)

Norma;  
I've heard of it but never used it.  
Tom Lehmann/The Dough Doctor  
998

### [\*\*Dough Ingredients / Re: Yeast storage and longevity\*\*](#)

Vacuum sealing it the key to getting long term storage from an opened package of IDY. New packages are either gas flushed or vacuum sealed.

Tom Lehmann/The Dough Doctor  
997

### [\*\*Dough Clinic / Re: 20" \(50cm Pies\) im up to 24oz \(700g\) dough balls to get up to size\*\*](#)

We typically use 10-ounces of dough to make a 12-inch N.Y. style pizza, this calculates to a dough loading of 2.4778-grams per square inch. A 20-inch pizza has 314-square inches so  $314 \times 2.4778 = 778$ -grams. So based on this a good dough weight for your 20-inch N.Y. style pizza would be 778-grams.

Tom Lehmann/The Dough Doctor  
996

### [\*\*Off-Topic Foods / Re: Baking soda and Pretzel\*\*](#)

The next time you make them open them up a bit more to get a better shape, then try dipping the tops in sesame seeds right after the caustic solution, makes for a great flavor!

Tom Lehmann/The Dough Doctor  
995

### [\*\*Newbie Topics / Re: Storing dough in fridge.. How long?\*\*](#)

A lot of the answer to your question pivots around the finished dough temperature, the amount of yeast used in the dough formula, and overall how well the dough is being managed. Every dough is different in this respect, the best advice I can give you is to save one or two of your dough balls for testing with a few more days of CF time. That's the only way you will know for sure.

Tom Lehmann/The Dough Doctor  
994

### [\*\*Newbie Topics / Re: Storing dough in fridge.. How long?\*\*](#)

One more thing, the strength of your flour will also play an important part in determining if YOUR dough will still be good several days down the road.

Tom Lehmann/The Dough Doctor  
993

### [\*\*Newbie Topics / Re: Blistering when balling\*\*](#)

Pictures? It sounds like the dough might have quite a bit of fermentation on it at the time of scaling and balling, a picture would help.

Tom Lehmann/The Dough Doctor  
992

**[Newbie Topics / Re: Blistering when balling](#)**

Your ADY is a bit on the high side for what you are wanting to do, I'd suggest dropping it back to 0.3%. Additionally, you don't say what the finished dough temperature is but from what you are describing it sounds like it is possibly too high (hot), try adjusting the water temperature to give you a finished dough temperature of 70F/21.1C.

Tom Lehmann/The Dough Doctor  
991

**[Dough Clinic / Re: What is the difference between Autolysis and hydrolysis?](#)**

Do you mean autolyse and hydration? Hydrolysis is a totally different thing not related to pizza making.

If so, you can mix water and flour together to allow the flour to better or more fully hydrate prior to the actual dough mixing process. This is beneficial when making dough with whole-wheat flour or making a multi-grain dough. In this case the flour and water are typically allowed to set for about an hour. An autolyse, on the other hand, is similar but it is allowed to set for anything from one to several hours (more typically several hours) which allows the flour to fully hydrate and it also allows for enzymes in the flour and yeast to begin working making for an easier to handle dough and some will say a better flavored finished product. The autolyse method is especially beneficial when making dough with a high (70%+) absorption.

Tom Lehmann/The Dough Doctor  
990

**[Dough Clinic / Re: My pizza gets soggy not crunchy after cools down](#)**

What you have described is pretty common for delivery/take away pizza. Delivery pizzas are best baked as long as possible and with a ripple sheet or Pizza Savor mat in the box to hold the pizza up off of the bottom of the box, we've discussed this here a number of times in the past if you care to search the archives. Your best bet might be to educate your customers to reheat the pizza once they get it home, this will refreshen as well as re-crisp the pizza for maximum enjoyment.

Tom Lehmann/The Dough Doctor  
989

**[Dough Clinic / Re: Chicago tavern style needs improvement](#)**

Five to eight percent shortening will be about the limit. As for why the dough appears to ferment faster with fat the answer is, it doesn't but the fat both lubricates the dough for easier expansion and it also coats the cell wall for improved gas retention so the dough retains more gas, making it appear larger.

Tom Lehmann/The Dough Doctor  
988

**[Newbie Topics / Re: If I wanted to just buy a 1/2" pizza steel, where would I do that for the least](#)**

Also check out any scrap yard that take metal in your area, we have one near us and I've found some great buys there. For a few extra bucks they'll even cut it.

Tom Lehmann/The Dough Doctor  
987

## [\*\*Dough Clinic / Re: My pizza gets soggy not crunchy after cools down\*\*](#)

Tim;

I wrote about this in one of my articles some time ago. Here are the things to do to improve the quality of a DELCO pizza;

- 1) Lightly oil the skin prior to application of the sauce.
- 2) Use sauce sparingly.
- 3) Use vegetable toppings sparingly.
- 4) Bake pizzas as LONG as possible to both dry out the pizza and develop the thickest crust as possible.
- 5) Immediately after baking place on rack to steam-off for a minute before boxing.
- 6) Use some type of sheet in the box to hold pizza off of the bottom of the box.
- 7) Make sure box has steam vents and that the vents are opened.
- 8) Encourage customers to reheat/re-crisp the pizza when they get it home.
- 9) When it comes to oven selection, air impingement ovens are by far the best choice if DELCO pizzas are in your future. The focused airflow of these ovens is a decided benefit to achieving the best bake and driest pizza possible for this application.

Tom Lehmann/The Dough Doctor

986

## [\*\*Dough Clinic / Re: Hidden dangers of old starters?\*\*](#)

Travis;

Just something to watch for. Pineapples contain a very powerful reducing enzyme (Bromelain) which is very similar to papain. These enzymes are effective at hydrolyzing protein and very low levels. I don't know if the pH of the starter will inactivate the bromelain or not but it is something to be aware of. If you use the starter and find that the dough becomes unusually soft and extensible this might be the cause. let us know how it works for you.

Tom Lehmann/The Dough Doctor

985

## [\*\*Off-Topic Foods / Re: Baking soda and Pretzel\*\*](#)

Bagels are either steamed or kettled (boiled) but not actually boiled as the water temperature is only 200F, and just plain water is used. After kettling they are allowed to dry for a minute or so and then baked with a turn about mid way through the baking process, pretzels are just run through the alkali solution (2% lye) and then salted and baked. For the crispy pretzels they then go through a kiln drying process which is a pass under the oven to allow for a more controlled drying process (about 20-minutes), they are then taken directly to packaging.

Steamed bagels are made using a rotating rack oven, steam is introduced into the oven for the first 15 to 20-seconds, the door is then opened to evacuate the steam and the bagels are baked for about 18 to 20-minutes at 450F. The difference is that kettled or traditional bagels as they are known are tough and chewy while steamed bagels are much more tender eating, for this reason the steamed bagels are much more popular for use when making bagel sandwiches.

Tom Lehmann/The Dough Doctor

984

## [\*\*Off-Topic Foods / Re: Baking soda and Pretzel\*\*](#)

The traditional way of making bagels is to mix, form, cold proof on bagel boards overnight, pull from the cooler and allow to rest at room temperature for 20 to 30-minutes, transfer to the boiling kettle and stir until the bagels all float, then

transfer to a rinse station where the bagels are flushed with cold water and immediately topped if desired and placed onto wet baking boards (redwood) and baked for a couple of minutes until a firm skin is formed on the bagel, they are then turned off of the boards (inverted) onto the oven deck to continue baking.  
Tom Lehmann/The Dough Doctor  
983

### **New Forum Members / Re: Dogh Enhancer**

Dough enhancer is a very broad term, I guess we might call anything added to the dough that enhances it in some way a "dough enhancer" these might include:  
dead yeast (glutathione): Dough Relaxer  
diastatic or non-diastatic malt: Crust color/flavor/food for the yeast  
vital wheat gluten: Strength  
calcium sulfate: Reduces stickiness  
from a commercial stand point enzymatic oxidizers are also used: Strength  
some might even include ascorbic acid: Strength  
vinegar might be referred to as a dough enhancer too: Accelerates fermentation

It all depends upon that you want the dough enhancer to do, then you select the best product for that function.

Tom Lehmann/The Dough Doctor  
982

### **Dough Clinic / Re: Adding high ratio of shortening/oil in pan pizza dough**

With pan style pizzas using shortening is preferred over oil, the best way to add it is to have it at a temperature between 70 and 80F and just add it right on top of the flour when you begin the dough mixing process. If the amount of shortening is 10% or more it is advisable to withhold the shortening until after the dough has come together in the mixing bowl, then add the shortening and mix just enough to thoroughly incorporate it.

Tom Lehmann/The Dough Doctor  
981

### **Dough Clinic / Re: Adding high ratio of shortening/oil in pan pizza dough**

Do NOT melt the shortening prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
980

### **Dough Clinic / Re: Shortest quality neapolitan dough**

I agree, mix, (target finished dough temperature 75 to 80F), scale, ball, box and allow to ferment. The exact fermentation time as well as the yeast level will need to be adjusted to fit into your operating scheme in your mobile pizza operation.

Tom Lehmann/The Dough Doctor  
979

### **Dough Clinic / Re: Shortest quality neapolitan dough**

As a general rule, you only need to have a tightly balled dough if you are targeting much more than about 48-hours fermentation time in ball form. Rather than concentrating on balling tight or loose, it's better to concentrate on being consistent.

Tom Lehmann/The Dough Doctor  
978

## [\*\*General Pizza Making / Re: Thoughts on balling wet doughs\*\*](#)

Try keeping your hands wet during the rounding/balling process.

Tom Lehmann/The Dough Doctor

977

## [\*\*Dough Clinic / Re: Bromated flour\*\*](#)

All trumps is the "preferred" flour to use in New York as it gives the desired finished crust characteristics and the All Trumps flour used there also happens to be bleached and bromated. Does this mean that it HAS to be bleached and bromated? No, you can use just about any flour having 12 to 14.4% protein content to make a decent N.Y. style pizza. Stop worrying about the bromate, the residual "bromate" in the crust is measured in PPB (parts per billion). If you live in a metropolitan area you probably have more to fear from the air you're breathing. To answer your last question, little to none unless you are adamant about fermenting your dough for 5-days or more. Be sure to go back and read the discussion threads we just recently had on bromate in flour.

Tom Lehmann/The Dough Doctor

976

## [\*\*Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat\*\*](#)

No, not unless your frying fat temperature is above 365F/185C, if you drop the fat temperature too far the donut will become dry or the inside will not be cooked properly. Optimum frying time for a yeast raised donut with a scaling weight of around 1.5-ounces will be about 1-minute and 45-seconds.

Tom Lehmann/The Dough Doctor

975

## [\*\*Resources / Re: High-gluten flour in Nashville area\*\*](#)

Can you break it down into smaller (5-pound) bags and store it in the freezer? If you can store it in the freezer for 6-weeks you can then transfer it to a container that can be tightly sealed and store it at room temperature for up to a year.

Tom Lehmann/The Dough Doctor

974

## [\*\*Pizza Cheese / Re: cheese blends\*\*](#)

Nothing special but just a good cheese flavor which I personally think is an improvement over just plain mozzarella is a blend consisting of 80% Grande WM mozzarella + 15% Parmesan and 5% Romano. After that, "the world is your oyster", begin experimenting with different cheeses to find what YOU like best for YOUR pizzas.

Tom Lehmann/The Dough Doctor

973

## [\*\*Dough Clinic / Re: Frozen dough recipes and stabilizers\*\*](#)

Dustin;

Have you REALLY looked into this? I mean form a legal point of view?

Because your pizzas will be sold from a venue other than where they are made (pizzeria) you will have to have at minimum the following:

Ingredient declaration

Nutrition facts panel

Where the pizza is made (hard address)

Approved name (yes, there are laws regulating what you can call your pizza)  
If there is any meat on the pizza it will need to be made in a USDA inspected

facility.

You will most likely need to have special packaging (plain stretch wrap doesn't cut it).

The dough formula isn't anything special but you might want to consider moisture controlled vegetable toppings if you will not be blast freezing the pizzas. Blast Freezing= -30 to -45F, this can be done mechanically using an ammonia freezer or cryogenically using an industrial cryogen such as liquid carbon dioxide or liquid nitrogen.

Due to the UV light in the store you will need to have a full panel over the top of the pizza or you will need to have a packaging film with a formulated UV barrier to prevent the toppings from fading in color which can happen quite rapidly.

Tom Lehmann/The Dough Doctor

972

### **Dough Clinic / Re: Adding high ratio of shortening/oil in pan pizza dough**

Before answering your question I would like to know what substrate the fat is sprayed on.

Tom Lehmann/The Dough Doctor

971

### **Dough Clinic / Re: Frozen dough recipes and stabilizers**

If you're going to use yeast your shelf life will need to be limited to not more than 15-days unless you use blast freezing. Without blast freezing, if you want/need more than 15-days shelf life you will need to use a par-baked crust to build your pizza on. As for the sauce, you will need to use as little water as possible while still being able to achieve spreading/application consistency. Some frozen pizza manufacturers will incorporate gums into the sauce (Ticaloid Lite from TIC Gums) to help control syneresis as the sauce melts during the early stages of baking, still it is a good idea to limit the amount of sauce used.

Regarding chemical leavening, a coated/encapsulated chemical leavening system such as Wrise is used only if you are making a bake to rise type of crust but since this type of crust also contains yeast you're back to blast freezing again.

So, what about the pizzerias that make a pizza, partially bake it, wrap it and sell it from a frozen case in their store? I think everyone will agree that they are not true restaurant/pizzeria quality pizzas but most will also agree that they are better than make delivered pizzas. This is OK at the store level where the food item is not exposed to the masses as it is at a supermarket, but once you take it to the supermarket you MUST ensure that the pizza is heated to an internal temperature of at least 160F and then get the product frozen as quickly as possible which may require that you have an effective HACCP (hazard analysis critical control point) plan in place that is being followed.

Tom Lehmann/The Dough Doctor

970

### **Dough Clinic / Re: Adding high ratio of shortening/oil in pan pizza dough**

Hard fats like beaded mono-glycerides are not appropriate as they have a melting point that is too high (typically around 136F) you need something with a melting point close to body temperature or it will impart a waxy mouthfeel to the finished product. Do you have a specific reason for wanting to use a more expensive spray dried product than just a blended plastic fat? The more processing steps that go into making a product the more expensive it usually becomes. The products you are looking at are typically used in specific applications like dry mixes.

Tom Lehmann/The Dough Doctor  
969

**[Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat](#)**

One thing I should point out is that what I fry donuts in is different from what you are frying them in, I'm talking about using a commercial donut fryer using a bit more than a cube of shortening (50#) so I have a huge amount of latent heat stored in all that hot oil while you are frying in what appears to be maybe just a couple pounds of oil so the temperature is not as consistent as mine is, with that said you may need to fry your donuts a little longer, you will sacrifice something in quality but that's the nature of the beast. The good news is that yeast raised donuts have a shelf life measured in hours so more than likely they'll all be gone in no time at all.  
:chef:

Tom Lehmann/The Dough Doctor  
968

**[Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat](#)**

Nope, it's not the radiant heat coming off of the aluminum wok, the oil will easily absorb that heat.

There is NOTHING that will give you a 72-hour shelf life on a yeast raised donut. If you want to have a 72-hour shelf life from a donut you have to make cake donuts, not yeast raised donuts.

Tom Lehmann/The Dough Doctor  
967

**[Commercial Ovens / Re: Correct Pizza Oven Temperature](#)**

I'd recommend starting with 250 to 275C for the deck temperature and use the same temperature on the top, then adjust the top temperature to give you the desired top pizza color characteristics once the bottom is baked, remember, not all cheese colors the same so your specific mozzarella cheese or cheese blend may color up entirely differently than that which someone else is using. The dough management as well as the dough formulation will also impact the way the crust bakes. The rule for baking pizzas is to get the bottom crust properly baked, then worry about the top of the pizza.

Tom Lehmann/The Dough Doctor  
966

**[Dough Clinic / Re: Help!!! Can't keep my dough balls as balls.](#)**

Additionally, your IDY amount calculates out at 0.883% based on 453-grams of flour weight which is nearly 3 times the suggested amount of 0.3%. The IDY amount shown for the dough based on 1-Kg. of flour weight is correct at 0.3%. As Yael indicated the finished dough temperature is critical, especially when making dough in warmer climates, in your case you should be targeting a finished dough temperature of about 70F/21C, I would also recommend that you lightly oil each dough ball and place into individual plastic (bread type) bags, then twist the open end into a pony tail and tuck the pony tail under the dough ball as you place it into the fridge to cold ferment. I think this will work better for you than what you are presently doing. To use the bagged dough balls, remove from the fridge about 1-hour prior to use, roll the bag down around the dough ball and invert the dough ball over a floured surface allowing the dough ball to fall free from the bag onto the bench top, flour both sides of the dough and begin opening into a skin by your preferred method.

Tom Lehmann/The Dough Doctor

**[Dough Clinic / Re: English Muffin Bread.....?](#)**

When I was teaching in the AIB Baking Science and Technology class we used to make it when the students were in the large production shop, I don't think I have a copy of the formula anymore but if memory serves me correctly we used a spring wheat flour with 13.8 to 14.2% protein content, 1% oil, 6% compressed yeast, 1.75% salt, sugar 2%, vinegar (100-grain strength) 0.75%, water 72% (variable).

Mixing:

Use delayed salt addition mixing method.

Mix slightly past full development.

Targeted finished dough temperature is 63 to 65F (this is CRITICAL).

Fermentation time is 15 to 20-minutes.

Final Proof is hot and dry at 105F/50 to 55% R.H.

Bake at 400F

De-pan loaves for cooling immediately after baking.

Note:

We determined dough absorption experimentally by increasing it to the point where the proofed loaves would collapse during baking then back it down to a point where we no longer experienced collapse, with some lots of flour we were able to use as much as 78% absorption.

The mixing time can be slightly reduced by withholding 10% absorption and mixing to full development, then adding the withheld water along with the salt and mixing it in during the last few minutes of mixing.

Handle the fully proofed dough GENTLY.

Hopefully I didn't forget too much!

Tom Lehmann/The Dough Doctor

964

**[Dough Clinic / Re: Neapolitan Pizza - Puffy Airy Crust \(Canotto Style\)](#)**

Pictures of your pizza would have helped immensely, but since we don't have that to go on I'm going to take a "SWAG" and say that you will need to increase the dough absorption to at least 65% or more, and bake at a higher temperature, not knowing anything about how your pizzas are being baked I'll say to bake the pizzas on a baking steel 3/8-inch thick or a stone at least 1/2-inch thick as hot as you can get your oven (allow at least 90-minutes for everything to come up to temperature before baking your first pizza).

Let us know if this moves your finished pizza characteristics closer to where you would like it to be.

Tom Lehmann/The Dough Doctor

963

**[Commercial Ovens / Re: Correct Pizza Oven Temperature](#)**

Alex;

Try it, see if it works.

Something to ponder; Maybe the cheese you are using isn't well suited to high baking temperatures? Maybe try a different cheese too.

Tom Lehmann/The Dough Doctor

962

**[Dough Clinic / Re: Neapolitan Pizza - Puffy Airy Crust \(Canotto Style\)](#)**

Start increasing the dough absorption, first by 5% then after that in 2% increments, that should help to open the crumb structure. With the crumb

structure more open you may find that the crust is developing too much color, address that by eliminating the sugar from your dough formula.

Tom Lehmann/The Dough Doctor  
961

### **Dough Clinic / Re: Neapolitan Pizza - Puffy Airy Crust (Canotto Style)**

Let's go by the old adage of "first things first" and if absorption doesn't help then we can dig into dough management.

Tom Lehmann/The Dough Doctor  
960

### **General Pizza Making / Re: Aluminum pans for Chicago deep dish**

Ya gotta season those bright colored aluminum pans unless you like light colored crusts. We have discussed this a number of times here as well as how to maintain those seasoned pans.

Tom Lehmann/The Dough Doctor  
959

### **Prep Equipment / Re: Spiral Dough Hook for KitchenAid Artisan?**

I'm of the same opinion as TXCraig1, the "C" hook aka dough hook doesn't work in any size mixer unless the bowl is at near maximum dough capacity which probably explains why we used to see sooooo many used Hobarts totally worn out. The reverse spiral dough arm was first made available back in the late 60's (AIB did prototype dough testing with it at the time), thankfully, the reverse spiral dough arm is now standard equipment with all new Hobart mixers (at least the large ones that I deal with). When Hobart made their own motors it was a very different "ball game", but around 1975 they were forced to contract all of their motors, what they got were gutless wonders. When AIB moved from Chicago, IL to Manhattan, KS in 1977 I had several of the old Hobart A-120 (12-quart) mixers as well as an A-200 (20-quart) mixer. Hobart agreed to exchange all of our old mixers for new models but I kept my old mixers as they were in excellent condition. After setting up shop in Manhattan we discovered the shortfalls of those new mixers. Remember, I kept my old ones so it didn't impact me or my lab at all but others were in for a huge surprise, the new mixers would stall with the same dough size that the old ones were mixing on a daily basis, and the speed would vary as the dough developed (not good for research) while my old ones just kept plugging along just fine. It really wasn't until they came out with the Legacy line that they seemed to get things under control.

Tom Lehmann/The Dough Doctor  
958

### **Dough Clinic / Re: roni roll bursting open**

To better answer your question I really need to see a picture of the burst toll.

Tom Lehmann/The Dough Doctor  
957

### **Dough Clinic / Re: Dough Management Problem**

A couple of things to comment on;

1) Your dough absorption is 65% which would normally be pretty typical but as you are using VWG at 5.5% (VWG has an absorption of approximately 175% so 5.5% VWG would be responsible for 9.6% of that 65% absorption) so the overall absorption of 65% may seem OK but in reality might be too low? I suggest increasing the dough absorption in 2% increments to see if the dough becomes any

easier to open.

2) Your dough ball count in the box is too high, reduce the dough ball count per box by 50%.

Tom Lehmann/The Dough Doctor  
956

**Shop Talk / Re: Spiral Mixer (commercial) recommendations and general feedback**

Have you looked at the not too far distant archives for the discussion we have had on spiral mixers?

Tom Lehmann/The Dough Doctor  
955

**Dough Clinic / Re: Why is it happening**

Also, what was the finished (mixed) temperature of the dough? How did you put the dough balls into the fridge (type of container, was it lidded or not?)

Tom Lehmann/The Dough Doctor  
954

**Dough Clinic / Re: Why and when is it recommended to use malt in the dough?**

Unless the flour is malted or you have added diastatic malt to the dough/biga formula the use of a biga will actually result in a lighter crust color. This is due to the fact that a biga is fermented and one of the byproducts of fermentation is acid (acetic, lactic and propionic), these acids lower the pH of the dough which inhibits its ability to develop color during the baking process. This is why sourdough breads are always lighter in color. If diastatic malt or amylase enzyme is present the starch portion of the flour can be hydrolyzed into sugars (malt or dextrose) which provide a nutrient for the yeast as well as helping to develop crust color during baking.

Tom Lehmann/The Dough Doctor  
953

**Shop Talk / Re: Spiral Mixer (commercial) recommendations and general feedback**

Here is a quick summary of my suggestions;

- 1) Two speeds are better than a single speed.
- 2) Reverse rotation is a nice feature to have.
- 3) A removable bowl can make life a lot easier in some shops.
- 4) A drain plug in the bowl makes cleaning a LOT EASIER.
- 5) Spiral mixers will effectively mix a dough as small as 25% of stated bowl capacity or as large as 115% of stated bowl capacity so size your mixer so your dough size is close to being in the middle of this bracket.

Note: To clean a spiral mixer, put a couple gallons of HOT water in the mixer, cover bowl with a plastic sheet, allow to steam for 20 to 30-minutes, scrub with a long handle plastic pot brush, pull the drain plug and drain while rinsing with clear water, sanitize, reinstall drain plug. Without that drain plug you will need to bail the water out of the bowl (now you understand why the drain plug is important).

Tom Lehmann/The Dough Doctor  
952

**Newbie Topics / Re: Prep table**

Another option for the home (what I use) is a wood (maple) top. They're very

reasonable priced and available from most home centers like Menard's. For a commercial application cultured quarts is also a good option as it doesn't stain or discolor and is nearly bullet proof in all other ways and you can get it in just about any color you want.

Tom Lehmann/The Dough Doctor  
951

### **Dough Clinic / Re: roni roll bursting open**

I agree, I also think the dough is too thin, When making rolled items I always like to use a rolling pin or pastry pin to open the dough as this gives me a more uniform dough thickness than opening by hand. A uniform dough thickness is important as it helps to eliminate blow-outs. I also like to make several French cuts across the top of each roll to allow steam to escape and to allow for controlled expansion during baking. In some cases it also helps to spray the rolls with water immediately before placing in the oven, this allows the dough to expand a little during oven spring which reduces the chance for a blow-out.

Tom Lehmann/The Dough Doctor  
950

### **Dough Clinic / Re: Too much char?**

I'm confused, you use flour or semolina flour on the peel to help with peeling the skins but yet you say you are baking for at least one minute on screens?

If you can share your dough formula as well as dough management procedure it would be a big help.

Tom Lehmann/The Dough Doctor  
949

### **Dough Clinic / Re: Why is it happening**

When using IDY and hand mixing the dough it is always a good idea to suspend the IDY in a small portion of warm (95F/35C) water before adding it to the dough. You should be targeting a finished dough temperature in the 70 to 75F range, and you should not be lidding the containers right away, instead, very lightly oil the top of the dough after it's in the container, then allow the dough to cool in the fridge until the internal dough ball temperature is 55F/12.7C, then apply the lid for the duration of the cold fermentation period.

Unless you're really big into physical fitness and want arms like the village blacksmith all of that kneading really isn't necessary. Let biochemical gluten development do the work for you. Just knead the dough until it begins to take on a smooth appearance, then scale, ball and place into the fermentation containers.

Tom Lehmann/The Dough Doctor  
948

### **Dough Clinic / Re: Flours for Roman-style pizza dough**

I would advise not using more than 25% combined spelt and semolina flour to start with, then you can begin to incrementally increase the spelt-semolina flour blend to whatever your specific flour will accept. You will also want to determine the correct absorption value for the spelt-semolina blend that you use. If you search back through the archives we have had a lot of discussion on whole-wheat and multi-grain blends, in this discussion I explained in detail how to find the absorption of these "composit" flour blends. I would also highly recommend that you put the composit flour blend in an autolyze for a minimum of 1-hour to allow for complete hydration prior to actually mixing the dough.

Tom Lehmann/The Dough Doctor

**New Forum Members / Re: Hello From Chicago!**

Brian;

Just be sure to season your new tin-plate pans well prior to their first use or they won't bake any differently than your aluminum pans, and once you have them well seasoned NEVER soak them in water for any reason. If you do, the seasoning will begin to peel off like a bad sunburn and you will need to strip all of the seasoning off of the pan and start all over again. Instead, to clean the pans just wipe out with a clean towel or if you feel absolutely compelled to wash the pans grasp pan in one hand, dip in soapy water, LIGHTLY scrub with a soft plastic bristle brush, rinse in clear water, wipe dry (NOTE: At no time did I say to release your hold on the pan), now place the pan into a warm oven to force dry for about 15-minutes, now you can put the pan away. If you don't follow these basic rules for a seasoned pan these infamous words will haunt you: "I told you so". :-D

Welcome to the site!

I'm an ex south sider (Tinley Park).

Tom Lehmann/The Dough Doctor

946

**Dough Clinic / Re: Too much char?**

Fyre;

Do you realize that you are using 7.5% sugar in your dough formula? A more typical level would be 1.5 to 2%. At this sugar level you should get a more even, uniform browning by baking on either a screen or directly on the oven deck. Make this one change and let us know how it works for you. Include pictures if possible.

Tom Lehmann/The Dough Doctor

945

**Dough Clinic / Re: Too much char?**

You really can't, but I'll give you an example, years ago we R.E. the Papa Murphy's crust and found that the sweetness perceived in the finished crust (not the dough) was due to 5% sugar. So if you back it down to 2% to see if that gets the color back on track you can then begin incrementally increasing the sugar to get some sweetness in the finished crust, and if it's sweetness that you are after I suggest limiting your total fermentation time to not more than 24-hours CF, this is because fermentation = acid formation and acid = tartness, tart is just the opposite of sweetness. From an ingredient standpoint you might consider replacing any fat in the dough formula with ghee as this will contribute to a perception of sweetness in the finished crust.

Tom Lehmann/The Dough Doctor

944

**Dough Clinic / Re: Why is it happening**

Peter;

It doesn't make sense to me either. In many cases where high salt levels are used it is the step taken to control the fermentation rate that has resulted from improper dough management (failure to cross-stack or lidding fermentation containers too soon) or just lack of dough temperature control. Once these are properly addressed the high salt levels are no longer necessary and in my opinion, desirable as there is plenty of salt coming from everything that is put on top of the dough.

Marolla1;

The way to measure dough temperature is by use of a dial aka stem type

thermometer.

Tom Lehmann/The Dough Doctor

943

## [\*\*Dough Clinic / Re: Finished dough temperature range\*\*](#)

BBE;

65% RH (relative humidity?) You most likely mean dough absorption (65% water based on the total flour weight). A finished dough temperature in the 70 to 75F range is recommended when the dough will be mixed entirely by hand as the colder dough temperature makes for easier dough kneading. When machine mixing is used we typically recommend a finished dough temperature between 75 and 80F unless there is poor refrigeration and in that case it's back to the 70 to 75F recommendation. Targeting a higher finished dough temperature just makes the dough more sensitive to slight differences in finished dough temperature as well as room temperature. For example, at 72F the dough will show little effect of missing the targeted temperature range by 2 or 3F (like 77 or 78F) but that same dough at 80F and getting a finished dough temperature of 82 or 83F the dough will show greater effect in the form of faster fermentation as well as being more difficult to cool after being placed into the fridge. The reason for waiting for the dough to drop in temperature to 55F before covering it in the fridge is to reduce the propensity of a warm dough to sweat in the lidded container but more importantly to ensure that it has cooled to a point where it can be further cooled even though the container is lidded at a constant and predictable rate. Remember, just putting the dough into the fridge doesn't stop fermentation, the dough MUST be cooled to a temperature below 40F to retard fermentation, if not the dough will over ferment or blow, and to add insult to injury, the dough is always in the process of warming up due to the heat of metabolism resulting from the fermentation process. This is why I've always said that you cannot have effective dough management without temperature control.

Tom Lehmann/The Dough Doctor

942

## [\*\*Dough Clinic / Re: Neapolitan Pizza - Puffy Airy Crust \(Canotto Style\)\*\*](#)

Dough absorption is the amount of water added to the dough, it is expressed in percent of the total flour weight used to make the dough. For example, if we made a dough with 700-grams of flour and it required 400-grams of water to give the desired handling and finished crust characteristics the dough absorption in this case would be 400 divided by 700 X 100 or 57.14% (we would round that off to 57%). All of the other dough ingredients are also expressed in this very same manner.

If you have a dough formula (dough formulas are based on weight measures (grams, kilograms, ounces, pounds, etc.) while recipes are based on volumetric portions (teaspoons, tablespoons, cups, buckets, etc.) that is given in percentages and you want to find the weight for those percentages it's very easy to do:

- 1) Decide how much flour you want to use by weight measure.
- 2) Using your calculator, enter the flour weight then press "X" followed by the ingredient percent that you want the weight for and read the ingredient weight in the display. The ingredient weight will always be in the same weight measures that the flour is shown in.
- 3) Flour is always shown as 100%.

I used to tell my students that it is just like calculating the amount of a tip where the flour weight is the cost of the meal and the ingredient percent is the percent of

the tip that you want to leave.  
Tom Lehmann/The Dough Doctor  
941

### **Dough Ingredients / Re: U.S.D.A. forecasts the smallest all-wheat area on record**

While Kansas USED to be known as "The Wheat State" about 6-years ago corn surpassed wheat as the main agricultural crop in Kansas.

To keep on top of what is actually happening to wheat prices you have to look at the world picture and take into what the wheat crop in Brazil, Argentina, Canada, Australia, China and Russia are doing. Generally it's not a big issue if one of those countries falls behind as the other countries will export wheat to make up the difference but if several or all of them face issues with their wheat crop (like we saw about 12-years ago where ALL of them faced severe issues) it will go to a whole new playing field where wheat might not even be available and when it is it will be expensive and flour prices will spike through the roof as they did back then. If we ever find ourselves in that spot again (we probably will) watch the world wheat carryover, there are the world wheat reserves, when things were really bleak we were down to less than 3-days! Think of it like this, you are out of a job and can't find employment and you are now tapping into your 401K (the wheat reserves), when it's gone you are up that proverbial creek without a paddle.

Tom Lehmann/The Dough Doctor  
940

### **Dough Clinic / Re: ny style dough that cracks when folding**

Just to confirm, you want to make a New York style pizza that has a crispy crust as opposed to a more typical foldable crust common to N.Y. pizzas. It sounds like you want to make a New Haven style pizza which I've often described as a New York style pizza but with a crispy crust.

Here is a good dough formula to start with;

Flour: 100%(strong bread flour)

Salt: 1.75%

Sugar: 2%

Oil: 2%

IDY: 0.375%

Water: 64% (variable)

Mix dough using delayed oil addition mixing method, and mix just to a smooth dough consistency.

Targeted finished dough temperature: 75 to 80F

Basic Procedure:

Mix

Scale and ball

Box and oil top of dough balls.

Cross-stack in cooler until internal dough ball temperature reaches 55F.

Down-stack

Allow to ferment for a minimum of 24-hours, best at 48 to 72-hours.

Open dough balls into skins by hand.

Dress and bake at 500F.

Tom Lehmann/The Dough Doctor

## [\*\*General Pizza Making / Re: Calling all Dough Savers\*\*](#)

I'm betting that the best research team at M.I.T. could not come up with a poorer shape for freezing than a round ball shape (think dough ball). Just remove the dough balls from the box and flatten to about 1-inch, or so in thickness, then place in the freezer. They will freeze much more thoroughly and faster than they would if left in ball shape and you will have markedly improved your chance at success in making pizzas using the frozen dough at the same time.

Tom Lehmann/The Dough Doctor

938

## [\*\*Shop Talk / Re: Business planning for new shop\*\*](#)

Also check out your state SBA (Small Business Assn.) to see what kind of assistance they can provide. We used to have a program called KVAC (Kansas Value Added Center), it was a state funded association operated through Kansas State University comprised of volunteer and retired business people whose sole purpose was to assist new start up businesses in the state of Kansas. All at no charge to the client. We were paid a token stipend for our time through the KVAC program. I don't know if New York state has anything like this but from all the hype I hear from N.Y. about a "business friendly" environment I would think that they would have something similar in place.

Tom Lehmann/The Dough Doctor

937

## [\*\*Dough Clinic / Re: convection and undercooked dough - lou's semolina\*\*](#)

Pete;

What temperature are you baking it in your reel oven? What shelf material do you have (steel, transite, or open grid?)

Tom Lehmann/The Dough Doctor

936

## [\*\*Shop Talk / Re: Spiral Mixer \(commercial\) recommendations and general feedback\*\*](#)

A spiral mixer operating at 80% of capacity is a "walk in the park" for that design of mixer. They are not nearly as load sensitive as planetary mixers are, and one thing that's a sure bet is that a spiral mixer will outlast a planetary mixer any day of the week and with a lot fewer repairs during its life span.

Tom Lehmann/The Dough Doctor

935

## [\*\*General Pizza Making / Re: Aluminum pans for Chicago deep dish\*\*](#)

Remember, NEVER, EVER soak any seasoned pan in water! The seasoning will begin peeling off like a bad sunburn then you'll need to strip all of the remaining seasoning off of the pan(s) and start all over again.

We have previously had some discussion on how to clean seasoned pans if you want to look back through the archives.

Tom Lehmann/The Dough Doctor

934

## [\*\*Dough Clinic / Re: convection and undercooked dough - lou's semolina\*\*](#)

Pete;

There is a huge difference in the way a deck oven bakes and the way a reel oven bakes. Thin crust Chicago pizzas are typically baked in a reel oven at 500 to 550F for just shy of 30-minutes while the deep dish pizzas take a bit longer at nearly 45-

minutes. This is why the reel oven are so popular in Chicago, they have a huge capacity when long baking times are the order of the day. Deck ovens have their burner located immediately below the deck in order to maintain deck temperature and recover temperature quickly while reel ovens have a single ribbon burner across the bottom of the oven and the shelves (decks) just rotate through the heated air. There is also a big difference in crown height of the two ovens also, deck ovens have a relatively low crown height measured in just a few inches while a reel oven really doesn't have a crown. Middleby-Marshall reel oven are the most common reel ovens encountered in Chicago. Cobblestone Oven company is a major supplier of these ovens in Chicago, they don't make them and they are not a distributor, they refurbish existing ovens and resell them. When maintained they will last just about forever.

Places making an authentic Chicago style pizza will often use a reel type oven, occasionally they will use a Middleby-Marshall but more commonly I see the smaller reel ovens made by Fish and Reed Oven Company being used unless they are a high volume shop.

Tom Lehmann/The Dough Doctor  
933

**Dough Clinic / Re: convection and undercooked dough - lou's semolina**

I agree with the comments from Bob's Red Mill. But remember that while the baking trays rotate through the oven cavity in a reel oven they are not considered to be convection ovens by any sense. Convection ovens are characterized by a much greater and focused airflow over and around the product. This should not be confused with air impingement baking which is totally different in that it employs VERY high speed airflow which is VERY highly focused on the product during baking (the technology of baking is very different from convection baking). Reel ovens are the mainstay of the retail baking industry where they serve to bake everything from pies, cookies, pastries, as well as all types of breads and rolls. Rotating rack ovens are a form of convection oven which is utilized in the baking industry and much like many home ovens, they have a feature which allows for shutting off the convection fans for a portion of the baking cycle in order to prevent peaking of layer cakes and poor crust development on loaf breads.

By the way, Chicago pizzas are given a long bake time to ensure the raw sausage (what is Chicago style pizza without the use of raw sausage?) is fully cooked.

My favorite Chicago pizza places are Nancy's, Uno, Due, Gino's and Beggars.  
Tom Lehmann/The Dough Doctor  
932

**Dough Clinic / Re: convection and undercooked dough - lou's semolina**

True, but they lack the capacity needed by many pizzerias.

Tom Lehmann/The Dough Doctor  
931

**Dough Clinic / Re: convection and undercooked dough - lou's semolina**

There is a very good reason why large, commercial bread ovens (not artisan, that a whole different story) have an air circulating device that's called a "colorator" installed in them, they are installed in the oven at a point late in the baking stage where they serve to provide precise control of crust color after the loaves have been baked. Like I said, rotating rack ovens are much like a home convection oven but without the airflow they are plagued by one major issue, that is heat stratification so the products at the top of the rack bake at a different rate than that at the bottom of the rack until the airflow is turned back on again. To get

around this many ovens now pulse the airflow fans for a set period of time at the beginning of the bake cycle. About the best I can say for it is that "it works".

Tom Lehmann/The Dough Doctor

930

**[Dough Clinic / Re: papa johns pizza ZING](#)**

Yeast, a living organism needs to feed and it feeds off of sugar that is both added to the dough as an ingredient (the exception being lactose which is not metabolized by the type of yeast we use) and also the enzymatic conversion of starch into sugar by the enzyme amylase which is both present with the yeast and also added to the flour by the miller as sprouted barley flour (malted flour). As yeast feeds it produces carbon dioxide, acids (acetic, lactic, and propionic) and alcohol. What John is referencing as "Zing" is a slight acidity formed when the carbon dioxide gas is dissolved in the water from the sauce creating a mild acid (carbonic acid). He is correct in the formation of this acid but I would question if it is a significant factor in the flavor of a pizza since the other three acids formed are significantly stronger and are recognized for their contribution to the flavor profile of a pizza. The slight tartness, regardless of how it is formed or what acid is responsible, is an important aspect of our sensory response to a food in that it makes us salivate and we unconsciously associate salivation with something that tastes good to us.

Tom Lehmann/The Dough Doctor

929

**[Newbie Topics / Re: Having issues stretching dough? Seems to stretch unevenly.](#)**

If you're not scaling and balling before the CF period, when are you scaling and balling? Also, how much fermentation is the dough getting in ball form between balling and opening? Am I missing something in your procedure?

Tom Lehmann/The Dough Doctor

928

**[Dough Clinic / Re: Why and when is it recommended to use malt in the dough?](#)**

Getting back to a very basic question: Is your flour malted in any way?

Tom Lehmann/The Dough Doctor

927

**[Newbie Topics / Re: Having issues stretching dough? Seems to stretch unevenly.](#)**

Spot-on!

My suggestion would be to ball it immediately after mixing (when you scale it) and then lightly oil the containers, drop the dough ball into the container, lightly oil the top of the dough ball, leave the top of the container off when you place it into the fridge until the internal dough ball temperature reaches 55F/12.8C, then apply the lid for the duration of the CF period. When ready to use the dough, remove from fridge and allow to temper to 50F/10C, then begin opening the dough ball(s) into skins. You will want to experiment with the final temperature (50F/10C) as some find it easier to open into skins at a slightly higher temperature. You probably won't want to go more than 65F/18.3C though.

Tom Lehmann/The Dough Doctor

926

**[Stones/tiles/steel, Pans & Accessories / Re: Pizza peel choices](#)**

My own personal peels are all wood peels, they're hard to beat for any kind of dough and they dramatically reduce the incidence of the dough sticking to the peel.  
I use aluminum peels as my oven peels only.

Tom Lehmann/The Dough Doctor  
925

**[Dough Clinic / Re: Why and when is it recommended to use malt in the dough?](#)**

You might find some advantage to adding a very small amount of malt to the biga if you are fermenting the biga for several hours. If you are baking your pizzas at or above 750 to 800F I'd suggest a non-diastatic malt but if you are baking at a lower temperature I'd use a diastatic malt.

Tom Lehmann/The Dough Doctor  
924

**[Shop Talk / Re: All Trumps Unbromated/Unbleached - Inconsistencies?](#)**

In our pizza classes I used to ask my students if they could tell me what the difference between flour and hockey pucks was.

Answer: Hockey pucks are consistent and always the same. Flour isn't.  
This is why large commercial bakeries have a FARINOGRAM REPORT ON EACH AND EVERY LOT OF FLOUR THEY RECEIVE. The Farinograph report gives vital information on flour absorption, mixing time and overall strength of the flour allowing them to make the necessary adjustments right up front without any surprises. Most of the time we see the most significant changes in flour during the period which is referred to as new crop change-over, this is when the new crop is just coming into the mills, for spring wheat based flours this is usually mid-August to early September. For winter wheat based flours this is usually mid July to early August.

Tom Lehmann/The Dough Doctor  
923

**[Shop Talk / Re: All Trumps Unbromated/Unbleached - Inconsistencies?](#)**

No, it's because when a large wholesale account receives their flour it comes in a tank car (road or rail) and it was milled immediately before shipment (usually just hours or a day at most after milling) so it is easy to have a Farinogram report specific to that particular lot of flour. With bagged flour the routing is different as the flour goes from the mill in bags to a mill storage area, then its shipped to a distributor and then sometimes another distributor like an ingredient vendor this makes it difficult to match the bagged flour to a Farinogram report, and add to that, unless you specify from your vendor not to mix lot numbers on an order, you may find that your flour shipment consists of two or more different mill lots. Due to laws regarding traceability it probably wouldn't be too difficult for the mills to have a computerized system where you would enter your lot number (shown on each bag) and it would give you a page showing the Farinogram report. Then there is the issue of explaining just what it is and how to use it as well as how to develop a Farinogram factor for each of your doughs. That sounds like a lot of work to me for any company that is highly competitive and trying desperately to keep their costs down. A possible solution would be to charge an annual fee to access such information, I don't know how many operators would avail themselves of such a program though, but it's a thought.

Tom Lehmann/The Dough Doctor  
922

## [\*\*Resources / Re: Supplies in Alaska\*\*](#)

Have you "poked" around at other independently operated stores to see if you can find out where they source their materials from? I would have guessed that there would be some type of distributor in Anchorage that you could order from or special order from, if not maybe a distributor on Washington or Oregon might be able to get things to you a bit cheaper?

Tom Lehmann/The Dough Doctor  
921

## [\*\*Dough Clinic / Re: Cooling the dough balls down to an internal temperature of 50 to 55F\*\*](#)

It all depends upon how much fermentation you want to achieve during the CF period. Remember that the fermentation rate will dramatically slow at temperatures below 45F and almost stop at temperatures of 40F and lower, so at 42F there won't be very much fermentation taking place. At 50 to 55F internal dough temperature there will be a measured amount of fermentation taking place which is suitable for dough that will be subjected to up to 72-hours CF but yet it will still be "usable" at the 24-hour mark if necessary. Dough which is allowed to cool to a lower temperature will require more time to fully ferment so if you are planning to hold the dough for 5 to 7-days or more cooling it to a lower temperature is the right thing to do but keep in mind that the dough will be under fermented at the other end of the spectrum (24 to 48-hours). There are some "00" flours which have a very short fermentation tolerance and allowing these doughs to cool to a lower temperature would be an effective way to better manage dough made with these types of flours. As for working with reach in coolers we have found that it is desirable to reduce the finished dough temperature by at least 5F when using a reach in cooler as opposed to a walk in cooler due to the lower efficiency of the reach in when loading it with dough.

I hope this has answered your question.

Tom Lehmann/The Dough Doctor  
920

## [\*\*Dough Clinic / Re: Problems with NP dough in 70% hydration\*\*](#)

In addition to what Yael said, I'd also suggest hydrating/activating the ADY in a small amount of warm (38C) water for about 10-minutes prior to adding it to the dough water in the mixing bowl.

Tom Lehmann/The Dough Doctor  
919

## [\*\*Dough Clinic / Re: Oil in dough\*\*](#)

Gus;

Putting oil in the dough will help to allow the dough to rise better and it will certainly tenderize the crumb so the pizza is less, not more chewy. Because oil repels water it also helps to prevent the development of a gum line in the crust during baking (putting oil on the skin prior to applying the sauce will serve the same purpose). Your procedure really isn't all that complex so I really wouldn't worry about it. The one thing to do next time you make pizza is to use colder water as this will help to lower the finished dough temperature.

Tom Lehmann/The Dough Doctor  
918

## [\*\*Dough Clinic / Re: Problems with NP dough in 70% hydration\*\*](#)

When ADY is not correctly hydrated glutathione can/will be leached out of it

resulting in some inconsistencies in your dough both due to the reducing effect of the glutathione and also due to the fact that yeast cells from which glutathione has been removed from will not ferment.

You might not readily see this but it is happening.

Tom Lehmann/The Dough Doctor

917

### **Dough Clinic / Re: Problems with NP dough in 70% hydration**

I would tend to agree with that. That is not the same as putting the ADY directly into a pizza dough with a more typical absorption of 62 to 66%.

Tom Lehmann/The Dough Doctor

916

### **Dough Clinic / Re: SAF High Power IDY**

RedSauce;

My feelings exactly.

Tom Lehmann/The Dough Doctor

915

### **Prep Equipment / Re: Remodeling kitchen...Best surface?**

Cultured quartz, offers both beauty and durability with little to no maintenance and it's widely available even at home centers.

Tom Lehmann/The Dough Doctor

914

### **Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat**

I've not seen corn starch added to the dough formulation but it is commonly used in icings and glazes and it is an integral part of powdered sugar.

Tom Lehmann/The Dough Doctor

913

### **Dough Clinic / Re: Problems with NP dough in 70% hydration**

I would consider 25C water to be cool, not warm (32C+ would be considered "warm") but with that said, 25C is a good water temperature to use when making your dough, however, I would encourage you to put the ADY into 4 to 5-times its weight of warm (37C) water to hydrate and activate it, then just add it right to the dough water in the mixing bowl. After adding the yeast suspension go ahead and add all of the remaining ingredients and incorporate by hand until a dough begins to form (about 5-minutes), turn the dough out of the bowl and scrape the bowl clean, lightly oil the bowl, knead the dough for just a couple of minutes and form it into a ball and place back into the mixing bowl or other suitably sized container (be sure it's lightly oiled), allow to ferment for about 2-hours (this will allow for some biochemical gluten development to take place), turn the dough out of the bowl and knead until the dough begins to take on a smooth appearance (about 5-minutes?), place dough back into the lightly oiled container and allow to ferment for 30-minutes, turn the dough out of the container and scale/divide into desired weight pieces, form each piece into a ball, lightly oil each dough ball and place into individual plastic bread type bags, twist the open end into a pony tail to close and tuck it under the dough ball as you place it into the fridge to cold ferment for 48-hours. To use the dough, remove from the fridge about 2-hours prior to use time, roll the bag down around the dough ball and invert over a floured surface allowing the dough ball to fall from the bag, flour both sides of the dough ball and open into a skin by your preferred manner, the skin is now ready for immediate use.

Tom Lehmann/The Dough Doctor  
912

**General Pizza Making / Re: Replacing water and powdered milk with whole milk?**

Whey powder isn't the issue, it's the heat treatment of the whey that's the issue. They are using what is referred to as high heat treatment aka bakery grade whey powder that has already been heat treated to denature the specific whey proteins responsible for creating the softening of the dough. Think of it like you would fresh eggs, all fresh eggs are considered to be dangerous to consume without proper heat treatment (cooking), but after heat treatment they are fine to eat. ;D

Tom Lehmann/The Dough Doctor  
911

**Dough Clinic / Re: Dough to hard to chew**

Everybody know you're not supposed to eat dough! :-D :-D :-D  
Getting to you point, a couple of things come to mind;

- 1) Five hours fermentation probably wasn't enough fermentation time for your dough made by your specific dough formula, overnight would have been better.
- 2) It looks like you took the dough straight from the fridge to the oven which further compounded the issue as this would reduce the oven spring characteristics of the dough resulting in poorer bake out which in turn results in a tougher, chewier finished crust or roll in your case. You would most likely have been better off by just leaving the made up rolls rest at room temperature for that hour rather than putting them in the fridge.

Tom Lehmann/The Dough Doctor  
910

**Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Please show us your dough formula and complete dough management procedure to include times and temperatures as well as information on the flour you are using as this will help us to better identify what's causing the problem.

Tom Lehmann/The Dough Doctor  
909

**Events Calendar / Re: Pizza Expo 2020**

Jsaras;

Attend seminars directed at new operators and when on the show floor get as much information from vendors as possible (even "stuff" you don't think you will ever need) then when you get back home organize it in several 3-ring folders for use as a quick reference guide in the future, you'll be glad you did! Also visit with ALL of the different oven companies as well as the dough mixer and pan suppliers their information will be invaluable if you decide to "drop the hammer".

Tom Lehmann/The Dough Doctor  
908

**Dough Clinic / Re: Yeast types and uses**

You can use any type that is readily available to you. The type of pizza being made does not dictate the type of yeast used but many like to use IDY due to its uniformity, ease of use, and long shelf life.

Tom Lehmann/The Dough Doctor  
907

## [\*\*Dough Clinic / Re: Dough to hard to chew\*\*](#)

Pete;

Pretty much all of it is correct. Getting a thorough bake is critical for achieving a more tender eating crust on the rolls. More yeast will help with oven spring for a better bake as will more fermentation of the dough, this is why I was a bit concerned over the rolls going straight from the fridge into the oven as a refrigerated roll of any kind is more difficult to bake than a roll at room temperature. Depending upon the dough formulation a little fat in the dough formula can also be beneficial as it promotes oven spring, heat transfer and produces a more tender eating characteristic.

Tom Lehmann/The Dough Doctor  
906

## [\*\*Dough Clinic / Re: Pizza base burns underneath later in the day at restaurant\*\*](#)

Jamie;

Have you considered the possibility that the problem might be with the oven? Not knowing anything about your oven I can't say, but if the oven has a very high crown that could account for the problem. Most operators with that problem address it by baking the pizza until the bottom is done (the way a pizza should be baked) and then lifting the pizza up into the crown of the oven to finish off the top. I've done this many times myself and it works well.

Tom Lehmann/The Dough Doctor  
905

## [\*\*Newbie Topics / Re: Trying for consistency lower TF\*\*](#)

A dough loading of 0.088 ounces per square inch is about average for a N.Y. style pizza so your 0.09 target is pretty close but your IDY level of 1% is much higher than what is normally used, in fact it's about 3X higher than normal which might be giving you a thicker than normal finished crust. My suggestion would be to drop the IDY down to 0.375% and see if the finished crust thickness is more to your liking.

Tom Lehmann/The Dough Doctor  
904

## [\*\*Newbie Topics / Re: Trying for consistency lower TF\*\*](#)

You should lightly oil the dough ball and leave it uncovered for at least 2-hours, then cover it for the duration of the cold fermentation time.

Tom Lehmann/The Dough Doctor  
903

## [\*\*Dough Clinic / Re: Rising crust pizza - SALP alternative?\*\*](#)

If you cannot find SALP (sodium aluminum phosphate) try looking for CAPP (calcium acid pyrophosphate) it has a neutralizing value (N.V.) of 67 so the CAPP will equal 67% of the amount of baking soda used. If you are not using a commercially encapsulated product such as Wrise use a plastic fat instead of oil in the dough formula and blend the CAPP and the soda into the plastic fat.

Tom Lehmann/The Dough Doctor  
902

## [\*\*Dough Clinic / Re: Fermentation time counting question\*\*](#)

Yes you do, but remember that the scheduling of those fermentation periods is just as important as the total fermentation time, for example, if we are going to give our

dough 24-hours total fermentation time there will be a huge difference in how the dough handles if we were to ball the dough immediately after mixing and then give it 24-hours of undisturbed fermentation as opposed to fermenting the dough for 23-hours and then balling it and trying to open it into a skin only an hour later. This is one reason why I personally like to scale and ball the dough immediately or soon after mixing and then allow it to ferment in ball form for the bulk of the fermentation time (whatever that might be), when managing the dough in this manner you are almost assured of a dough ball that will be very relaxed and open easily.

Tom Lehmann/The Dough Doctor  
901

### **Dough Clinic / Re: Rising crust pizza - SALP alternative?**

The only other real option which you have is GDL (glucano delta lactone).  
Tom Lehmann/The Dough Doctor  
900

### **Dough Clinic / Re: Rising crust pizza - SALP alternative?**

The proportions of GDL to soda are 2.2-parts GDL to 1 part soda. The amount to use of the GDL + soda blend is 3% of the total flour weight. Do NOT use any oil in the dough formula, instead use a plastic fat/shortening (DO NOT use butter or margarine as they contain water). Put the fat into a small bowl and add the GDL +soda blend and using a fork or spatula mix the two together until the GDL +soda is THOROUGHLY incorporated into the fat, then you can add the fat to the dough formula and begin mixing the dough.

Adjust the amount of yeast to 0.25% compressed yeast or its equivalent of ADY or IDY. Target a finished dough temperature of 65F. Immediately after mixing scale and ball the dough, set aside to ferment at room temperature just long enough for the dough to be able to be easily opened (about 2-hours?), open the dough into a skin, place in an ovenable pan or on a piece of oven parchment paper and place on a pizza circle and store in the cooler for at least 1-hour, remove from the cooler and lightly oil the top of the skin, dress to the order, wrap in stretch wrap and place back in the fridge for at least 3-hours prior to sale/use.

If these will be baked in a home oven you will want to include 7% bakery grade sweet dairy whey powder or 5% sugar in the dough formula.

I've got formulas and procedures posted in the RECIPE BANK at <[www.pmq.com](http://www.pmq.com)>  
899

### **Newbie Topics / Re: Trying for consistency lower TF**

Your pizzas look GREAT! :drool:  
Tom Lehmann/The Dough Doctor  
898

### **Dough Clinic / Re: Final Dough Temperature**

There are a couple of problems associated with targeting a finished dough temperature as low as something in the 50 to 55F range;

- 1) Cold flour does not absorb water as readily as warm flour so a longer mixing time will be required, a longer mixing time = more bowl friction = more heat generation = increase in finished dough temperature, it's kind of a Catch 22.
- 2) The dough itself is very stiff at low temperatures, as the dough temperature drops below 65F the dough quickly becomes progressively stiffer/firmer/harder, whatever you want to call it. This by itself results in greater warming of the dough through increased bowl friction.

3) From a commercial standpoint about the lowest temperature that can be realistically achieved is 60 to 65F (60F is really pushing the envelope), and to accomplish that both refrigerated water and direct expansion refrigeration of the mixing bowl are required which means that a horizontal bar type mixer will be needed to mix the dough so we are talking about commissary type operations here as opposed to home or pizzeria.

4) Keep in mind that you would need to have the dough at 50 to 55F not just coming off of the mixer, but still at that temperature after scaling, balling (rounding) and boxing. The lowest finished dough temperature that I've encountered in the production of pizza dough was 65 to 67F and that was in a large box store commissary, even at that, with a mixing room temperature of 55F the actual dough temperature going into the cooler was closer to 75F than 67F. Aside from these obstacles, it would be nice if we could bring the dough off of the mixer at a temperature where we could get it into the cooler within the 50 to 55F range as that would eliminate the need to cross-stack and down-stack BUT at the same time it would impact our dough management procedure as the amount of fermentation that the dough receives during the cross-stack period plays an integral part in our dough management procedure by allowing for the development of acids and allowing enzymes to do their job as well as changing dough density which further impacts the way the dough continues to ferment in the cooler especially when considering the impact of heat of metabolism during the residence time in the cooler.

As a side note, frozen dough is typically made using a dough with a targeted finished dough temperature of 65 to 70F (highly specialized horizontal bar type mixers are required for this task), the dough is then immediately scaled and rounded, slightly flattened, and it then immediately proceeds to the blast freezer where it is blast frozen to a core temperature of 15F +/- 2F, it is then packaged and held in a holding freezer for 24-hours at -10F prior to shipment/distribution. The idea here is to render the dough "stable" by getting it frozen before any significant fermentation begins. This is the reason why bread made from frozen dough has little or no fermentation flavor.

Tom Lehmann/The Dough Doctor  
897

### **Dough Clinic / Re: More yeast vs more fermentation time?**

Fermentation time v/s yeast quantity, that is the question.

Adding more yeast to a dough is not a substitute for fermentation time because just adding more yeast will provide more leavening power but it will not provide the necessary time needed for the byproducts of fermentation (acids, alcohol, carbon dioxide) to begin breaking down the flour proteins. Additionally, there are enzymes present (amylase and protease) which hydrolyze starch and proteins during the fermentation process which further conditions the dough making it easier to work with. All of this degrading of starch and protein also help to contribute to the flavor profile of the finished (baked) crust as well as adding to the overall digestibility of the crust. The key is "time", these reactions all require time to take place they do happen to a lesser extent with short fermentation times and higher yeast levels but not to the same extent as is achieved with a lower yeast amount and a longer fermentation time.

Tom Lehmann/The Dough Doctor  
896

### **Dough Clinic / Re: Rising crust pizza - SALP alternative?**

While a plastic fat can be added right along with the flour in most pizza

applications in this case where we have the GDL + soda mixed into the fat it should still be added later in the dough mixing process to help prevent any of the fat from being scrubbed off of the chemical leavening contained in the plastic fat. With the bake to rise concept you really want to limit the amount of fermentation that the dough receives. A little fermentation is OK but a lot of fermentation only leads to a sub quality finished pizza. The steps you have outlined for freezing a bake to rise pizza are valid and should work well as far as the dough is concerned but freezing vegetable toppings is never a good idea if you want to have a decent finished pizza that isn't wet and soggy. This can be done commercially using either moisture controlled vegetable toppings or employing either mechanical or cryogenic blast freezing techniques. The Nestle DiGiorno/Delicio/Giordano's brand frozen bake to rise pizzas employ both moisture controlled vegetable toppings as well as blast freezing and highly specialized packaging to achieve the level of quality they have. Bake to rise pizza is not a new invention, it has been around for a VERY LONG TIME, over 70-years! When I was a small child my first introduction to pizza was the Chef Boyardee pizza kit. We have discussed this previously here if you wish to read more about it. Papa Murphy's take and bake pizza chain is a well known user of this concept (their stores don't even have an oven). It was mentioned that you could make these pizzas on a par-baked crust, this is not correct as a par-baked crust will not rise during the baking process, instead it will be just another form of a pretty standard frozen pizza that one might pick up at the local supermarket. The bake to rise concept pizzas must be made using a raw dough to allow it to rise during baking. I totally agree that it would be a lot easier to make the school's pizzas using a par-baked crust, then all they would need to do is to bake the pizzas long enough to fully cook the toppings and warm the crust, you will get a crispier finished pizza and for the most part, a better tasting finished pizza too as you can use a more standard dough formula utilizing more fermentation to build in flavor and you won't need to contend with any off flavors resulting from the CL (chemical leavening) system used in the bake to rise dough formulation.

Tom Lehmann/The Dough Doctor  
895

### **Dough Clinic / Re: Larger Bubbles Before Cooking**

Pictures of the dough, dough ball prior to opening as well as the finished crust would all be helpful in this case. It sounds like you might be allowing the dough balls to rest at room temperature too long before opening them into skins. The next time you make dough try opening dough balls at 2, 4, and 6-hours and compare the resulting crumb structure to see in opening them any sooner helps to create a more open, porous crumb structure.

Tom Lehmann/The Dough Doctor  
894

### **Dough Clinic / Re: Yeast donuts recipe?**

A Boston Cream Donut is nothing more than what is normally referred to as a custard filled Bismark with chocolate dipped icing on top, much like a Boston Cream Pie except in a donut format.

I'll need to look for the yeast raised donut formula you mentioned.

Tom Lehmann/The Dough Doctor  
893

### **New York Style / Re: Yeast Amount**

When answering this question one must always ask: What do you mean by yeasty flavor? All too often when further exploring this question I've found that what they

are actually referring to is the flavor of "FERMENTATION" not the flavor/taste of yeast. The taste of yeast is probably best described as that of old, wet newspapers. The other yeasty flavor commonly referenced is that of bread made from commercially frozen dough (very little fermentation and double the normal yeast level), this is a flavor that some might associate with the bread that their Grandma used to make back when Grandmas made bread from scratch. Not knowing specifically which flavor is being referenced as "yeasty" is an exercise in pure futility.

Tom Lehmann/The Dough Doctor  
892

### [\*\*Dough Clinic / Re: Recommendations for Outdoor wood fired/gas fired brick oven\*\*](#)

Recommendations for home ovens is one area where I seldom tread as there are others here on this web site who are much better versed on the subject than I am, now when it comes to commercial ovens, that's "a horse of a different color".

Tom Lehmann/The Dough Doctor  
891

### [\*\*Dough Clinic / Re: Larger Bubbles Before Cooking\*\*](#)

Be careful what you wish for as large bubbles being formed during baking can/will rearrange the toppings and create inconsistencies in the top bake of your pizzas. If you just want to create a more open crumb structure you might look at increasing the dough absorption in 2% increments (the more fluid dough consistency will allow for easier expansion of the dough both prior to and during baking resulting in larger bubbles and a more open crumb structure. An increase in the yeast level might also help too as this will promote greater oven spring characteristics resulting in a more open crumb structure in the finished crust.

Tom Lehmann/The Dough Doctor  
890

### [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

Yeast Raised Donut Formula:

Flour: 100% (strong bread type flour with 12 to 12.8% protein content)

Sugar: 6%

Shortening: 10%

Dextrose/glucose: 1%

Bakery grade non-fat dry milk: 5.75%

Salt: 1.75%

Yeast (compressed): 6.5%

Water: 56% (variable)

Mix to a smooth, well developed consistency with a targeted finished dough temperature of 80F.

Ferment for 1-hour at room temperature.

Cut into smaller manageable size pieces and form into loaf shape, cover with a sheet of plastic and allow to rest for 15 to 20-minutes.

Sheet the dough to about 1/2-inch in thickness and cut with desired shape donut cutter.

Place cut donuts on oiled screens for proofing at 100F/75 to 80% Relative Humidity. Proof times will be about 45-minutes.

Fry donuts at 375 to 385F.

Frying time will be about 45 to 60-seconds per side. For Bismarks submerge the

donuts after frying the first side to complete the frying process.

Tom Lehmann/The Dough Doctor

889

### **New York Style / Re: Yeast Amount**

Peter;

Absolutely! I'm just saying that when people reference a "yeasty" flavor one has to be sure we are all on the same page flavor wise before attempting to answer the question, I wish I had a dime for each time I've gone off on a tangent discussing a true yeasty flavor only to find out later that what the person was looking for was more of the flavor developed by the yeast aka fermentation flavor. It's like the time I got a question on how to develop a true rye flavor in rye bread. I suggested a pumpernickel rye formula (the equivalent of a whole-wheat but with all rye flour) as you can't get more of a rye flavor than that, as it turned out that didn't work either as it still didn't taste like "rye bread" to the individual. So, what was he looking for in flavor? As it turned out he was looking for the missing "mystery" ingredient, caraway seed! He was relating the flavor of rye bread to that of caraway seed. He never saw the caraway seed in his rye bread because the brand he was buying used either fine ground caraway seed or caraway seed oil for the flavor and because he was buying his bread from a small local bakery they didn't need to provide an ingredient listing on each loaf which might have given him a clue to its use in the bread. I see the same thing when people are looking for a corn like flavor and keep adding corn flour or corn meal but to no avail, in actuality, all they need to add is masa flour aka maseca (the magic ingredient in corn chips that gives them their unique flavor).

Tom Lehmann/The Dough Doctor

888

### **Dough Clinic / Re: Pizza Dough - Fails to Retain Shape during Ferment**

I can see several issues with what you are doing that might be contributing in part or whole to the issue.

- 1) 67% absorption is a bit on the high side, I'd recommend going lower, possibly start at 65% and go down in 2% increments from there.
- 2) You are putting IDY into the dough water. For hand mixing you should be hydrating the IDY in about 5X its weight of warm (100F) water before adding it to the colder dough water. What you are presently doing can leach glutathione out of the yeast which will have a softening effect upon the dough.
- 3) Do not place the lid on the container until the internal dough temperature reaches 50F, this is especially important when using a long CF period.
- 4) Are you mixing/kneading the dough until it has a smooth appearance? This is important as the smooth appearance in an indicator of gluten development and it is the gluten that helps to hold the dough ball together.

Tom Lehmann/The Dough Doctor

887

### **Dough Clinic / Re: pour all of the water vs little by little**

Are we talking about machine mixing or hand mixing/kneading?

Tom Lehmann/The Dough Doctor

886

### **Dough Clinic / Re: pour all of the water vs little by little**

I'm in agreement with Yael, plus it is actually a lot easier on the mixer. In actuality, you achieve a much more uniformly mixed dough by method #1 while method #2

results in a much more inconsistent dough which is why you were seeing it as being more extensible due to the inconsistent gluten development.

Tom Lehmann/The Dough Doctor

885

**Dough Clinic / Re: Pizza Dough - Fails to Retain Shape during Ferment**

For the 65% dough absorption here is how you do it:

460 (flour weight) X 65 (press the "%" key) and read the amount of water in the display window. 299-grams is the answer.

We have discussed the leaching of glutathione from ADY or IDY when put into cold water a number of times here, it never hurts to read it again though.

Tom Lehmann/The Dough Doctor

884

**Dough Clinic / Re: pour all of the water vs little by little**

Your observations are correct in that a short fermentation time makes your observation more pronounced. A longer fermentation time will allow you to mix the dough better and then achieve the desired extensibility through longer fermentation which will, at the same time, provide a better flavored crust that also has better eating properties.

Tom Lehmann/The Dough Doctor

883

**Dough Clinic / Re: pour all of the water vs little by little**

The total dough absorption figures out to about 64% (30% as added water, 16% from the boiled potato and 18% from the whole egg) which is high for a yeast raised donut. I would suggest reducing the water incrementally to about 55% or maybe a little less to see how that works for you. As your dough formula is quite rich I might also suggest using 100% of the high protein flour rather than the blend that you are presently using.

Tom Lehmann/The Dough Doctor

882

**Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Alex;

What you are describing is pretty common for a whole-wheat dough. I think your problem might be related to low dough absorption. Your present dough absorption calculates to 68.75% which is low for a whole-wheat pizza dough. Increase the dough absorption to 74% (592-ml) and mix the dough just until it all comes together as a homogeneous dough (it is VERY EASY to over mix a whole-wheat dough). Put the water (18.3C) in the bowl first, then add the honey and all of the dry ingredients including the yeast if it is IDY but be sure to put the IDY on top of the flour (if it is ADY pre-activate it in 50-ml. of warm (37.8C) water for 10-minutes before adding it to the water in the mixing bowl. Mix at low speed until the dough just begins to form then add the oil and mix for 1-minute, then mix the dough at the highest speed possible just until a dough is formed. Take the temperature of the dough, ideally it should be in the 75 to 80F/23.8 to 26.6C) range. Immediately scale and ball the dough and place into lightly oiled fermentation containers, lightly oil the top of each dough ball, leave the lids off of the containers until the internal dough ball temperature reaches 10C then apply the lids BUT make sure you have some form of a vent hole in the lids to bleed of any gas and prevent pressure build-up that might pop the lids off. Cold ferment for NOT more than 24-hours, remove from the fridge and allow to warm AT room temperature until the internal dough

ball temperature reaches 10C then turn the dough out of the container(s) onto a flour dusted surface and begin opening the dough into skins by your preferred method. As soon as the pizza comes out of the oven brush the edge with olive oil or as I like to do, use melted butter.

Let me know how this works for you and be sure to post some pictures.

Tom Lehmann/The Dough Doctor  
881

### [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

You can make your own by scalding the liquid milk then add it as part of the dough water remembering that only 88% of the weight of liquid milk is water.

Tom Lehmann/The Dough Doctor  
880

### [\*\*Dough Clinic / Re: pour all of the water vs little by little\*\*](#)

It should be about the same (80%).

Tom Lehmann/The Dough Doctor  
879

### [\*\*Dough Clinic / Re: pour all of the water vs little by little\*\*](#)

Craig;

Even though the water is bound by the starch it is still free water and as such it is included in with the dough absorption in the same manner as the water in the eggs would be.

Tom Lehmann/The Dough Doctor  
878

### [\*\*American Style / Re: Recreating Drive-In Pizza\*\*](#)

Here is some direction;

- 1) Use a strong bread type flour and mix the dough to just short of full gluten development.
- 2) Dough absorption will be about 56%
- 3) Dough formulation will include the reducing agent RS-190 aka dead yeast to reduce mixing time and provide extensibility to the dough.
- 4) Target a finished dough temperature in the range of 80 to 85F.
- 5) Very little fermentation time is employed in making this crust.
- 6) To form the skin use a dough sheeter/rolling pin or pastry pin.
- 7) After forming, dock the skin and allow it to proof for 15-minutes before baking.
- 8) Bake at 425F

9) Here's a starting dough formula if you don't already have one;

Flour: 100%

Salt: 2%

Sugar: 2%

Oil: 2%

RS-190: 1.5%

Ticaloid Lite Gum or Guar Gum: 0.25%

Yeast: 2.5% (compressed yeast)

Water: 56%

The function of the Guar Gum in this application is to help retain moisture in the par-baked crust which results in a finished crust with more of the characteristics of a crust baked from a raw dough skin. I did all of the initial applications work many years ago.

Tom Lehmann/The Dough Doctor  
877

**General Pizza Making / Re: Yeast doing too much work.**

In all probability not, just reball the dough and place it back into the fridge, then about 3-hours before you plan on using the dough remove it from the fridge to temper AT room temperature. The dough balls will be ready to use when the internal temperature of the dough balls reaches a temperature between 50 and 60F.

Tom Lehmann/The Dough Doctor  
876

**Dough Clinic / Re: pour all of the water vs little by little**

In most large wholesale bakeries where sweet dough is made the sugar is held back in the dough mixing process along with a good portion of the fat until the gluten has been pretty well developed to the desired point, the sugar and fat are then gradually added and mixed in just to get a thorough incorporation.

Tom Lehmann/The Dough Doctor  
875

**Dough Clinic / Re: Hobart A120 Mixer Input**

With a 65% absorption dough the A-120 (12-quart capacity) mixer will handle up to a maximum of 1,000-grams of total flour weight. I used them all the time when I ran the bake lab at AIB. Add up the total of all the bakers % (find the sum) then divide by 100 and multiply the 1000-gram flour weight by this to find the total dough weight. It will probably be close to 170 divided by 100 = 1.7 so 1.7 X 1,000 = 1700-grams total dough weight.

Tom Lehmann/The Dough Doctor  
874

**Dough Clinic / Re: pour all of the water vs little by little**

Powdered sugar is only necessary when you don't want to have the potential grittiness of the granulated sugar (that's why it is also known as "icing sugar" since this is a mute issue in the dough you can just use granulated sugar, a fine granulated sugar such as "fruit granulation" is most commonly used in bakery applications.

Tom Lehmann/The Dough Doctor  
873

**Dough Clinic / Re: pour all of the water vs little by little**

You would find then to be about the same with the one having the potatoes being possibly more sticky.

Tom Lehmann/The Dough Doctor  
872

**Dough Clinic / Re: Hobart A120 Mixer Input**

No, I'm saying that if you do the math as indicated and divide the total dough weight in grams by your unit weight that would be the approximate number of units that could be had from a single dough made in the A-120 bowl. I say "approximate" as there will be some bowl loss resulting in the actual dough weight being a bit less than the calculated dough weight. You are on the right track though.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Fermentation time counting question**

Just remember to allow time for the dough ball to warm AT (repeat AT) room temperature until the internal ball temperature is in the 50 to 60F/10 to 15.5C range before opening into skins.

Tom Lehmann/The Dough Doctor

870

**Pizza Ovens / Re: Anvil Conveyor Oven - Belt Speed**

I'm not personally familiar with the speed control for the conveyor but the conveyor drive motor usually isn't anything special so it might just be a rheostat type of control which should be a pretty easy fix if it is. You might search the Internet to see if you can find an electrical schematic for the oven as that will tell you for sure what you're up against.

Tom Lehmann/The Dough Doctor

869

**Dough Clinic / Re: Hobart A120 Mixer Input**

By the way, that's a very good price on the A-120 mixer, especially with all of the extras. Be sure to set the bowl to agitator clearance before using it though. The bowl lift is adjustable, place a nickle between the bowl and the reverse spiral dough arm as a gauge with the bowl in the fully up position, adjust the gap so the agitator JUST clears the nickle. If your bowls are tin plate DO NOT mix sauce in them unless you are fond of a funky metallic taste. Not a problem with stainless steel bowls. NOTE: Match bowl with agitator and mark them so they can stay together as a pair. If you heat the familiar Hobart "tink, tink, tink" as the mixer is running with or without a dough in it the clearance between bowl and agitator is not correct OR there is a dent in the bowl which has to be removed. We have discussed all of this previously here so you might want to take a stroll through the archives if appropriate. P.S. BE SURE TO BOLT YOUR MIXER DOWN as they have a tendency to want to walk off of bench tops while running.

Congrats on a great find!

Tom Lehmann/The Dough Doctor

868

**Dough Clinic / Re: Hobart A120 Mixer Input**

You're not missing anything, you can get up at about 10-pounds of dough into the 12-quart bowl but but you can't achieve a consistent mix throughout the dough using that much dough with the relatively short mixing time employed for pizza dough as compared to a bread dough which is significantly longer. If you don't mind having a dough that is inconsistently mixed you can use a lot more dough than I suggested. If you don't see the dough being turned over during the mixing process you're not getting a consistent mix throughout the dough. Bread doughs are a different matter as they are mixed much longer and to a higher level of gluten development which helps to turn a larger dough over in the bowl during the mixing process. If you mix large size pizza doughs your best bet will be to stop the mixer periodically and manually turn the dough over in the bowl a couple of times during the mixing process. To your point, I should have mentioned this.

Tom Lehmann/The Dough Doctor

867

**Dough Clinic / Re: Hobart A120 Mixer Input**

I've used the Ankarsrum mixer (a friend of mine had one) for making bread doughs but never for making pizza doughs and I've never physically or mentally done a comparison of the two mixers (the other being a planetary type mixer) so I'm probably not the best person to ask about a comparison of the two. The best I could offer is that the Ankarsrum mixer is really a home type mixer while the Hobart A-120 mixer is designed for commercial applications. With that said, there was a period of time (mid 1970's to sometime in the 1990's when Hobart didn't make the motors for their A-120 or A-200 mixers) which left these two mixer models grossly under powered for their size. Now, if we are looking at either an A-120 or A-200 mixer made prior to that it's a whole different story as those were true work horses and didn't have to "stop for a rest" half way through mixing a large size dough.

Tom Lehmann/The Dough Doctor  
866

**Events Calendar / Re: Pizza Expo 2020 \*\*\*POSTPONED\*\*\***

This was a very smart move on their part especially when considering the C-19 situation in Italy and Europe, not to mention Asia as well as progression along the entire West cost of the U.S. Always better to be safe than sorry.

Hopefully this thing will be behind us by the end of June!

Tom Lehmann/The Dough Doctor  
865

**Dough Clinic / Re: Switched ovens, pizza is very dry and crispy now.**

What kind of surface were you baking on in the home oven? Why the sudden increase in baking temperature?

Tom Lehmann/The Dough Doctor  
864

**Dough Clinic / Re: Switched ovens, pizza is very dry and crispy now.**

I agree with the dough absorption increase. See if it will carry 65% if its a N.Y. style that you are after.

Tom Lehmann/The Dough Doctor  
863

**General Pizza Making / Re: Aluminum pans for Chicago deep dish**

Most antacids as well as different forms of baking powder will contain aluminum.

Tom Lehmann/The Dough Doctor  
862

**Dough Clinic / Re: Differences between human vs. machine made pizza?**

We studied hand v/s machine dough mixing many years ago, mixing a dough by hand is so gentle that it is all but impossible to over mix a dough without the aid of a reducing agent such as L-cysteine or glutathione aka dead yeast, machine mixing on the other hand, if it can be set to mix the dough at relatively high speed/r.p.m. can/will easily over mix just about any kind of yeast leavened dough. Because of the force applied to the dough through the mixing action the dough will heat up considerably more with machine mixing than with hand mixing as a result of bowl friction. Gluten development is considerably faster with machine mixing and there is also much better incorporation of ingredients into the dough with machine mixing. It is also a lot easier to incorporate higher levels of water into a dough with machine mixing as opposed to hand mixing/kneading. With all of this said, there are also dough mixers that are designed to emulate the hand mixing process, the one which immediately comes to mind is the Artofex twin arm dough mixer. These

mixers were designed specifically for mixing very soft/slack Danish doughs but they also work well with the higher absorption pizza doughs too. The main function of the Artofex mixer is to allow for the development of a dough without excessive gluten development. There is a very slight "chemical" if you want to call it that, difference between mixing with a planetary mixer and mixing by hand, in a planetary mixing bowl if is possible to have a limited amount of oxygen in contact with the dough so as gluten bonds are broken they are not readily reformed through oxidation at the S-H bonding points. This is one reason why it is possible to almost liquefy a dough through excessive machine mixing and it is also a contributing factor to the shorter mixing time in this type of mixer. Note that this is only observed in doughs which have been exposed to fermentation such as a remixed straight dough process or more commonly a sponge and dough process, in both of these cases the dough or sponge beings carbon dioxide into the mixing bowl and being heavier than air, it is not displaced very well by the mixing action but it does displace the air/oxygen from the bottom of the bowl where the dough is resulting in the dough being mixed in an oxygen depleted environment. We didn't see any evidence of this when we just added the ingredients to the bowl and began the dough mixing process as many of us do when making our doughs by the conventional straight dough process.

The British Tweedy Bread Mixer utilizes this principal by pulling a vacuum in the mixing chamber for significantly reduced dough mixing times. In our research we were able to achieve only a limited reduction in dough mixing time by flooding the mixing bowl with carbon dioxide during the mixing process which we attributed to the significant amount of air contained within the flour and other dry ingredients in the mixing bowl and the fact that the dough reached the desired amount of gluten development before a significant reduction in mixing time could be seen.

Tom Lehmann/The Dough Doctor  
861

### **Dough Clinic / Re: Hobart A120 Mixer Input**

It will be in the 8 to 10-minute range using 2nd. speed.

Tom Lehmann/The Dough Doctor  
860

### **Dough Clinic / Re: Gum line**

OMG! We have covered this a number of times before and I've written a comprehensive article on the topic (maybe Peter can direct you to it?).

The first thing to do though is to make sure you REALLY have a gum line and not a false gum line. Turn the slice upside down so the bottom crust is facing up, use a VERY SHARP serrated knife or a single edge razor blade and using multiple strokes cut the slice from the point to the outer crust, now fold the slice so toppings are facing each other, look immediately under the sauce, if you see a gray area more than about 1/8 inch in thickness, congratulations, you have the dreaded gum line (read about how to solve) if not, don't worry as you don't have a gum line. Note: If you cut the slice from the top down, through the sauce and toppings you will ALWAYS get a false gum line as you are pulling the sauce down into the crust as you cut it. You CANNOT use a pizza wheel or rocker knife to cut the slice when looking for the presence of a gum line as these tools will compress the crumb structure making it impossible to identify the presence of a true gum line.

Tom Lehmann/The Dough Doctor  
859

### **Dough Clinic / Re: Differences between human vs. machine made pizza?**

A number of years ago there was a pizzeria just outside of Pittsburgh, PA (School Hill?) that I had visited where the owner mixed all of his doughs totally by hand. Interesting observation: The owner didn't have a hair on either of his arms or hands, if I remember correctly, he was bald too, but I don't think that had anything to do with mixing the dough :-D

Tom Lehmann/The Dough Doctor  
858

### [\*\*Dough Clinic / Re: Gum line\*\*](#)

The most common things that might be responsible are:

Baking too hot or not long enough.  
Pre-saucing.  
Over thinning of the sauce.  
Using too much sauce.  
Too much/many toppings.

It would really help to be able to see the issue and know more about how the pizza is made and baked as this can help in determining the cause.

Tom Lehmann/The Dough Doctor  
857

### [\*\*Dough Ingredients / Re: All Trumps- unbromated, unbleached\*\*](#)

Having your A.T. flour unbromated really doesn't hurt a thing unless you are planning to ferment your dough for the better part of a week, and even then it would be questionable. As for it being malted, at the temperature you're baking at it shouldn't pose a problem in the 700 to 750F range. You can always repackage what you don't use into 2 to 5-pound bags and freeze it. Frozen it will keep forever and a day.

Tom Lehmann/The Dough Doctor  
856

### [\*\*Dough Clinic / Re: How to make pizza perfectly round?\*\*](#)

And let's not forget that a few years ago free form pizzas were popular too, Pizza Hut's Big Foot pizza was a good example of a commercial attempt at this.

Tom Lehmann/The Dough Doctor  
855

### [\*\*General Pizza Making / Re: Stretching/ opening a dough ball problem\*\*](#)

What is the internal temperature of the dough ball at the time you begin to open it into a skin? Most pizzerias target for 50F but many home pizza makers target something in the 55 to 60F range. I'm thinking that an hour out of the fridge might not be long enough to give you this dough temperature. Also, how long are you cold fermenting the dough?

Tom Lehmann/The Dough Doctor  
854

### [\*\*Dough Ingredients / Re: All Trumps- unbromated, unbleached\*\*](#)

There are two reasons for freezing the flour, it dramatically slows the oxidation rate and if you freeze the flour for a minimum of 30-days you will effectively kill any insects, larvae and eggs that might be in the flour. This means that a 5-pound bag of flour will need to be in the freezer for at least 6-weeks. Once frozen you can transfer it to an insect proof metal or plastic container for long term storage. It will oxidize but at least it won't be infested. Oxidized flour behaves very much like

bromated flour just in case you're wondering.

Tom Lehmann/The Dough Doctor

853

### **Dough Ingredients / Re: All Trumps- unbromated, unbleached**

Peter;

The flour needs to be frozen (not just in the freezer) for a minimum of 30-days so I'm assuming a week to allow the flour (regardless of the amount) to get down to freezing temperature. Flour is really hard to cool due to its low moisture content as well as its density.

Tom Lehmann/The Dough Doctor

852

### **General Pizza Making / Re: Stretching/ opening a dough ball problem**

What you've described sounds about right to me for that procedure. I use a different procedure where I grasp the skin with my palms facing down and I pull the edge of the skin between my thumb and index finger stretching the dough as I pull it through, this helps to increase the circumference of the skin.

Tom Lehmann/The Dough Doctor

851

### **General Pizza Making / Re: Is this dough going to work...?**

The surface is pretty normal for a no knead dough. Actually, no knead doughs do get kneaded but not very much. After you knead the dough for a minute or so you will see the surface become a lot smoother as the dough again expands.

Tom Lehmann/The Dough Doctor

850

### **Dough Ingredients / Re: Has any one used eggs, mashed potato's or fine semolina flour to your dough?**

All of the above.

Eggs (whole eggs) add richness to the finished crust and contribute to crust color development.

Mashed potatoes contribute softness and some crust color to the finished crust. Semolina flour will help to produce a crispy thin type crust BUT at levels above 25% it will contribute to a very tough and chewy eating characteristic in the finished crust, especially after a few minutes out of the oven.

Tom Lehmann/The Dough Doctor

849

### **Dough Clinic / Re: Gum line**

We're talking about two different things here right? Gummy bread and pizza crust and the development of a gum line in a pizza crust. Flour has three main parts, starch, protein and moisture. There is typically less than 1% ash and minerals. The starch has very little capacity to carry water as it is in the flour so the burden of carrying the water is left up to the protein, the more protein present the higher the dough absorption. As the dough is baked/heated the protein gives up the water to the starch which is beginning to gelatinize and now has a high affinity for water, the starch gelatinizes/sets and creates the structure for the finished product we're making. A higher protein content doesn't hold on to the water any differently than a lower protein content.

Tom Lehmann/The Dough Doctor

848

## [\*\*Dough Clinic / Re: Steam oven\*\*](#)

Gus;

I need a little more information on the oven, it sounds like it is a steam injected oven using low pressure steam and gas or electric to heat the oven. A rotating rack oven with steam injection would be a good example of this type of oven. For baking a pizza on a raw dough skin this would probably not be a good choice but for reheating a pizza or a slice it might work OK if the steam can be controlled and evacuated from the baking chamber to allow for crisping of the pizza after it has been reheated.

Tom Lehmann/The Dough Doctor  
847

## [\*\*General Pizza Making / Re: Is this dough going to work...?\*\*](#)

Since you asked, here is what I would do;

After the initial counter top bulk fermentation, divide the dough into desired weight pieces and form into balls, wipe the balls with oil and place in the cooler without a lid on the container(s) and allow it to cool to 50F internal ball temperature, then lid/cover the container(s) and allow to CF for the additional time. Remove from cooler, allow to temper AT room temperature until the internal dough ball temperature reaches 55F then begin opening the balls into skins by your preferred method. Dress and bake.

Tom Lehmann/The Dough Doctor  
846

## [\*\*Dough Clinic / Re: Help with Tough Dough/Crust\*\*](#)

Can you please share your dough formula and dough management procedure with us? Also be sure to include all dough temperatures.

Tom Lehmann/The Dough Doctor  
845

## [\*\*Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.\*\*](#)

I always like to investigate the easy things first so what I'd suggest is as follows:

- 1) Add the cold water to the mixing bowl then add the sourdough (if used) to the water followed by the flour, yeast (if used) and salt.
- 2) Mix the dough longer than what you are presently mixing for, you want to mix until the dough has a smooth appearance.
- 3) Scale and ball the dough immediately after mixing, place it into lightly oiled containers but DO NOT COVER/LID as tightly as you are presently doing. The dough will release carbon dioxide gas which will blanket the dough preventing it from drying out. Cut a couple small holes in the plastic wrap to prevent any pressure build up in the containers.
- 4) After the room temperature fermentation period reball the dough placing the dough balls back into their containers and cover lightly.
- 5) Allow the reballed dough to rest at room temperature for about 5-hours or until it can be easily opened into a skin.

Try this and let us know what the results are.

Tom Lehmann/The Dough Doctor  
844

## [\*\*General Pizza Making / Re: Specific Dough Freezing Question\*\*](#)

I don't know what you mean by "will the outer skins be OK" If you are suggesting placing the dough balls onto sheet pans for freezing no problem, I do suggest that

you flatten them to about 2-inches or so as this will greatly reduce the time needed to freeze the dough ball to the core. In large scale production we usually lightly oil the dough balls (pucks as they are referred to as) prior to freezing as this is another step in making sure the dough balls don't stick together when bulk packaged. The dough does not dry out in the freezer IF the freezer is kept closed. Keep in mind that unless you are either mechanically freezing at -25F (ideally lower) or cryogenically freezing at -40 to -55F your shelf life of the frozen dough will be limited to about 2-weeks.

Tom Lehmann/The Dough Doctor  
843

### **General Pizza Making / Re: Specific Dough Freezing Question**

When you go to use the frozen dough place it in the fridge overnight to slack-out/thaw, then bring it out to room temperature and allow it to warm to about 55F internal ball temperature before opening it into a skin for use.

Another good way to manage your frozen dough is to make the dough with little to no fermentation time prior to freezing it, then in preparation for use, slack it out in the fridge overnight, then bring it out to room temperature until the internal dough ball temperature reaches 55 to 60F, reball it, lightly oil the dough ball and place into individual plastic (bread type) bags, twist the open end to close and tuck the pony tail under the dough ball as you place it back into the fridge to cold ferment for 24-hours. Remove from fridge and allow to warm to 55F (internal ball temperature), then roll the bag down around the dough ball and invert it over a flour dusted bench/counter top, or bowl of flour, flour the dough ball and open into a skin by your preferred method, the skin will be ready for immediate use.

Tom Lehmann/The Dough Doctor  
842

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Nope, scale and ball the dough immediately after mixing. The dough will feel soft and tacky but don't let that discourage you as it will improve during the fermentation period. No need for stretch and fold as biochemical gluten development will take the place of that for you.

Tom Lehmann/The Dough Doctor  
841

### **Dough Clinic / Re: Steam oven**

Gus;  
You might try leaving the door cracked open a bit during the last part of the baking process to allow for ventilation of some of that steam out of the oven, this should give you a crispier finished pizza if that is your quest. Otherwise, steam will give you a soft and soggy pizza.

Tom Lehmann/The Dough Doctor  
840

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

The problem stems from the use of 100% whole-wheat flour, you will not get an extremely open crumb structure as you do when using white flour. By nature whole-wheat items are more dense than those made with white flour. This is due to the roughly 20% bran content of the whole-wheat flour, it absorbs a lot of water and it has a cutting and disrupting effect upon the gluten structure neither of which is conducive to a very light, open crumb structure. Whole-wheat flour is best when used to make relatively thin crust pizzas if any kind of crispiness is desired. It

can be used to make thicker crust pizzas as well as pan style pizzas but crispiness is generally not going to be a strong point.

I've had my best whole-wheat pizzas when baking at 260C both top and bottom. At this temperature I can bake the pizzas sufficiently long to get the crust thoroughly baked without burning the top of the pizza.

Tom Lehmann/The Dough Doctor  
839

### **Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.**

When you are mixing your dough with a mechanical mixer it is not necessary to allow the dough to rest at any time during the mixing process. Your math is correct. ^^^

Tom Lehmann/The Dough Doctor  
838

### **General Pizza Making / Re: Specific Dough Freezing Question**

We developed that procedure for use with commercial frozen dough which is made without any kind of fermentation at all (fermentation before the freezing process is detrimental to long frozen shelf life properties of the dough) so it's awful in the taste and aroma department when it comes to the finished/baked crust. That procedure actually provides a pretty decent flavor to the finished crust, at least when compared to the alternative.

Tom Lehmann/The Dough Doctor  
837

### **Pizza Cheese / Re: Spotting LM Mozz from the nutrition label?**

What disappointing characteristics have you been finding? Remember that different mozzarella cheeses will perform differently under different baking conditions.

Tom Lehmann/The Dough Doctor  
836

### **Dough Clinic / Re: Questions about temperature?**

To answer your questions in the order presented;

1) The type of mixing greatly factors into the heating of the dough during the mixing process, as a very general rule, the slower the mixing action the less heat build up there will be due to friction between the bowl and the dough BUT in some cases this can be off set by a significantly longer mixing time which can result in significant heat generation.

2) Wheat proteins disassociate (come apart) at warm temperatures which is why a dough will be extremely soft and sticky at temperatures approaching 100F this softer and more extensible dough will not exhibit the same amount of bowl friction as a cold dough which is much firmer/stiffer. Cold doughs do not hydrate or develop gluten as well as warmer doughs do so you might say that a compromise temperature (the Goldilocks Temperature Range) of 70 to 85F provides doughs which will exhibit rapid flour hydration combined with good gluten development and decent handling properties.

3) 1F per hour on average.

4) Yes and no, a higher protein flour will typically be a stronger flour which will require more fermentation to give a finished dough that has the desired dough handling properties. Since temperature is the driver of fermentation one of the things that we can do is to increase the finished dough temperature to achieve a faster fermentation rate, hence more fermentation within any given period of time.

With that said, we can also simply allow the dough to ferment for a longer period of time or even increase the yeast level. Each of these has pros and cons which will influence which is the most appropriate action to take based on the dough management procedure we're using.

5) I'm not sure what you mean by "enabling the yeast" but sugar hydrolyzed into nutrient for the yeast to feed upon during the fermentation process (any residual sugar is utilized in the browning reaction to provide crust color and in some cases flavor). It is well known that small amounts of sugar (about 2%) have little impact upon the fermentation rate but at higher levels the osmotic pressure exerted by the sugar upon the yeast will actually have a suppressing effect upon the fermentation rate, however at the same time it can also provide sufficient nutrient to allow for longer fermentation periods if necessary. Salt has a suppressing effect upon yeast activity. At levels above 2.25% we begin to see this, and at 3% and above the impact can be significant. Increasing the temperature will have no impact upon the yeast in this case so the usual action taken is to increase the yeast level.

6) No.

7) 34 to 40F (most will target for 36 to 40F)

8) 50F for a pizzeria and anything in the 50 to 60F range for home pizza making.

Tom Lehmann/The Dough Doctor

835

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

I don't know anything about the dough formula he is using but you might want to try adding VWG (vital wheat gluten) to the dough formula. I would suggest starting with a 5% addition and then working up in 3% increments from there. Remember to blend the VWG into the flour to prevent pilling and also remember to increase the dough absorption by 1.7% for each 1% VWG added. The other option to look at is the use of Ultra Grain whole-wheat flour which while still whole-wheat flour has significantly different handling properties than the more conventional whole-wheat flours.

Tom Lehmann/The Dough Doctor

834

### **Dough Clinic / Re: Yeast donuts recipe?**

They are essentially the same, but the milk powder must still be heat treated for bakery application. If the product is intended to be reconstituted for drinking or cheese manufacture it is not a heat treated dry milk product. You will need to contact the manufacturer to find out if the milk powder has been heat treated for bakery applications. You might also check around at some local retail bakeries to see what kind of milk powder they're using in their yeast leavened products. When I had my shop we used to make the dough and cut the donuts on one day and then place the cut donuts on parchment lined sheet pans which were placed in the cooler, on the following morning they were removed from the cooler and placed onto proofing screens and then placed into the donut proofer for final proofing before frying. This allowed us to have yeast raised donuts ready for sale about 1.5-hours sooner than if we had to make the dough that morning. The dough will only be good for 1-day.

A 10-L mixer should work well to get you started.

Tom Lehmann/The Dough Doctor

833

### **Newbie Topics / Re: Newbie Pizza Dough Cooking Test**

I'm not sure exactly what you are trying to accomplish, but if it's to look at the

baking properties of different doughs you have to put something on top of the skin during the baking process as the baking dynamics are totally different for a plain skin (we'd call it a par-baked skin). The easiest thing to do is to just sauce the skin and then bake it by your preferred method, the results which you see should translate pretty well to a fully dressed pizza baked under the same conditions.

Tom Lehmann/The Dough Doctor

832

### **Dough Clinic / Re: Proofing dough before/after cold ferments?**

To answer your questions;

- 1) What you are describing is a type of autolyse (I use an almost identical method when hand mixing the dough all the time) which is well recognized as being beneficial when hand mixing and kneading the dough as it allows for better dough hydration.
- 2) You will ALWAYS get a more consistent dough if you go directly from mixing/kneading to scaling, balling and into the fridge/cooler.
- 3) While there is a difference in crust flavor between R.T. and C.F. we have never been able to distinguish a hybrid flavor resulting from the use of both. Take your pick, which do you like and go for it. I do realize that both methods are frequently employed and in cases I've recommended it myself but it has always been for a dough management reason not to develop a specific flavor profile in the finished crust.
- 4) We have investigated that and found just too many variables to draw any significant conclusions. Included in the variables are flour protein content, fermentation tolerance of the protein, dough absorption, dough formulation, dough temperature and ambient temperature. Conclusions COULD be drawn from a specific dough formula produced under controlled conditions with a specific lot of flour but in reality the data wouldn't be all that useful as the results would change with a different lot of flour (flour is NOT consistent) as well as with any change in the finished dough temperature and if your dough formula wasn't the same as that used to develop the data again it wouldn't be relevant.

Tom Lehmann/The Dough Doctor

831

### **Dough Clinic / Re: Yeast donuts recipe?**

Sure, 100% bread flour will work just fine. If you notice, I have the "Crisco" shown in brackets to give an example of what is meant by All Purpose Shortening, any non-emulsified all purpose shortening will work just fine in this application.

Tom Lehmann/The Dough Doctor

830

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Alex;

After mixing the dough what does it feel like? Select one: Dry, Tacky, Sticky, Smooth.

What is the temperature of the dough after mixing?

I see that you are using "dry yeast" what kind of dry yeast is it? Select one: Active dry yeast, Instant dry yeast.

How are you adding the yeast to the dough?

Have you tried making your dough without the honey? Honey will contribute to a darker crust color and possible burning at high baking temperatures.

Tom Lehmann/The Dough Doctor

829

## **Dough Clinic / Re: Questions about temperature?**

Because you get better gluten development at the higher "kneading" temperature. Isn't that why we are kneading the dough? ??? The lower temperature at the time of opening the dough ball(s) into skins serves two purposes, one is that it makes the dough easier to handle and form into a skin and two, it allows for a broader window of time to use the dough in. This is especially important in a commercial (pizzeria) setting. Most pizzerias target their opening temperature for 50F but for home application where we are only opening a couple of dough balls within a fairly short period of time we can use a higher temperature which is typically around 60F BUT keep in mind that a warmer dough can be more problematic to open if one is not skilled in opening the dough balls into skins so for home applications I will frequently suggest beginning to open the dough balls into skins at 50F and as your level of ability increases begin increasing the temperature at which you open the dough. A really skilled bench person can open doughs as warm as 85 to 90F without too much of a problem, but as we all know, many home pizza makers are not yet at that skill level. As the old adage goes: "Different strokes for different folks."

828

## **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Alex;

If you are following the dough formula and procedure as shown in the video I would suggest that you look at incrementally increasing the % of yeast used in the dough formula to achieve a more open crumb structure.

What do you mean by: "That towel technique" to open the dough balls into skins? You also say that your crust burns quickly in your oven, have you confirmed the ACTUAL temperature of your oven using something like an infrared thermometer? You mention that the dough is elastic when you go to open it, is it REALLY elastic or do you mean extensible. Elastic is like a rubber band, where you stretch it out and it pulls back or fights you as you try to open it. Extensible is when the dough is easy to open and stays put/retains its shape when you place the skin on a peel. This is an important distinction as a whole-wheat dough that is too elastic might actually be under absorbed. Most whole-wheat doughs will require about 75% total dough absorption, your total dough absorption is less than this so it might be something to consider.

Tom Lehmann/The Dough Doctor

827

## **General Pizza Making / Re: Is this dough going to work...?**

When it comes time to open the dough balls don't be afraid to use dusting flour, after getting the ball pretty well opened place it on a wood prep peel with some fine corn meal as peel dust, finish opening and dress to the order, bake immediately. Let us know how it turns out.

Tom Lehmann/The Dough Doctor

826

## **Dough Clinic / Re: Coating dough balls in oil for high temp bakes**

Like with everything, there is always a possibility. I can say that in many cases too much oil is being added to the dough ball which is why I always emphasize wiping a light coat of oil onto the dough balls. If you can see a shine on the surface of the dough there is sufficient oil to do the job at hand. The next time you make dough apply the oil as sparingly as possible to see if that has any impact. In some cases

we've found that oil is only needed on the top of the dough ball, it is not needed in the container. For whatever reason with some containers the dough does not seem to adhere very well and it will fall free from the container with minimal distortion. Here's another trick you might try to see if it works for you, as you round the dough place the balls on the bench and lightly dust the top of the dough balls with flour (I like to use semolina flour but try your regular flour too), then place the dough balls into the un-oiled with the floured (top) side down, very lightly oil the top of the dough balls and CF as usual. Now, here is something else to ponder, according to the laws of physics (hard to argue with them) cold air holds less moisture than warm air so contrary to popular belief, things DO NOT dry out due to being placed in the fridge.....UNLESS YOU KEEP OPENING THE DOOR which allows warm air to enter which is the culprit when it comes to drying out the dough balls. If you have a dedicated fridge for the dough balls or if you can resist the temptation to open the door UNTIL YOU ARE READY TO DOWN-STACK/COVER THE CONTAINERS you might find that you don't even need to use any oil. Where the oil application is essential is in commercial practice where the dough boxes are placed into a common walk-in or reach-in cooler and the door is constantly being opened and closed plus there is significant airflow to provide a consistent temperature throughout the cooler (this is not present in a home fridge, at least none that we have ever owned), so there are some things for you to explore. Please let us know if any of these work for you.

Tom Lehmann/The Dough Doctor  
825

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

Good point! I was assuming he was using KA Whole-Wheat flour (14% protein content) as he alluded to, but then.....maybe someone needs to pin a tail on me. :-D :-D :-D

Tom Lehmann/The Dough Doctor  
824

### **Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.**

A good temperature to final proof the dough balls at would be between 70 and 75F/21.1 to 23.9C. so your 24C location should work fine.

When re-rounding the dough don't try to make them into cannon balls that Napoleon would be proud of, instead lose round them (just get them into a round shape) and I think you will be OK.

Tom Lehmann/The Dough Doctor  
823

### **Neapolitan Style / Re: Thinning Dough**

Thin dough skins and extra heavy on the toppings is not a good mix for a number of reasons. If it were me, I'd be making the dough a little thicker (same diameter but greater dough weight), also you can try placing those cherry tomatoes sliced side down on a clean towel to remove some of the extra moisture from the cut surface. I do this all the time when I use nothing but sliced fresh/ripe tomato for my "sauce". You might also consider applying a very light application of oil over the center of the skin before adding the sauce, this will help to create a moisture barrier keeping the moisture on top of the skin rather than allowing it to soak into it or worse yet, through it.

Tom Lehmann/The Dough Doctor  
822

## [\*\*Newbie Topics / Re: First Attempt at Lehmann Dough - The Results w/ Photos\*\*](#)

Looks like a winner to me! :drool:  
Tom Lehmann/The Dough Doctor  
821

## [\*\*Dough Clinic / Re: Bulk Fermenting vs. Individual Balls\*\*](#)

Alex;  
I think you hit the nail right on the head! The protein level indicated for a whole-wheat flour can be misleading, because there is about 1% protein bound to the bran portion of the flour the total protein content of a whole-wheat flour is about 1% higher than its white flour counterpart BUT that 1% extra protein is not typically comprised of gluten forming proteins so it doesn't do anything for the strength of the flour. If you cannot find a higher protein content whole-wheat flour you can always add VWG to the existing whole-wheat flour, the amount to add should raise the total protein content of your flour by 3%, since 1% VWG increases the protein content by 0.6% you will need to add about 5% VWG plus the necessary extra water  $1.7 \times 5\% = 8.5\%$  extra water.

By the way, just because the spelt flour has 14% protein content doesn't mean that it's all gluten forming protein, I seriously doubt that it will work for you without the addition of VWG.

Tom Lehmann/The Dough Doctor  
820

## [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

They are one and the same, just of a finer consistency.  
Tom Lehmann/The Dough Doctor  
819

## [\*\*Dough Clinic / Re: Coating dough balls in oil for high temp bakes\*\*](#)

Absolutely! It only needs to be opened once after you put the dough balls in to introduce enough warm air to form a skin. In some cases a skin might form but it will only be a dry (not crusty) skin which isn't too much of an issue but if you want to address it you can always drape a damp towel over the containers for the cross-stack period, that should fix the problem regardless if the door is opened or not.

Tom Lehmann/The Dough Doctor  
818

## [\*\*Dough Clinic / Re: Bulk Fermenting vs. Individual Balls\*\*](#)

Alex;  
I'd say that is a pretty fair summary as I see it.  
Tom Lehmann/The Dough Doctor  
817

## [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

High heat treatment is the only one to use for yeast leavened products, any of the others can be used for chemically leavened products. Due to its cost, today many bakeries don't use dry milk powder in their yeast leavened products, instead they will often use milk replacers/substitutes designed specifically for that application. The function of the milk powder in the yeast raised donuts is to help retain moisture, contribute to crust color development, and impart flavor. The calcium content also functions to help buffer the acid formation during fermentation which is part of the flavor improvement achieved with the use of milk.

Am I missing something? I fail to see an issue here, if high heat treatment aka bakery grade dry milk powder is not available all one has to do is to use liquid milk and heat it just until it begins to boil (scald it) then allow it to cool and use it as part of the total liquids content, just remember that liquid milk is approximately 12% solids, the rest being water. This is what bakeries and home bakers did before high heat treatment milk powder became available.

Tom Lehmann/The Dough Doctor  
816

### [\*\*Chitchat / Re: Even during a pandemic, we'll never be this hungry\*\*](#)

I've seen the same thing but what I'm seeing is that only the higher priced pizzas are left on the shelves, all of the Roma's, Tombstone, and other "bottom feeders" are gone. Wonder what pizzas were on either side of the Tony's? They're gone, just stating an observation.

Tom Lehmann/The Dough Doctor  
815

### [\*\*Chitchat / Re: Even during a pandemic, we'll never be this hungry\*\*](#)

By us, here in Manhattan, Kansas Tony's brand and DiGiorno brand pizzas are the premium brands on our supermarket shelves and with each trip to the store I always check to see what is moving and what isn't, it's been a very consistent observation that many of the low cost pizzas are sold out or are in limited supply as compared to the higher priced/premium brands. My Econ. 101 class explained that by stating that the more expensive something is the fewer will be sold, which explains why we see more Fords on the road than Rolls Royce. :-D

Tom Lehmann/The Dough Doctor  
814

### [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

Easy to do;

We have 56% absorption for the dough which represents all of the water added to the dough, so if we calculate 12% of 56% ( $56 \times 12$  press the "%" key and read the answer in the display) we find that if all of the liquid added to the dough was liquid milk the total milk solids contribution would be 6.72% (only 1% more than called for but still within the normal range for milk solids) so in this case we can substitute the water with 100% liquid milk and add the difference (6.72%) in water. If you want be specific and add the specified amount of dry milk powder called for in the dough formula you will need to replace 48% of the water with liquid milk then add 8% water plus 5.75% water for a total of 13.75% water in addition to the 48% liquid milk.

As far as the type of milk, it really doesn't make any difference as long as it is liquid milk ready for drinking (as opposed to being concentrated).

Tom Lehmann/The Dough Doctor  
813

### [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

Your math is indeed correct. ^^^

Just remember to scald and then cool the liquid milk before using it and you're good to go.

Tom Lehmann/The Dough Doctor  
812

### [\*\*Stones/tiles/steel, Pans & Accessories / Re: KA Cutter\*\*](#)

Beautiful cutter! Is it available with a 4 or 5-inch wheel? Over the years we found that the larger diameter wheels cut better in that they disrupted the top of the pizza less than the smaller diameter wheels.

It's hard, if not impossible to find a really good cutter with the larger diameter wheel.

Tom Lehmann/The Dough Doctor  
811

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

When comparing the nutritionals of whole-wheat flour against an enriched white flour the only difference is in the fiber/bran content of the whole-wheat flour. This is due to the fact that enriched flour is enriched to the same level of vitamins/minerals as whole-wheat flour. Comparing whole-wheat flour to a non-enriched white flour the cards are stacked in favor of the whole-wheat flour as the most nutritious part of the wheat berry is associated with the bran fraction, just like apples and potatoes, when you remove the outer skin you also remove the most nutritious part.

Tom Lehmann/The Dough Doctor  
810

### **Dough Clinic / Re: 48 hrs bulk ferment - 12 hours ball ferment?**

Since you have two dough balls, unless you need both at the same time, use one now and let the other one go for an additional 24 hours to see which one you like the best.

Tom Lehmann/The Dough Doctor  
809

### **Dough Clinic / Re: Cold Dough**

Two main reasons;

- 1) The dough will open a lot easier at 60F than at 40F.
- 2) The dough will exhibit a pronounced tendency to bubble at the lower temperatures to the point where you are almost guaranteed a bubbling problem with a 40F dough going into the oven.

Tom Lehmann/The Dough Doctor  
808

### **New York Style / Re: Dough with its own mind and mutated like a virus**

No salt? Crust must taste awful.

Would need more information on mixing time, dough temperature and dough management procedure used.

Did the dough feel the same after 2-days than it did on the first day? I'm guessing it's related to the dough being initially under mixed but that as it fermented biochemical gluten development occurred which would toughen the dough significantly. Without more information that the best guess I can offer.

Tom Lehmann/The Dough Doctor  
807

### **Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.**

The dough does not appear to be very well developed even after 10-minutes of mixing, I can't tell from the pictures what the dough agitator/hook looks like, could you please send a picture of it laying flat on your work surface? Typically, a properly developed dough is mixed just until it takes on a smooth appearance which I do not see in any of the pictures. Just trying to figure out why.

Tom Lehmann/The Dough Doctor  
806

**Dough Clinic / Re: Aluminum pans**

I'm guessing that your pans are not anodized to prevent oxidation. Aluminum oxidizes quite fast and what you are seeing is most likely the oxidation transferring to the dough. Next time make sure the pans are anodized to prevent this from happening. You can still salvage the pans though by wiping the INSIDE of the pan(s) with salad oil and baking in a 400F oven for about 30-minutes. Do this twice and then treat them as you would a seasoned baking pan.

Tom Lehmann/The Dough Doctor  
805

**Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.**

QJ;

Excellent point but the Caputo Red should be sufficiently strong. Let's see what the "dough hook" looks like, it appears to be quite thin and if in the old "C" configuration it may not be developing the gluten very well.

Tom Lehmann/The Dough Doctor  
804

**Dough Clinic / Re: Aluminum pans**

Most pans manufactured for baking, like bread, cake and sheet pans are anodized, with any other pans you will need to check the label or pan specifications.

QuertyJuan brings up a good point, if you put a drop of concentrated detergent on the pan and leave it there for 15-minutes and the aluminum turns dark or black it isn't anodized but if no change in color is observed it's most likely anodized.

The problem with raw (non-anodized) aluminum and dough is that the dough becomes progressively more acidic as it ferments and anything that is acidic or caustic (like soap) will at the very least etch the aluminum removing any oxidation in the process and leaving a very clean surface on the aluminum. The downside is that the food can easily pick-up a metallic aftertaste due to the aluminum oxide.

Tom Lehmann/The Dough Doctor  
803

**Dough Clinic / Re: Pizza dough is instable and breaks/tears apart.**

I'm betting that the issue you're experiencing is mostly due to the agitator (dough hook) on your mixer. It is not really a reverse spiral design and it is very thin (small diameter) so it tends to drive through the dough without imparting as much stretching/kneading action that a thicker or cast agitator would impart. This means that your mixing time will need to be longer or at a higher speed if that is possible with your specific machine. In any case, try mixing your dough until the dough just takes on a smooth appearance and has an extensible skin.

Keep us posted on your progress.  
Tom Lehmann/The Dough Doctor  
802

**Starters/Sponges / Re: Need help with biga dough**

Why not just make a higher absorption biga? Put the water in the bowl first along with the yeast and then whisk the flour into the water as well as you can. This should give you a finished biga that will incorporate much more readily.

Tom Lehmann/The Dough Doctor  
801

## [\*\*Sauce Ingredients / Re: Recanning Stanislaus Tomato Sauce\*\*](#)

I'm confused, why are you wanting to can 80-pounds of product when it is already canned? Why not just open a single can, use what you need and then break the remainder of the can down into smaller containers (about the amount you usually use in each container) and freeze? The other, unopened cans can be put away on a shelf for later use as you need it. It keeps very well.

Tom Lehmann/The Dough Doctor

800

## [\*\*Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.\*\*](#)

DO NOT vacuum package the pizza as there is a potential for clostridium. All of the commercial operations use MAP (modified atmosphere packaging) but not vacuum. If you search back through the archives you will find earlier discussion on this topic.

Tom Lehmann/The Dough Doctor

799

## [\*\*Dough Clinic / Re: Dough seems too airy after proofing\*\*](#)

Jack;

10-grams divided by 600 X 100 = 1.66% yeast. If it is ADY (active dry yeast) the level should be 0.5% or about 1/3 of what you are using. If it is IDY (instant dry yeast) the level should be about 0.375% or 22% (1/5th) of what you are using. Remember that with hand mixing the dry yeast, regardless of which type you're using should be suspended in about 5 times its weight of warm (100F) water prior to addition to the dough. If you are using ADY you will want to wait about 10-minutes for the yeast to begin to activate before adding it to the dough water but if you're using IDY all you need to do is to suspend the yeast in the water by stirring in well and then adding it to the dough water.

Check your finished dough temperature too, you will be looking for a temperature in the 75 to 85F range for hand mixed dough. This is adjusted by the temperature of the dough water.

After you take the dough out of the fridge only allow it to set out at room temperature until the internal dough ball temperature reaches 60F, more time than that is not necessary and will probably put your dough opening skills to a greater test.

Tom Lehmann/The Dough Doctor

798

## [\*\*Sauce Ingredients / Re: Recanning Stanislaus Tomato Sauce\*\*](#)

Again.

Only open what you need, the rest is already canned. If canning something twice would improve the product I'm sure Stainslaus would be doing it. Freeze only the remainder of the opened product, if you absolutely must, can only that portion of the opened cans. If you're worried about being able to get future product, deviate from your "norm" and use just a single product on your pizzas (desperate times call for desperate measures). I personally prefer to use just the 7/11 ground whole tomatoes (with peel) as my "go to" sauce. Another favorite is 74/40 Tomato Filets (I use the drained juice for my pasta sauce base) and the Saporito is used for what I call my "chunky" sauce.

I've been making more pizzas lately using just the frozen tomatoes from last years harvest, I drain off the juice and use the tomato for my sauce. The juice is used as a base for our next meal based on pasta. Last night I marinated a couple of chicken

breasts in the drained juice then cooked the chicken in the marinade, cut it into pieces, added some vegetables (from the freezer) and cooked them in the marinade too, I then seasoned the marinade and added the cooked pasta and diced chicken, with some grated Parmesan cheese on top we had a great meal. Like I said, desperate times.....

In the end though it's your call.

Tom Lehmann/The Dough Doctor

797

### **Shop Talk / Re: how is the Corona virus affecting business?**

Restaurants, bars, pizzerias, buffets all ordered to shut down to any dine-in, only DELCO is now allowed. The places not impacted are those that do delivery only like Domino's, the various sandwich shops, and Sonic. Most are hoping to just retain staff during these trying times, profits are on the back burner for now.

Tom Lehmann/The Dough Doctor

796

### **Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.**

Chlostridium aka botulinum is not destroyed by heat as its the aflatoxin that's so deadly. It can still be present after baking. Since its an anaerobe it doesn't grow in the presence of air only in an anaerobic environment (like a vacuum sealed package). There have been two documented cases of clostridium in vacuum packaged tortillas and one in bread from back in the 50's. The last case of clostridium poisoning that I read about was back in the 90s? where a young housewife in Indiana canned some low acid tomatoes using a high acid tomato recipe, the entire family died. Garlic is also a good or better candidate for clostridium when added to oil.

Tom Lehmann/The Dough Doctor

795

### **Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.**

Not all foods are prone to clostridium contamination, clostridium is primarily soil borne, so think about things like garlic, carrots, onion, vegetables, etc as being more prone to it. Meats and fruits seem to be pretty safe but after that you're on your own. Just because something can be vacuum packaged doesn't mean that it will be safe to eat, the same can be said about canning foods too. If one wants to do something for their own family, that's fine, let's pray that nothing goes terribly wrong, but when we begin to market the product to other people, outside of our immediate family one has an obligation to ensure that food item is safe and sanitary, in my world playing Russian Roulette is not considered to be a safe activity so I'd rather see it frozen than vacuum packaged unless you have the microbiologist on staff to certify its safety.

Tom Lehmann/The Dough Doctor

794

### **Dough Clinic / Re: yeast and flour supply chain?**

I'm not sure I fully understand your question but as far as shortages in flour and yeast are concerned it is my understanding that neither is in short supply, but there are some regional supply/distribution issues especially at the store/supermarket level. From what I've seen and heard yeast is still widely available from on-line sources, many have said the same for flour but shipping costs can dramatically increase the cost. You might check out any local restaurant supply facilities as they should have a good inventory of flour, maybe not exactly what you want but then

this is a good time to learn to improvise. How long will this last? That's impossible to say but I think what we are seeing is spot shortages, none on the shelves today but they were full yesterday.

As to how often you should be baking bread and pizza, wow! That's a tough one to answer. I've got something over 200-pounds of flour on hand with plenty of yeast and baking powder so I'm pretty well set-up for the near future. Right now I bake every other day or so, bread, pizza, calzones, pies, cakes and kuchen. Yes, we have two chest freezers in the basement full of venison and pork as well as frozen and dehydrated vegetables, fruit and berries all from last years harvest so we're not in the same boat as our city brethren, the point is make what you can as often as you can with the amount of supplies you have on hand and as you're out and about on a "necessities" run keep an eye out for something you can use to justify firing up the oven. I was out this morning and I could have snagged two bags of KA Whole-Wheat Flour on the shelf or a couple cans of baking powder but I didn't.

Tom Lehmann/The Dough Doctor  
793

### [\*\*Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.\*\*](#)

My feelings exactly! ^^^ ^^^ ^^^

Let's put this in context here, someone buys a frozen pizza from you, just how long do you suppose they are going to sit on it before consuming it? An educated SWAG says less than a week. You can freeze just about any pizza or raw dough for that matter for up to 15-days without any disastrous change in quality, so if you put a manufactured/made-on date as well as a use-by date on the package quality should not be an issue, ingredient labeling, well that's a different issue. You just want to make sure you don't sell the pizza to someone who has an allergy specific to an ingredient or topping that you are using.

Tom Lehmann/The Dough Doctor  
792

### [\*\*Neapolitan Style / Re: What factors influence the amount of air in the cornicone?\*\*](#)

From what you are describing as well as your comments on "pushing" the dough lead me to believe that you might have a problem in the way you are opening the dough. Here is something to try, open the dough using a rolling pin or pastry pin but DO NOT open it to full diameter, instead just open it to within 36 to 50mm of the full diameter, then finish opening the skin to full diameter by hand. Be sure to provide us with the dough ball weight and diameter pizza you are making.

Tom Lehmann/The Dough Doctor  
791

### [\*\*Dough Clinic / Re: Correlation between hydration and cook temp and time\*\*](#)

As a rule, the colder/cooler the dough is going into the oven the longer it will take to achieve the same bake as a warmer dough at the same oven temperature but this difference is all but impossible to see in anything but an air impingement oven as the difference is measured in seconds, not minutes. You can also impact the baking of the top of the pizza by using colder toppings. We were able to see differences in top bake with cold v/s warm sauce and cheese in our deck ovens at 500F more so than in our air impingement ovens at 475F. You mention that you feel that your dough could use more water, why don't you increase the dough absorption in 2% increments to see what that does for you? A couple percent increase in dough absorption will not mandate a change in oven temperature. I normally thing of pizza doughs as having a typical dough absorption in the 62 to

68% range for a N.Y. style pizza, cracker style doughs are a lot lower in absorption, typically in the 40 to 50% range with thin crispy doughs coming in at 52 to 56%. There are a good many Neo. style doughs as well as "traditional" style doughs which utilize what I refer to as high absorption (above 70%), these doughs can have an absorption of anyplace from 70 to as high as 82% with most probably falling in the 75 to 78% range.

Tom Lehmann/The Dough Doctor  
790

### **Chitchat / Re: Even during a pandemic, we'll never be this hungry**

My first introduction to pizza was the Chef Boyardee home pizza kit about 60-years ago, as a kid I liked it but today it makes anything sold on a cardboard circle from a frozen case look pretty darn good but as noted, over time our tastes do change. That doesn't make them anything less of a pizza, they're just not at the top of my list anymore. But it is nice to know that when things get tough, it's not burgers and dogs, or even Mac & Cheese that people turn to in desperation, it's PIZZA! Doesn't make any difference the "ilk" of it, it's still PIZZA! :pizza: :pizza: :pizza:

Tom Lehmann/The Dough Doctor  
789

### **Neapolitan Style / Re: What factors influence the amount of air in the cornicone?**

A short time ago we discussed bulk and ball fermentation here. With such a small size dough you will not achieve any benefit to bulk fermentation. Because of this I'd suggest just balling the dough and then giving it the room temperature fermentation, then turn it out of the container onto a floured surface, flour the dough ball and open it into a skin ready for dressing and baking. You don't even have a pastry pin?

Tom Lehmann/The Dough Doctor  
788

### **Chitchat / Re: Even during a pandemic, we'll never be this hungry**

Back in the 80's during the great pizza price wars which also brought us "extended cheese product" (they had to do something to keep the price down) and since no one thought much of the quality of a frozen pizza it really didn't matter because as mentioned, even back then people were buying the cheapest on the shelf and "doctoring" with their own toppings. I worked with a frozen pizza company (Fellini's Pizza) out of Topeka, KS at introducing the first really value packed frozen pizza (preceded Tony's Red Baron). While essentially all frozen supermarket pizzas were selling for \$1.00 each or a little less we developed and introduced an 11-inch frozen pizza that was REALLY LOADED with toppings (you could visibly perceive the value in that pizza). We sold it for \$3.00 for a single topping and \$4.00 for two toppings (in addition to cheese). For the cheese pizza we used a cheese blend along with 1/3 more cheese on the pizza (8-ounces total). The pizza was a huge success and it continually sold out at all of the Dillon's Stores here in Kansas. The television ad that was developed for it was as follows: A gurney is wheeled by a team of doctors and nurses towards the double doors of the operating room (this was shot at Stormont Vail Hospital in Topeka but when by a different name back then I believe) as the gurney approached the doors a nurse pulls back the sheet and proclaims "Wait! This is a Fellini's Pizza, it doesn't need to be doctored". Pretty corny I know, but it worked, it got the message across.

Tom Lehmann/The Dough Doctor  
787

## **Dough Clinic / Re: SAF IDY**

Not all that well. It has a high tolerance to sugar but a VERY POOR tolerance to salt, so unless you are using 1% salt or less, I don't recommend it.

Tom Lehmann/The Dough Doctor

786

## **Dough Clinic / Re: Oil in rim sticks to peel**

It sounds like you're using too much oil, just brush the top of the rim with oil, as the rim expands it will roll the sides down allowing the top to expand and become the outer edge of the rim. The thing about oil is that a little does the same job as a lot when you're putting it on the rim before baking.

Tom Lehmann/The Dough Doctor

785

## **Dough Clinic / Re: yeast and flour supply chain?**

When things normalize the hoarders will be sitting on a life time supply of unopened bags of flour. I'm betting that very few even know how to make bread and even fewer will ever try their hand at it after they can just pick it off of the supermarket shelf. Has anybody heard if there has been a run on MREs (meals ready to eat/modern day military rations)? I used to see people buying that stuff by the pallet! I think as much, if not more went to the civilian market as went to the military.

Tom Lehmann/The Dough Doctor

784

## **Chitchat / Re: Even during a pandemic, we'll never be this hungry**

Freezing, the great equalizer.

Tom Lehmann/The Dough Doctor

783

## **Dough Clinic / Re: yeast and flour supply chain?**

The big question though is, what are those individuals going to do once this is over?

Tom Lehmann/The Dough Doctor

782

## **Dough Clinic / Re: SAF IDY**

The ascorbic acid is added only to counter the softening effect of the glutathione (yes, some is released during the drying and rehydration process).

The specific strain of S.C. used in the SAF GOLD has a high tolerance for sugar, but remember, SAF/Lesaffre is a French company so it was developed specifically for the French baking industry where low salt levels are employed when high sugar levels are used, this is why we see such limited use of it here in the U.S. as we typically use both high sugar and salt levels at the same time.

By the way, there is also a GREEN LABEL SAF which was developed specifically for use in frozen dough systems. We looked at this one too and didn't find there to be sufficient difference in performance over RED LABEL to justify its increased cost. Again, this is why we don't see it used more than we do. You might say that it's hard to improve upon something as good as SAF RED LABEL.

Tom Lehmann/The Dough Doctor

781

## **Dough Clinic / Re: Need Help with Fermentation Process**

I can see a few things that might be creating a problem for you.

1) 25% (400-grams) of your total flour is a durum semolina flour which creates a very tough, elastic gluten. I would suggest replacing the durum semolina flour with your organic bread flour or the "00" flour.

2) You are adding 22% sourdough starter which I think is excessive, try using it at 1/2 of the present level.

3) You mention using the "window pane" test to check for gluten development, this is ONLY FOR BREAD, it is not used for pizza dough as pizza dough is not mixed the same as a bread dough. Instead, just mix the dough until it has a smooth appearance, more mixing than that is not needed nor desirable.

4) Since you have a spiral mixer I'd like to propose a different, more direct mixing method. Put water in the mixing bowl (20 to 21C), then add the starter followed by the flour (all of it), add the salt and mix until all of the flour has been hydrated then add the oil and continue mixing until the dough takes on a smooth, satiny appearance. Measure the dough temperature, it should be in the 23 to 27C range. Take the dough directly to the bench for scaling and balling, lightly oil each dough ball and place into fermentation container(s) , DO NOT APPLY LIDS, leave the containers open in the fridge until the internal dough ball temperature reaches 10C then cover/lid the containers and allow to cold ferment for 24-hours (the dough will probably be at its best after 48-hours). You might want to make some pizzas from the dough after both 24 and 48-hours to see what works best for you. When you're ready to use the dough balls remove from the cooler and place at room temperature ONLY until the internal temperature of the dough ball reaches 10 to 15C, then turn the dough ball out onto a floured surface and open into a skin by your preferred method, dress to the order and bake.

Let us know how this works for you, provide some pictures if you can.

Tom Lehmann/The Dough Doctor

780

## **Dough Clinic / Re: Need Help with Fermentation Process**

No, why not just pyramid stack them or lay a piece of wood (or how about a table knife) across the top of the bottom containers and then stack on top of that? Where there's a will, there's a way.

Tom Lehmann/The Dough Doctor

779

## **Thick Style / Re: Standard Thick Crust Recipe - Basic Pizza**

I don't have any "recipes" but here is a good formula for one;

Strong bread type flour (12 to 12.8% protein content) 100%

Salt: 1.75%

Sugar: 2%

Shortening (Butter flavored Crisco, butter, margarine, non-deodorized lard, etc.)

4%

IDY: 0.4%

Water: (65F) 64%

Target finished dough temperature: 75 to 80F.

Mix to a smooth dough consistency, take directly to the bench for scaling and balling, wipe dough balls with salad oil, place in individual plastic bread type bags, twist open end into a pony tail and tuck it under the dough ball as you place it in the fridge. Cold ferment for 24 to 48-hours, remove from fridge and allow to warm to 60F INTERNAL ball temperature, roll bag down around the dough ball and invert over a floured surface, flour both sides of the dough ball and using a rolling

pin or pastry pin open to a diameter slightly larger than your pan. Prepare the pan by applying oil to the inside of the pan, you want to have a well oiled pan. Place the opened dough into the pan and set aside for about 20-minutes, then using your hands/fingers finish stretching the dough to completely fill the pan, drape with a plastic sheet and allow to final proof for about 45-minutes (time will be variable depending upon the thickness you want in the finished crust). Dress the skin to within 1/2-inch of the edge and bake or using your fingers, pull the dough up on the edge of the pan just before dressing. Bake at 450 to 500F on a grid type oven shelf. You may need to rotate and change shelf position after about 12-minutes of baking. Remove from pan immediately after baking.

Note: A dark colored pan or a well seasoned pan is by far the best pan to use, a 1.5 to 2-inch edge height is desirable.

Tom Lehmann/The Dough Doctor

778

### **Thick Style / Re: Standard Thick Crust Recipe - Basic Pizza**

Just a guess here but I'm guessing that the flour was mis-scaled, maybe only 1000-grams or the tare of the container wasn't accounted for. Try to get a weight on what you have, it might give a clue.

Tom Lehmann/The Dough Doctor

777

### **Newbie Topics / Re: Transferring High Hydration Dough from Dough Tray**

While it can be done, I think as a novice, working with high absorption and long fermentation doughs you would be much better served using individual dough containers that have been lightly oiled.

Tom Lehmann/The Dough Doctor

776

### **Dough Clinic / Re: SAF IDY**

As the name indicates what you are looking at is ADY (active dry yeast). It is different in a number of ways from IDY but the main thing to remember is that when using ADY it must be hydrated and activated prior to use. Do this by putting the ADY into about 5 times its weight of 100F/38C water. Be sure to put the yeast into the water, not the other way around. The water that the yeast is hydrated/activated in should be considered as part of the total dough water. Stir the yeast to suspend it in the water. Allow the suspended yeast to set for about 10-minutes to activate, then stir and pour into the dough water in the mixing bowl, you are now ready to add the remainder of ingredients and begin the mixing sequence.

Tom Lehmann/The Dough Doctor

775

### **Thick Style / Re: Standard Thick Crust Recipe - Basic Pizza**

Between 3/8 and 1/2-inch thick depending upon how thick you want the final crust to be. I suggest starting at something around 1/4-inch thick and then make another one a little bit thicker until you find what you like.

Tom Lehmann/The Dough Doctor

774

### **Dough Clinic / Re: blending whole wheat?**

Andrew:

Whole wheat flour certainly qualifies as a high extraction flour, by definition it is 100% extraction. There are differences between different whole-wheat flours, for example there are whole-white wheat flours (milled from hard white wheat varieties). There are also whole-wheat flours milled from soft white wheat varieties which are referred to most commonly as graham flour. Now you know where graham crackers get their name. For this discussion we will limit ourselves to just the whole-wheat flour made from hard red wheat varieties as they are the most commonly used. There are differences in the particle size of the whole-wheat flour with "stone ground" being the coarsest, and then there is what is referred to as "steel cut" which looks like chopped/granular pieces of the wheat berry (hard to call it a flour), and then there is just a common whole-wheat flour which is what most of us relate to when thinking of whole-wheat flour. Since you are looking at replacing a regular whole-wheat flour with a stone ground type (it isn't actually ground on a stone anymore except maybe by some small independent retail millers), Be aware that the bran pieces will be larger and exert a more pronounced cutting effect upon the gluten film, and the larger pieces of bran will take longer to hydrate so I would highly encourage you to think about using the whole-wheat flour in an autolyze. Use sufficient water in the autolyze to make a thick pasty consistency and let it hydrate for about an hour. To figure the total dough absorption use 60% for the white flour and 75% for the whole-wheat portion of the flour blend and you should be pretty close. Mix the dough just until it begins to develop a smooth skin, DO NOT OVER MIX. Target finished dough temperature will be 75 to 80F. Don't get fancy with fermentation, mix, scale, ball, cold ferment NOT MORE THAN 24-HOURS. Don't skip the cross-stacking and tempering periods after the cold fermentation and you should be fine.

I've never heard of wheat or whole-wheat items described as having a "buttery" aroma, it is almost universally described as being "nutty", however, with that said, in all of my whole-wheat dough formulas I always use butter, seldom ever oil which does indeed impart a nice buttery aroma and taste to the finished produce, especially when you have the butter (Butter Flavored Crisco works well too) up at 5% or more. Also, you may find that a wheat or especially a whole-wheat dough benefits from a slightly higher yeast level.

You should have no issues at all substituting 25 to 30% whole-wheat flour for an equal amount of white flour in your pizza dough while retaining pretty normal dough handling properties.

Tom Lehmann/The Dough Doctor  
773

### **Thick Style / Re: Standard Thick Crust Recipe - Basic Pizza**

Be sure to cover the deep dish pans with foil or they will dry out for sure at 110F! I can only say that IF your dough is between 80 and 85F when it is panned and set on the oven it will most likely take between 30 and 45-minutes using the dough formula I provided. We used it for over 30-years so I know how it performs, and other dough formula?

Tom Lehmann/The Dough Doctor  
772

### **Thick Style / Re: Standard Thick Crust Recipe - Basic Pizza**

Areed, that's some fine lookin' pizza! :drool:

Next time try something a little different by using some Crisco or some other form of plastic fat (margarine, butter, lard, etc.) on the sides of the pan and use some oil in the bottom, then bring the cheese all the way out to the edge of the pan, that'll put a Detroit twist on your pizzas.

Tom Lehmann/The Dough Doctor  
771

**[General Pizza Making / Re: 8h@RT Whole Wheat Pizza Dough](#)**

Your dough really isn't a whole-wheat dough as it is only 36% whole-wheat flour, so it is more correctly referred to as a "wheat" dough. I see that your total dough absorption is 60% which might be a bit low for this type of dough as wheat and whole-wheat doughs tend to perform better at a higher absorption. My suggestion would be to make the dough again but increase the dough absorption to 65% and fine tune it from there if things look better. Keep in mind that wheat and whole-wheat doughs should be slightly tacky to the touch as opposed to dry.

You may also find that an autolyze will also help. To make the autolyze put all of the whole-wheat flour into a container with an equal amount of water, stir to suspend the flour in the water and let set undisturbed for an hour, then add it to the mixing bowl along with the remainder of the dough ingredients and mix the dough in the normal manner. You may find that this will allow you to increase the dough absorption even more for an even more open crumb structure.

Tom Lehmann/The Dough Doctor  
770

**[Dough Clinic / Re: Need Help with Fermentation Process](#)**

Your dough looks fine in each photograph, I wouldn't suggest making any major changes except to "make it your own". As long as you have some type of sugar in your dough you can use "00" type flours at the lower baking temperatures, but to be honest with you, I'd be highly tempted to experiment with a more typical bread type of flour rather than the "00". You might like what you get from it, but then again, you might not, try it to find out.

What is the baking time for your pizzas?

The crumb structure looks OK for what you are doing but then again, experimentation might allow you to improve it somewhat. To go this route I'd suggest incrementally increasing the dough absorption (2% increments) to see if that helps.

I'd also experiment with ways to bake the pizza longer, perhaps try laying a piece of aluminum foil over the top of the pizza at the end of the bake and leave it in the oven for an additional minute, or so. See, now that you have a decent pizza to experiment with the real fun begins, that's what I mean by making it your own. Don't be afraid to experiment, just change only one thing at a time and record everything you do, remember, you're making PIZZA, not nitroglycerin so have fun, and remember that your mistakes can taste as good as your successes! :chef:

Tom Lehmann/The Dough Doctor  
769

**[General Pizza Making / Re: How to get less rise but more flavor](#)**

I can comment on a number of things that I see here.

- 1) The salt level is low at only 1.5% I suggest increasing it to 2 or 2.5% to better control the fermentation rate. This will also improve crust flavor too.
- 2) You might want to reduce the IDY down to 0.3% (a 25% reduction in amount).
- 3) 6-hours out of the fridge before opening the dough is indeed too much, use a thermometer to measure the internal dough ball temperature and when it reaches 55 to 60F then proceed with opening it into a skin. My guess the time will be closer to 2-hours than 6-hours.
- 4) If you really want to have a thin crust you really need to use a rolling pin to fully open the dough ball into a skin and you may need to dock the skin after opening.

Tom Lehmann/The Dough Doctor  
768

**[Dough Clinic / Re: Neapolitan pizza in home oven](#)**

A good Neapolitan pizza will need to be baked at a much higher temperature (750 + F). How about a slightly modified New York style pizza formula?

Tom Lehmann/The Dough Doctor  
767

**[Sauce Ingredients / Re: Recanning Stanislaus Tomato Sauce](#)**

"Cooked sauce, so no worries" about what?

Tom Lehmann/The Dough Doctor  
766

**[Sauce Ingredients / Re: Saucing with uncooked fresh tomatoes](#)**

My ALL TIME FAVORITE substitute for sauce is to use thin sliced fresh, ripe tomatoes (operative word being "ripe"). Slice about 3/16-inch thick, place on towel to remove excess juice. Brush dough skin lightly with oil, apply fresh garlic and fresh basil leaves and then apply the fresh tomato slices (don't peel) as that's where all the flavor is at. Add cheese and toppings and bake.

Let us know what you think.

Tom Lehmann/The Dough Doctor  
765

**[Dough Clinic / Re: How to get this dough? Thin crust, crispy \(but not dry\), puffy and soft inside](#)**

Micko:

Please post the dough formula, mixing and dough management procedure you used to make your pizza. Also, be sure to provide the finished dough temperature. I agree that 45 to 50% absorption seems awfully low, this is more like the absorption that is used to make a thin crispy type of pizza. If the ingredient amounts provided to you were in "pinches, drabs and dribbles, I think we may just need to start over fresh with a dough formula that you can manipulate to give you the desired finished crust characteristics that you are looking for.

Tom Lehmann/The Dough Doctor  
764

**[New York Style / Re: Processor for NY Style?](#)**

It's also good to keep in mind when mixing the dough that all you are looking for is a dough with a smooth appearance, once the dough takes on a smooth appearance it has been sufficiently mixed. With time and developed expertise you will be able to better fine tune the dough mixing specific to your dough management procedure and desired finished crust characteristics, but for now I suggest just mixing for the smooth appearance. One other thing, with a food processor it is better to error on the under mixed side than on the over mixed side.

Tom Lehmann/The Dough Doctor  
763

**[Dough Clinic / Re: Dough seems too airy after proofing](#)**

We're looking forward to seeing your progress.

Tom Lehmann/The Dough Doctor  
762

## [\*\*General Pizza Making / Re: How to get less rise but more flavor\*\*](#)

With 0.3% IDY and a finished dough temperature in the 75 to 80F range I've found that 48-hours CF is needed to really develop a decent flavor, and if you can wait that long, 72-hours might be even better. In the end though the fermentation tolerance of your flour and, how well you manage your dough and YOUR specific tastes will dictate the CF time.

Tom Lehmann/The Dough Doctor

761

## [\*\*Dough Clinic / Re: Bubbles in fried dough\*\*](#)

There is an old quip that goes something like this "I'd like to help you out but I don't know how you got in", in this case I'd like to help you out but I don't have any information on what you are doing. It would be of great help if you could please provide the dough formulation and complete dough management procedure including frying conditions. I've got an idea but I really do need more information.

Tom Lehmann/The Dough Doctor

760

## [\*\*New York Style / Re: Processor for NY Style?\*\*](#)

Peter;

Wow! You really did dig deep to find that one from 2003!

The SAF/Lesaffre Yeast Corporation water temperature calculation that is mentioned in the article is still available but here it is just in case someone wants it right away.

This is designed for doughs which will have a targeted desired finished dough temperature in the 82 to 88F range.

Here is the calculation:

145 minus flour temperature = desired water temperature.

While this is designed for commercial planetary mixers with a friction factor of about 30 it can be easily modified to any other type of mixer. It will take a little trial and error, but once you have it it's a handy tool to have.

1) Use the above equation to make a dough, measure the finished dough temperature.

2) If the temperature is more than 5F too high or too low recalculate the water temperature using 145 plus 10 (if the temperature is too low or 140 minus 10 if the temperature is too high).

3) Make a dough using the new calculated water temperature and measure the finished dough temperature. If the finished dough temperature is within 5F of your targeted finished dough temperature you're good to go, if not make another adjustment to the 145 number and repeat.

Once you have the number needed for your mixer to give you YOUR desired finished dough temperature the only variable will be the flour temperature so from that point on all you will need to do is to measure the temperature of the flour and subtract it from "your number" to get the desired water temperature.

Tom Lehmann/The Dough Doctor

759

## [\*\*Dough Clinic / Re: Bubbles in fried dough\*\*](#)

I think two things might be responsible, too much fermentation and frying the bread at too low of a temperature. I'd suggest reducing the fermentation time to

3-hours and adjusting the temperature of the frying fat to 370F/188C. Also, I'm guessing that you are using fresh oil for frying, this is not the best to use, though you probably have little choice. Believe it or not, a blend of about 25% old frying fat and 75% new frying fat is superior to 1% all new frying fat. One other thing, be sure to fry the items submerged.

You might incorporate these changes and let us know if you see any improvement.

Tom Lehmann/The Dough Doctor

758

### [\*\*Newbie Topics / Re: Do you mix by hand or use a mixer?\*\*](#)

I use both methods. When at home I will use the KA about 3/4 of the time but when away from the house I use hand mixing almost exclusively. For small batches I can't say that I have a preference but for larger batches or multiple doughs machine mixing wins out every time.

Tom Lehmann/The Dough Doctor

757

### [\*\*Prep Equipment / Re: Proofing tray storage\*\*](#)

How deep are your trays?

Tom Lehmann/The Dough Doctor

756

### [\*\*Newbie Topics / Re: Do you mix by hand or use a mixer?\*\*](#)

Really nothing to washing it, just use a hard plastic scraper to scrape the bowl out when you remove the dough then straight to the sink where it's filled with hot water, agitator then goes into the bowl and I get back to my pizza making chores. After the dough is put up I go back to the sink and finish washing the bowl and agitator and wipe down the mixer with a damp towel. Since we are not blessed with acres of counter space I find it more troublesome to drag the mixer out from its hiding space than to wash it.

Tom Lehmann/The Dough Doctor

755

### [\*\*Dough Clinic / Re: Over night proof\*\*](#)

Your dough formula contains a SLUG of IDY as well as a SLUG of salt! I would suggest bringing the IDY down to about 0.15% and the salt down to 2% or 2.5% if you're addicted to salt. In addition to dough formulation the temperature of the room where the panned dough is being proofed as well as the temperature of the dough at the time of panning are also critical factors that enter into determining the correct yeast amount, without this information my suggestion for yeast amount should be considered as an educated SWAG.

Tom Lehmann/The Dough Doctor

754

### [\*\*Dough Clinic / Re: Water Loss\*\*](#)

A fully baked pizza crust will typically come in at between 22 and 28% moisture content as compared to white pan bread at 38 to 40% and pretzels which come in at 2 to 4% moisture content.

Tom Lehmann/The Dough Doctor

753

### [\*\*Pizza News / Re: Pizza Expo/Tom Lehman\*\*](#)

Huh? ??? ??? ??? ??? ??? ??? ???

Tom Lehmann/The Dough Doctor  
752

### **Dough Clinic / Re: Water Loss**

Why would you want to do that when the salt percentage is based on the flour weight?

Tom Lehmann/The Dough Doctor  
751

### **Dough Clinic / Re: Water Loss**

You are confusing bakers percent and "true" percent which is based on the total dough or meat weight. To convert a dough formula into true percent just divide the individual ingredient weights by the total dough weight and multiply by 100. The problem with using true percent with dough formulations is that if you change any one ingredient you have to go back and recalculate the percent for each of the other ingredients.

By the way, there isn't that much difference in finished moisture content between a high absorption and low absorption dough until you drop down into the 40% and lower absorption range.

Tom Lehmann/The Dough Doctor  
750

### **Dough Clinic / Re: Instant dry yeast**

In one word: Absolutely! IDY is no different than ADY or CY when it comes to application and performance. 24 to 48-hours is not really considered to be a long fermentation time in the realm of pizza dough. If you have a balanced dough formula and have an effective dough management procedure the amount of IDY to use for 24 to 48-hours CF will probably be in the in the range of 0.3 to 0.4%.

Tom Lehmann/The Dough Doctor  
749

### **Pizza News / Re: Pizza Expo/Tom Lehmann**

I have to plead innocent as I know noting about it. I've not been contacted nor informed of anything. I am sure there is a lot of confusion and work going on over this whole thing of needing to cancel Pizza Expo so when/if something falls through the cracks it is totally understandable. I give them full credit for their attempts to provide a level of training the industry desperately needs right now.

Tom Lehmann/The Dough Doctor  
748

### **Newbie Topics / Re: Newbie looking for a basic beginner recipe for home oven**

Grease Wheel: You left the door open on this one! :-D  
With GUSTO!

Artimas: Can you please describe the differences you are seeing?

There is a quantum leap between the average pizzeria and the average home kitchen when it comes to making pizza dough, but the biggest difference that I've seen is in how the dough is refrigerated. Most home refrigerators are really not all that good for dough storage as in many cases they lack the necessary refrigeration capacity but more importantly it is small in comparison to a walk-in cooler or even a commercial reach-in cooler so every time the door is opened the temperature fluctuation is significant, it may not seem so, but it is. This temperature fluctuation

will have a significant impact upon the dough over the course of 24 and more hours. In many cases we can address this by targeting a lower finished dough temperature or by modifying our dough management procedure to better accommodate our unique conditions under which we make our pizzas. When teaching pizza making at homes I always tell everyone that the first thing we need to do is to have a dough formula and dough management procedure that allows us to make a decent pizza, then we need to fine tune it to allow us to make a great pizza on a consistent basis (this is a real confidence builder), after that I encourage them to experiment making different types of pizzas/pizza doughs/crusts, such as wheat, whole-wheat, multi-grain, Tex-Mex, Asian, based on thin crust or deep-dish formats (whatever their family preference is). Pizza making should be a family fun adventure in pizza cuisine, and now that we're hopefully all at home with our families this is a great time to get everyone involved in the pizza making process. My wife and I have made a pizza together for dinner for the last two days, the first one was a vegetarian topped N.Y. style and last night's pizza was a shrimp topped pizza with Alfredo sauce instead of a red sauce seasoned with dried dill from our garden last year, then we added left over vegetables from the previous night's pizza preparation. No complaints from my better looking half! Like the old adage goes, "Happy wife, happy life" ;D

Tom Lehmann/The Dough Doctor

747

### [\*\*Dough Clinic / Re: how to get cornicione\*\*](#)

All of which contribute to oven spring, which without you would have nothing much more than a large poker chip.

Tom Lehmann/The Dough Doctor

746

### [\*\*Dough Clinic / Re: Water Loss\*\*](#)

It is common knowledge that salt impacts yeast activity at levels above 1.5% in most dough formulations. This is addressed quite easily by an increase in the yeast level. Essentially all dough formulations which you find are already have the yeast level adjusted for the salt level to achieve a decent fermentation rate. If you want to see this for yourself just make a double size dough without any added salt, then mix until the dough comes together and forms a mass, remove from the mixing bowl, weigh the dough, divide it into two equal weight pieces, put one piece back into the mixer and add 1% salt based on the weight of flour in the dough piece, mix the dough for another 5-minutes, remove from the mixing bowl and cut off 75-grams, form into a ball and place into a lightly oiled tall drinking glass. Do the same thing with the other dough piece but add 3% salt to it, lightly tent each glass with a small piece of foil and set side by side to observe how the dough rises in each glass over the next several hours.

To see the effect of salt on gluten strength make two doughs, one without any added salt and the other with 2% added salt, pay close attention to how the gluten develops as well as how the dough feels at all stages of development.

Salt has a tremendous impact upon the taste of the baked product, when insufficient salt is used the finished product has a "starchy" taste and when excessive salt is used it has a salty taste. Some people like the salty taste while others do not, plus there are a lot of people who recognize the potential health concerns associated with excessive sodium in their diet so they try to limit sodium

consumption. Salt by itself is not a flavoring but instead it should be used only to accentuate flavors already present.

Tom Lehmann/The Dough Doctor

745

### [\*\*Off-Topic Foods / Re: Substitute power flour for bread flour\*\*](#)

If you are running a short fermentation schedule you may need to add a little more fermentation time but if you are fermenting your dough as most of us do, 24-hours or more, you probably won't ever see the difference.

Tom Lehmann/The Dough Doctor

744

### [\*\*Off-Topic Foods / Re: need some bread consulting, dough made, broken fridge\*\*](#)

If its just a leaven we're talking about I'd set it outside, it should be just fine.

Tom Lehmann/The Dough Doctor

743

### [\*\*Dough Clinic / Re: Crust doesn't brown\*\*](#)

By all means add sugar to your dough, 2% is a good starting point but you can go higher if you want. You seemed disappointed that the 2% sugar didn't give the crust a sweet taste, pizza crust is not typically sweet tasting but if you want to have a sweeter tasting crust you have to go to at least 5% sugar for starters. If you are baking with the broiled element on that's why your cheese is getting browned too fast. You might try moving the pizza to a lower rack position. Additionally, how long are you preheating the oven/stone? You want to preheat for at least 1-hour. A baking steel will probably help a lot.

Hand kneaded dough will always be more sticky than a machine mixed dough that is properly mixed, that's not a problem though as the condition will improve as the dough is allowed to ferment.

Your bread flour should be just fine in it is malted (check the bag).

In the mean time some things you might need to do:

- 1) Place the cheese in the freezer for 30-minutes prior to use.
- 2) Tent the top of the pizza with a piece of foil for about the first 5-minutes of the bake time (you will need to experiment).
- 3) If you are getting bubbling during baking the dough might be too cold (did not allow to warm to 55F internal dough ball temperature), par-bake with 1/2 of the sauce applied to the skin usually fixes the problem, or you may need to also dock the skin prior to dressing.

This is all based on the assumption that you are correctly following my dough formula and dough management procedure.

Tom Lehmann/The Dough Doctor

742

### [\*\*Off-Topic Foods / Re: need some bread consulting, dough made, broken fridge\*\*](#)

Please explain/describe what you have including the dough formulation.

Tom Lehmann/The Dough Doctor

741

### [\*\*Dough Clinic / Re: Chicago deep dish browning question\*\*](#)

First things first:

- 1) Are you using a dark colored deep-dish pan?

- 2) Are you baking at an honest 525F?
- 3) Are you using margarine or Butter Flavored Crisco in the pan?
- 4) What are you baking on (stone, steel, grid)?
- 5) Do you use Egg Shade coloring in the dough?

Tom Lehmann/The Dough Doctor  
740

### **Dough Clinic / Re: Pizza dough in bread machine?**

What you are looking at there is essentially a no-time dough or at the very best a short-time dough, neither of which will win any contests for the best tasting pizza crust. It's OK for a "feed me" pizza but that's about where that road ends. Why not just go for an over night fermentation at room temperature? If you are using IDY reduce it to 0.1% (be sure to suspend it in a SMALL amount of 95F water then add it to the dough water, no need to activate as ADY. If using ADY use 0.125% and hydrate/activate according to directions, if using CY use 0.25% and put directly into dough water and whisk to suspend then add to the mixer. Adjust the dough water temperature to 50F and allow to mix just long enough to achieve a smooth dough consistency. Divide into desired weight pieces and ball, place into lightly oiled containers and cover with a piece of foil (DO NOT SEAL TIGHTLY), place in a cool spot to ferment for 18 to 24-hours, then turn out of the container(s) onto a flour or fine corn meal dusted surface, coat the dough ball well and open into a skin by your preferred method, dress and bake.

Tom Lehmann/The Dough Doctor  
739

### **Dough Clinic / Re: Dense cornicione in a Neapolitan style pizza**

Your dough looks kinda dead to me so I'm guessing it's your yeast.  
Tom Lehmann/The Dough Doctor  
738

### **Dough Clinic / Re: Chicago deep dish browning question**

Bob;  
Egg Shade is the coloring material used by many pizzerias in Chicago, since it's available on line and relatively inexpensive you might want to order some. Many pizzerias us 6-ounces for a 50# flour dough so you can use that to calculate the amount you will need in your dough. The darker colored dough will absorb more heat which will help with the browning of the dough.  
If you can only bake at 450F can you move the oven shelf to a position closer to the heat if you have bottom heating?  
Assuming you are allowing at least an hour for the oven and steel to heat before baking.  
If all else fails try removing the pizza from the pan and placing it right on the steel for a minute or so to achieve a stronger bottom bake.

Tom Lehmann/The Dough Doctor  
737

### **Chitchat / Re: I don't ask for much.....but I ask now for your prayers.....**

Your family is in our prayers.  
Tom Lehmann/The Dough Doctor  
736

### **Dough Clinic / Re: Dough balls "spreads out" to much in the box**

CC;

Your picture graphically shows what a totally over fermented and collapsed dough looks like.

If you are to continue making pizza under those conditions you will need to reduce the amount of yeast dramatically, how much I cannot say as I don't know anything about the temperature at which the dough was fermented at but for starters I would suggest something around 0.05% (0.4-grams) CY/fresh yeast.

Now, I see that you have a question mark by the "fresh" when referencing the yeast, does this mean that the yeast is of questionable quality/freshness/age? Old yeast or improperly stored CY (stored at temperature above 40F/4.4C) can release glutathione into the dough resulting in an overly soft/extensible/weak/sticky dough. If your yeast was stored in the fridge with the broken thermostat this might be a contributing factor.

Also, I might add that if you are machine mixing, your mixing process can be made a little more direct by just putting the water into the mixing bowl, adding the yeast and then adding all of the flour and salt, then begin mixing. Your first three steps as shown serve no practical purpose with CY when machine mixing.

Tom Lehmann/The Dough Doctor

735

#### **Dough Clinic / Re: Dough balls "spreads out" to much in the box**

Here is a simple trick that I've used any number of time where refrigeration was non-existent, follow your present procedure BUT withhold 1/2 of the flour and 1/3 of the water. After the dough has fermented for the desired time, on the morning that you want to make pizza add the remainder of flour and water to the fermented dough mass, mix in well, then immediately scale and ball, place dough into lightly oiled containers, lightly cover (NOT AIR TIGHT), and allow to ferment until you are ready to make your pizzas (at least 6-hours), turn dough out of the container onto a flour dusted bench, dust the dough ball on both sides and open into a skin by your preferred manner, dress and bake.

Tom Lehmann/The Dough Doctor

734

#### **Pizza Toppings / Re: cooked green peppers**

At one time we used to see a lot of pizzerias blanching the green pepper slices for use in a slice operation. The reason for this is because the blanched slices do not weep (give up water) as fresh pepper slices do. They might have been using some form of canned green pepper slices but that would also be pretty close to blanched too.

Saute them as suggested will accomplish much of the same thing, something to experiment with.

Tom Lehmann/The Dough Doctor

733

#### **General Pizza Making / Re: How do I tell when dough is over-proofed?**

For pan pizza most go by just the risen height of the dough in the pan. Pizza Hut used to have a mark/line stamped into their deep-dish pans as an indicator of how high to allow the dough to rise.

Tom Lehmann/The Dough Doctor

732

#### **Dough Clinic / Re: Domino's Pan Pizza Dough Fermentation days**

I'm guessing 48-hours and 0.4% IDY.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Crust doesn't brown**

For your next try turning the broiler on 15-minutes before putting the pizza into the oven (this is after a 1-hour pre-heat time) and increase the sugar level in your dough to 3%, or three times what you are presently using. Don't make any other changes but do record everything that you do. Let us know if this provides further improvement in crust color.

The dryness you noted in the crust is due to the par-baking of the crust. Par-baked crusts are always significantly lower in finished moisture content than single baked crusts.

After you get a baking steel you should be able to open the skin, dress it and bake it without par-baking.

Tom Lehmann/The Dough Doctor

730

**Dough Ingredients / Re: Article on Lactic Acid**

Those "industry created shortcuts" are made by fermenting flour and water to create the lactic acid and then spray drying or roller drying with sufficient temperature and time to inactivate the material. The problem is that there is primarily only one acid present, lactic, while in a naturally fermented dough or even a sourdough there are other acids present as well which changes the entire flavor profile. This is one reason why my suggestion for using these products is to incorporate some regular fermentation into the dough and use the inactive sourdough material at only 1/2 of the LOWEST recommended level and work up from there if necessary.

Tom Lehmann/The Dough Doctor

729

**Dough Clinic / Re: Crust doesn't brown**

One other thing I might add, have you confirmed the actual temperature of your oven using a calibrated thermometer or an IR thermometer? In many cases where one is baking directly on a stone or steel the oven door is left open for some time which DRAMATICALLY reduces the actual oven temperature at the time the pizza is placed in the oven. You can use an IR thermometer to measure the temperature both before and after placing the pizza into the oven. If you don't own one of these handy devices they are readily available from most home stores as well as Harbor Freight and online sources too. I recently picked up yet another one, this time for use in the garage, from H.F. for just \$17.00.

Tom Lehmann/The Dough Doctor

728

**Dough Clinic / Re: Dense cornicione in a Neapolitan style pizza**

That's more like it! ^^^

Now you can adjust the amount of dough in the rim portion when you open the skins and also adjust how far out you spread the sauce to achieve the rim you want.

Tom Lehmann/The Dough Doctor

727

**Neapolitan Style / Re: center of pizza too thin....**

You didn't mention anything about the size of the dough skin or the weight of the dough ball, this can have an impact on it too. If the problem is just due to opening technique you might want to try this to get things started:

Use a rolling pin to open the dough ball to within 2-inches of the desired diameter, then finish opening the dough by hand.

I've got a video of this procedure being used commercially. It works well and we get individuals who have never opened a dough ball by hand doing it in no time at all. Once you begin to get the hang of it you won't need to use the rolling pin anymore. P.M. me with your email address or send me an email at <thedoughdoctor@hotmail.com> and ask for the dough opening video.

Tom Lehmann/The Dough Doctor  
726

**Dough Clinic / Re: Help - looks like dough is being eaten from the inside out**

Can you share your complete dough formulas? What I see in the photos of the dough balls is a case of insufficient dough absorption, this is especially evident with the two rye dough balls. The stickiness you noted with the rye dough is totally normal for rye, and depending upon the strength of the white flour that you're using VWG will most likely need to be included in the dough formulation

NOTE: Depending upon the type of rye flour (light, medium or dark) the absorption of the rye flour will be something between 68 and 75%. Plus, if it's a pumpernickel rye flour it will require a soaker.

Tom Lehmann/The Dough Doctor  
725

**Dough Clinic / Re: Help - looks like dough is being eaten from the inside out**

What was the total dough absorption for each of the doughs?

Tom Lehmann/The Dough Doctor  
724

**Dough Clinic / Re: Cracker style dough**

Most cracker type doughs are made with a dough absorption of 40 to 45% and about 5% fat in the form of shortening as opposed to oil. They are mixed for a VERY SHORT TIME, usually about 2-minutes or less. The "dough" after mixing looks a lot like a biscuit or pie dough in that it is extremely "shaggy" and not cohesive at all, but instead it is dry, floury, and crumbly. The dough is scaled to desired weight and packed together on the bench top using your hands to form something that looks a bit like a puck (hockey puck), this is then wrapped in stretch wrap or placed onto a sheet pan with a 2-inch spacing between pucks and the entire sheet pan bagged or wrapped. The dough is allowed to cold ferment for a minimum of 24-hours but may go as long as 48-hours, it is then removed from the cooler and allowed to temper AT room temperature until the internal puck temperature reaches 55F, the pucks are then formed into skins using a dough sheeter or a rolling pin/pastry pin. Formed skins are trimmed to diameter and dressed for baking, usually at 500 to 550F.

Tom Lehmann/The Dough Doctor  
723

**Dough Clinic / Re: Help - looks like dough is being eaten from the inside out**

Are you including the rye flour in the total flour? The total flour should include only the gluten forming flours. Other flours mentioned such as spelt have a very low amount of gluten forming proteins and they create a poor quality gluten, ditto for rye flour, it appears that you are milling the steel cut wheat into a flour so that

being the case it can be included in the total flour, if not milled into a flour it should be shown separately as an added ingredient. To determine the dough absorption figure 62% for the white flour portion and 75% for the dark rye flour portion, this should get you pretty close to the correct dough absorption. For the other flours use the same procedure as you would for finding the absorption of a multi-grain mix. If you search back through the archives you should find several threads of discussion on how this is done.

I hope this helps,

Tom Lehmann/The Dough Doctor  
722

### **Dough Clinic / Re: Yeast**

That's an impossible question to answer as I don't know how much damage the CY has sustained as a result of being frozen (CY does not tolerate freezing all that well). The best advice I can offer is to use it at 2.5 times your IDY level and see how it performs. If it appears slow you can increase the amount of CY but be aware that the freezing process will damage the yeast cells resulting in the release of glutathione into the dough making softer and more extensible than normal. To some extent this can be addressed by reducing the total dough absorption a couple percent. If you see any of this I wouldn't advise trying for any long fermentation times (limit CF to not more than 24-hours) as the softening will continue during the CF time.

By the way, unopened IDY can be frozen for up to 2-years with just a 25% loss of activity.

Tom Lehmann/The Dough Doctor  
721

### **Neapolitan Style / Re: Bench flour**

I use equal parts of regular white flour, FINE corn meal, and semolina flour. If you ask 50 different people what works best for them you'll probably get close to 50 different answers.

Tom Lehmann/The Dough Doctor  
720

### **Dough Clinic / Re: Cracker style dough**

Flour: 100% 500-grams

Salt: 1.75% 8.75-g.

Sugar: 2% (optional) 10-g.

Yeast: CY 1% 5-g.

Butter: 6% 30-g.

Water: 45% 225-g.

Total: 778.75-g

Bowl and fermentation loss: 75-g.

Yield: 703.75-g.

Use the trim dough to make a few bread sticks for appetizers. or just cut into strips about 1/2-inch wide and desired length to make a dipping bread stick.

Tom Lehmann/The Dough Doctor  
719

### **Dough Clinic / Re: Yeast**

We do begin to see some changes in the "brew" (which is what you are describing)

after about 36-hours in the fridge but these changes are hard to see in pizza crust production (bread making is a TOTALLY different story) so you should be good doing as proposed, but since we are not propagating yeast we are only diluting the existing population of cells, with time you will find that you will need to add ever increasing amounts of the brew to maintain equivalent gassing/fermentation power.

Tom Lehmann/The Dough Doctor

718

### **General Pizza Making / Re: Balling**

There is a commercial method of scaling and balling that I show in one of my videos on my web site at <[www.doughdoctor.com](http://www.doughdoctor.com)> very fast with one person balling approximately 85-pounds of dough in under 20-minutes (12-ounce scaling weight).

Tom Lehmann/The Dough Doctor

717

### **Dough Clinic / Re: mixing and handling unmalted flour**

From your description I am wondering if the flour might not be made from a specially milled hard red spring wheat which has a larger particle size (slower to hydrate resulting in a sticky dough). This would not be a durum semolina but more like a spring wheat semolina flour. We do the same thing here in the U.S. using hard red winter wheat varieties where the flour is designed specifically for making pasta.

Here is something to try, make an autolyze of the flour and 70% of the flour weight as water. Allow this to set for 1-hour, then add the remaining ingredients and see if you get a better dough. The absorption might not be correct but it should be better than what you have been getting and not as sticky either. If the flour is made from all spring wheat the dough should open pretty well after 24 to 48-hours cold fermentation but if the flour is made from a blend of both spring wheat and durum wheat you may find the dough to be too elastic for making donuts.

For your process, mix, (targeted finished dough temperature is 80 to 85F/26.6 to 29.4C), then bulk ferment for 1-hour, divide into 2 or 3Kg. pieces and form into loaves, cover the loaves and allow to ferment for 1.25-hours, then begin rolling the dough out to about 8mm in thickness, cut the donuts from the sheeted dough.

Place cut donuts on a frying screen or flour dusted cloth on a sheet pan or proofing board and allow to proof for about 45-minutes, fry approximately 1-minute on each side at 365F/185C.

Don't worry about the flour not being malted as your donut formula already has plenty of sugar in it.

Tom Lehmann/The Dough Doctor

716

### **Dough Clinic / Re: organic vs. non-organic flour?**

In a word, yes.

Tom Lehmann/The Dough Doctor

715

### **Dough Clinic / Re: mixing and handling unmalted flour**

No, just make the autolyze and add it to the bowl then the remainder of the ingredients (no more flour or water) and mix, then proceed as suggested or as you wish to.

Tom Lehmann/The Dough Doctor

714

## [\*\*Dough Clinic / Re: Cracker style dough\*\*](#)

RI;

I might add that with this type of dough it's important to suspend the yeast in the water and then add the salt and sugar, give it a quick stir and add the flour, then add the butter. The best way to add the butter is to cut it into pieces or shave it onto a piece of paper and then allow it to warm to room temperature, it is then added right on top of the flour just before you begin mixing.

Tom Lehmann/The Dough Doctor

713

## [\*\*Dough Clinic / Re: Help - looks like dough is being eaten from the inside out\*\*](#)

Easiest question to answer for the day: No.

Based on that I would move insufficient dough absorption to the bottom of my list of things to look at. I have never had any problem making bread or pizza doughs with just 20% added rye flour, it's not until you get up into amounts over 35% that things begin to get interesting with the dough unless additional VWG is added to help carry the rye flour. I think your approach is a good one to look at just the flour alone and then look at the starter and the added grains.

Tom Lehmann/The Dough Doctor

712

## [\*\*Dough Clinic / Re: mixing and handling unmalted flour\*\*](#)

No, just the flour and the water for the autolyze. Add the potato into the dough not the autolyze.

Tom Lehmann/The Dough Doctor

711

## [\*\*Dough Ingredients / Re: Yeast storage and longevity\*\*](#)

From a practical point in home use application the rate of deterioration between ADY and IDY is about the same.

Tom Lehmann/The Dough Doctor

710

## [\*\*Dough Clinic / Re: mixing and handling unmalted flour\*\*](#)

Use less potato.

Tom Lehmann/The Dough Doctor

709

## [\*\*Dough Clinic / Re: Help - looks like dough is being eaten from the inside out\*\*](#)

The thing about SD starters is that it's a crap-shoot as to what you get. You really don't know what you're culturing/growing until you go to use it. Once you find something that you like treat it like you would important computer data, back it up! Start a second one using the first one to inoculate the back-up thus ensuring you'll have the same micro-flora. Then if you lose one you will still have another to work with and to propagate another/more from without losing the flavor or performance of the master S.D. starter.

Tom Lehmann/The Dough Doctor

708

## [\*\*Prep Equipment / Re: Wide enough fridge\*\*](#)

Why do you want to proof the dough in your dough boxes? After CF just place at room temperature and allow the dough balls to warm to 50 to 60F internal temperature before opening into skins.

Pan pizzas are proofed after the dough is fitted into the pan before dressing and baking.

Is there a possibility that you mean "fermentation" rather than proofing?

Please unconfuse me.

Tom Lehmann/The Dough Doctor

707

### **Prep Equipment / Re: Wide enough fridge**

Now I'm unconfused. ;D but I still have some questions as to exactly what you are wanting to do.

So we want to room temperature ferment our dough in dough boxes measuring approximately 18 X 24-inches, right? I saw your reference to a heat lamp but the refrigerator part leads me to believe this assumption might be wrong. Maybe you just want to use the refrigerator as an insulated box? I guess the questions I'm asking now is "what temperature do you want to ferment your dough at, and how many dough boxes are we talking about?

Tom Lehmann/The Dough Doctor

706

### **New Forum Members / Re: Introduction - Pizza Truck Pipe Dream**

Phil;

Welcome to the site! Hopefully we can help you make your dream a reality. Your ideas are sound, and buying "local" can be a significant benefit, try to incorporate that theme into your advertising. One word of caution though, while N.Y. pizzas are great, they may not be perceived that way by once you get away from the east coast. A case in point, I worked with a young man here in Manhattan, Kansas about 12-years ago in opening a N.Y. pizzeria. Got the pizza nailed down tight, sauce and toppings too, even the store decor...pizza was judged just ho-hum. The problem was that people in this area want and really like a crispy crust regardless of the type of pizza it is. We made changes to the pizza so we now have a VERY CRISPY crust but retained all of the physical appearance characteristics of the N.Y. pizza. Truth is, we now have a New Haven style pizza, but the customers love it, so much so that the owner, Adam Peyton, now has three stores and has been named "best pizza" numerous times, in our local market area AJ's Pizzeria is without doubt the preferred pizzeria. (AJ's New York Pizzeria, Manhattan, Kansas). Point is, know your market and give your customers what they want and you'll have a leg up over the saddle on your way to success.

Tom Lehmann/The Dough Doctor

705

### **Dough Clinic / Re: Forkish Saturday dough, too much salt?**

It would if you took a break between suspending the yeast in the salt water and adding the flour, otherwise it would not cause any problem, on the other hand if the yeast amount was the same and you went from 2% to 3% salt (a 50% difference) that might explain the difference. What I suggest you do is to make the dough again but use only 2% salt, if you get better fermentation you'll have your answer, let me know what you find.

Tom Lehmann/The Dough Doctor

704

## [\*\*Dough Clinic / Re: Giusto's Ultimate Performer for NY Style\*\*](#)

It should work just fine, I've used the G.M. Sperry organic flour many times with my dough formula and dough management procedure with the added (optional) 2% sugar.

Tom Lehmann/The Dough Doctor  
703

## [\*\*Prep Equipment / Re: Is there a benefit to using wood boxes for proofing?\*\*](#)

Are you sure you want to leave the dough balls come all the way up to room temperature after the CF period? The dough can be problematic at room temperature in some cases, this is why pizzerias use 50F (internal ball temperature) and many home pizza makers use 60 to 65F (internal ball temperature) for the target temperature before opening the dough balls into skins. Poplar is probably one of the most common woods used for dough boxes and bagel boards because of its dense grain which doesn't tend to splinter like some of the hardwoods do. In the cracker industry, we used to use wood dough troughs for fermenting the cracker doughs (18 to 24-hours) and when the wood troughs were no longer permitted we found that there was a change in the flavor of the finished crackers. It was found that the wood would become inoculated with a strain of lacto bacillus which in turn migrated into the dough during the fermentation period resulting in a specific flavor development which could not be achieved in the mandated steel fermentation troughs. The specific strain of LB was identified and added as a supplement to the dough at the time of mixing thus restoring the original flavor to the crackers. Keep in mind though that this is all based on using well used wood dough troughs (boxes in your case) and the dough was in the box for 18 to 24-hours. Cracker doughs are around 40% absorption so there was never much of a problem with the dough becoming one with the wood. Note that these wood dough troughs were never washed, they were just scraped clean for the next use. Cold fermenting the dough for 24 to 48-hours, or more in a plastic box and then transferring it to a wood box to temper prior to opening would serve no useful purpose.

Tom Lehmann/The Dough Doctor  
702

## [\*\*Dough Clinic / Re: mixing and handling unmalted flour\*\*](#)

In countries where noodle production is one of the major products made from imported wheat or flour and bread or pastry production is secondary I've seen a number of cases where the lower protein HRW (HRW #!) is blended with the higher protein durum wheat/flour to provide a higher protein flour option. Many international millers don't have any baking background so they have little or no concept of the ramifications this can have for the end user. Like I said, it's just an educated guess based on the information provided. The relatively high ash content shown on the flour specification also shows that the flour is what we refer to as a high extraction rate flour (typical U.S. white flour runs at about 0.6% ash while whole wheat flour comes in at 1.0 to about 1.25%).

Tom Lehmann/The Dough Doctor  
701

## [\*\*Prep Equipment / Re: All in one scale? \(Precise and large capacity\)\*\*](#)

I love my KD-8000! We use it for when making jerky and preserves and anything else where we need to weigh something in the kitchen. Two scales are the way to go but if you don't have the accuracy range you want from a KD-8000 just weigh, put into water and stir, then divide. For example, if you want 1-gram of yeast,

weigh two grams into two small glasses of 100F water, stir to suspend the yeast and portion out one of the glasses. What you will have in the glass will be close enough to 1-gram for making pizza dough. Be sure to include the water in the suspension as part of the dough water and you're good to go.

Tom Lehmann/The Dough Doctor

700

### **Starters/Sponges / Re: Starter suddenly stiffened**

A number of years ago we did a study on similarity of flour by type from different manufacturers, we found that there was a very high level of similarity between bread, and H&R type flours. The so called "high gluten" flours were somewhat variable with some having a protein content as low as 12% while others were in the 13 to 14+% range. With AP type flours we found even greater variances as some AP flours were made from soft wheat varieties and others were made from hard what varieties with protein content all over the board from a low of 9% to a high of nearly 12%, and remember that there is a significant difference in the gluten characteristics between flours made using hard and soft wheat. Based on this study we developed the recommendation to be very cautious when changing brands of AP flour.

Tom Lehmann/The Dough Doctor

699

### **Newbie Topics / Re: First Delivery for our NY Style Slice shop concept**

And the baking temperature was?

Tom Lehmann/The Dough Doctor

698

### **Detroit Style / Re: Steel Pans**

I occasionally run into the same problem, when I do I just place the pan on a pizza screen and bake it that way.

Tom Lehmann/The Dough Doctor

697

### **Dough Clinic / Re: Modifying recipe to use Bread Flour Instead of KASL-Flour shortage due to Covid**

Dasnyde4;

The only time you might really want to use a "high gluten" flour (14+% protein content) is when making a more authentic New York style pizza. The dough formula and procedure performs very well using just about any decent bread type flour, with the only real difference being that the finished crust will not be as chewy as it would be if made using a flour like All Trumps. It will still be chewy, just not as chewy. This might even prove to be a good thing for you as some prefer a pizza that isn't quite as chewy as a traditional New York style pizza.

Welcome to the forum and let us know if you have any questions or problems along the way.

Tom Lehmann/The Dough Doctor

696

### **Dough Clinic / Re: Hilarious Result, But Delicious**

As you didn't mention anything about the dough feeling different we'll "assume" that it felt pretty normal to you, so I'm guessing you might have made an error in scaling the yeast or possibly scaled it right but maybe used IDY instead of ADY which when used at the same levels would create a slight increase in overall yeast

level. Just not enough information to make a better SWAG. In any case it's good to hear that you enjoyed the pizza regardless of what it looked like, like I always say "even our mistakes can taste pretty good".

Tom Lehmann/The Dough Doctor  
695

### [\*\*Dough Clinic / Re: Looking for a specific pizza dough recipe\*\*](#)

Try my New York dough formula but reduce the dough absorption to 56%, CF for 48-hours, allow the dough balls to temper to 50F internal temperature, open dough balls using a rolling pin or pastry pin to about 3/16-inch thickness, dock the dough well using a dough docker, fit the skin into a lightly oiled, bright colored (not seasoned) cutter pan, dress and bake at 500F. Bench mark from there and lets see how close that gets you.

Tom Lehmann/The Dough Doctor  
694

### [\*\*New Forum Members / Re: Pizza dough\*\*](#)

Dan;

You certainly came to the right place! Take a look at the posts on New York style pizzas and you'll find yourself chin deep in "high gluten" flour. :-D

Tom Lehmann/The Dough Doctor  
693

### [\*\*Prep Equipment / Re: All in one scale? \(Precise and large capacity\)\*\*](#)

Ml. on a scale? That's a first! :-D

Tom Lehmann/The Dough Doctor  
692

### [\*\*Dough Clinic / Re: Pizza Hut Pan Pizza\*\*](#)

Your best bet by far will be to fully bake the pizzas but to bake them to your minimum standard of being "done", to allow to cool, slice into desired size pieces, individually wrap each piece in cling wrap and freeze. I do not recommend trying to recon (reheat) the pizza directly from the freezer, instead either place it in the fridge to thaw or thaw at room temperature (you will need to work out the time needed to thaw as it will vary with the pizza). Place into a 350F oven to reheat. The time again, will need to be determined.

Tom Lehmann/The Dough Doctor  
691

### [\*\*Dough Clinic / Re: Hilarious Result, But Delicious\*\*](#)

I'm staying with my yeast guess.

Tom Lehmann/The Dough Doctor  
690

### [\*\*Prep Equipment / Re: All in one scale? \(Precise and large capacity\)\*\*](#)

I can imagine a scale that would require you to enter the temperature of the water and then a microprocessor would calculate the density and show the water as a volumetric measure in ml based on the weight of the water.

I think I'll just stay with my multi mode scale as I work mostly in metrics anyhow.  
Tom Lehmann/The Dough Doctor

689

### [\*\*Dough Clinic / Re: Modifying recipe to use Bread Flour Instead of KASL-\*\*](#)

## **Flour shortage due to Covid**

Yes one can. Find out how much protein your existing flour has and subtract this from the percent protein you want the flour to have, divide this number by 0.6 and that is the percent VWG you will need to add to bring your existing flour up to the desired protein level. Remember that you will need to increase dough absorption by 1.8% for each 1% VWG you add. Make sure to blend the VWG into the flour to prevent pilling of the VWG.

Tom Lehmann/The Dough Doctor

688

## **Newbie Topics / Re: Consistent white brim**

What shelf position are you baking on? If you are not baking on the highest shelf position try moving your pizzas to a higher position in the oven.

Tom Lehmann/The Dough Doctor

687

## **Newbie Topics / Re: Newbie--Caputo's Tipo 00 dough recipe**

Before you make the next bake try adding 2% sugar to the dough formula (flour weight X 2 (press the "%" key) and read the sugar weight in the display window.

Note: Ingredient weight will be in the same weight units (pounds, ounces, grams, etc.) that the flour weight was shown in.

Rather than baking the pizzas in a lower rack position you might also try raising the rack to a higher position (closer to the heat) as this should also help in getting better crust color.

Now, with all of that said, I might suggest one other thing, rather then starting with a "00" flour, set it aside for now and see if you can get a bag of regular bread type flour, use this flour to perfect your skills, dough formulation and dough management procedure, once you're enjoying some good pizzas that's the time to introduce the "00" flour and begin perfecting the dough formula and procedure with that flour.

Tom Lehmann/The Dough Doctor

686

## **Shop Talk / Re: Delay opening?**

I'll be brief. Delay the opening and DON'T quit the day job!!! ^^^

Tom Lehmann/The Dough Doctor

685

## **Newbie Topics / Re: Newbie--Caputo's Tipo 00 dough recipe**

Yes to both of your questions. What can you tell us about the AP flour you have on hand? Can you sens a picture of the ingredient panel? The reason I ask is because all AP flours are not created equal, some are more like a bread flour while others are more like a pastry flour.

Tom Lehmann/The Dough Doctor

684

## **Dough Clinic / Re: Thank you Tom the dough doctor**

We have discussed cold fermenting dough balls in bags a number of times here so I'll just summarize. When cold fermenting the dough balls in bags DO NOT use ZipLock bags, instead use bread type bags. Lightly oil the dough ball(s) and drop into individual bags, twist the open end of the bag into a pony tail and tuck the pony tail under the dough ball as you place it in the fridge (DO NOT SECURE THE OPEN END IN ANY OTHER WAY), after the CF period remove from fridge and

allow to temper AT (NOT TO, AT) room temperature until the internal dough ball temperature reaches 55 to 60F, then roll the bag down around the dough ball and invert it over a floured surface or bowl of flour, the dough ball will invert the bag as it falls free. Flour both sides of the dough ball and open into a skin by your preferred method. Save the bags and store in a small covered bowl in the fridge for the next time you make pizzas.

Note: When placing the dough ball into the bag try to pull the bag snug, but NOT tight to the dough ball. If you search back through some of the threads on the topic I think you will find some good pics of bagged dough balls.

Tom Lehmann/The Dough Doctor  
683

### **Shop Talk / Re: Delay opening?**

About a week or two out from opening begin making pizzas and send them out to local charities, police station, fire station, etc. This will give your crew a chance to practice and serve to advertise your presence. When opening, I would advise you not to do a grand opening, instead do a soft/quiet opening, if you have done your pre-opening work you will have customers coming in to check you out. This will allow you to work out any serving issues that might crop up (they always do) while allowing your staff to ramp up their skills gradually. In these trying times I don't think you'll get "hammered" as is usual for a new opening restaurant but you never know. Once your staff is comfortable and you feel ready for it, then is the time to consider a grand opening. Many of the restaurants that I've worked with never had to do a grand opening, once the word got out that they were open they were too busy for a grand opening! :).

Best of luck!

Please keep us posted.

Tom Lehmann/The Dough Doctor  
682

### **Newbie Topics / Re: Newbie--Caputo's Tipo 00 dough recipe**

There should also be a nutritional panel too, what does it say?

Tom Lehmann/The Dough Doctor  
681

### **Newbie Topics / Re: Newbie--Caputo's Tipo 00 dough recipe**

Wotavidone has answered the question for me, spot-on! Thank you! ^^^

While approximately 10% protein content is a bit on the low side it is entirely doable, especially when mixing the dough by hand.

While there are many different ways to mix a dough by hand here is the way that I do it.

Put water in mixing bowl (70F) 60% of the flour weight.

Add the salt and sugar to the water (no need to stir).

Put the yeast in 5% of the flour weight of 100F water, stir to suspend the yeast. IF CY or IDY you can now add the yeast suspension directly to the water in the bowl,

if it is ADY allow the yeast to activate for 10-minutes before adding it to the water. Immediately add the flour and begin to stir the dough with a wooden spoon, after a minute, or so, add the oil and continue mixing until the dough becomes too stiff to mix with the spoon, now begin mixing by hand until you have a homogeneous dough.

Turn the dough out of the bowl using a plastic bowl scraper to get it all out, lightly oil the bowl and the dough, knead the dough for a few minutes (3-minutes), form the dough into a ball and place back into the oiled bowl, cover (drape) with a piece

of plastic and allow to ferment for about 2-hours.

Turn the dough out of the bowl again and knead it until it just takes on a smooth appearance, oil the bowl, form the dough into a ball again and place back into the bowl.

Cover the bowl with a piece of stretch wrap but do not seal it tightly, place in the fridge to cold ferment for about 24-hours (48-hours max.).

After the CF period bring the dough out of the fridge and allow it to warm to 60F internal ball temperature (about 90-minutes), turn the dough out of the bowl onto a floured surface, flour both sides of the dough ball and open into a skin by your preferred method.

Tom Lehmann/The Dough Doctor  
680

### **Newbie Topics / Re: Consistent white brim**

Also, remember that we go to all the trouble of preheating the oven and the stone/steel and then we open the oven to peel the pizza in, depending upon how proficient one is at peeling a pizza into the oven can have a huge impact upon how much heat is lost from the oven during the process. This is especially so with today's "200" Energy Star rated ovens.

Tom Lehmann/The Dough Doctor  
679

### **Shop Talk / Re: Delay opening?**

I did that too, I worked at AIB during the day (6:30 a.m. to 6:00 p.m. including travel time) dinner with the family and off to the store at 7:00 p.m. Worked at the store until 12:00 a.m. and back home to repeat on the following day. I did this for nearly 2-years until I got my staff and got them all trained. It's a tough grind to be sure! More importantly, I was A LOT younger then too.

Tom Lehmann/The Dough Doctor  
678

### **Dough Clinic / Re: yeast and flour supply chain?**

People need bread so they're thinking of making their own, what kind of flour do you buy to make bread? Bread flour! If there were a shortage of bagels they'd all be buying "bagel" flour..whatever that is? During times of shortage I've always accepted the challenge to use whatever type of flour I could get my hands on, when traveling internationally back in the 80's we couldn't always find "pizza" flour or even "bread" flour but there was always some type of wheat flour available.

Sometimes it was even a composite flour consisting of 70% wheat flour and 30% fine ground domestic grains and legumes. In all cases we were able to make pizza from the flour, maybe not a New York style or a Neapolitan style, but it was a decent pizza and people liked it. The truth to the matter is that bread, pizza, bagels, pretzels, soft rolls and hard rolls can all be made from the same flour without any difficulty at all. The same goes for pizza in that it can be made from just about any kind of flour, yes you will need to make some adjustments in the way you make it but that's what learning about pizza is all about. What do you think the old pizza makers of 200-years ago in Italy did for flour? They used what they got and they learned, by trial and error, how to use it, and from the looks of the present day pizza industry they did a mighty fine job of overcoming their flour issues and got to the business of making pizzas. The same is true today, snag a bag of the "different" flour and experiment with it to broaden your learning curve, but what about the mistakes? Trust me, there will always be someone waiting just outside of the kitchen all to eager to help you make those mistake pizzas go away never to be

seen again.

I relinquish the soap box. :-D

Tom Lehmann/The Dough Doctor

677

### **Dough Clinic / Re: Bulk Fermenting vs. Individual Balls**

It looks like you are definitely getting a more open crumb structure. You might make another increase in the yeast level and you might also consider putting some moisture into the oven, maybe placing a pan of water in the oven before the pizza will increase the moisture content of the air within the oven to give you better oven spring. Electric ovens bake with a very dry heat as there are no products of combustion in the baking chamber as there are with wood fired ovens (water/moisture is one of those products of combustion).

Tom Lehmann/The Dough Doctor

676

### **Dough Clinic / Re: Substituting Caputo 00 for KABF**

There is bread and there is "bread", can you be more specific as to the type of bread that you are making?

Tom Lehmann/The Dough Doctor

675

### **Sicilian Style / Re: Help Scaling Tony G Sicilian Dough**

HansB;

You did that just as a very competent well trained baker would do it, well versed in what we refer to as "bakers math". You think like I do. Do you have a background in the baking industry?

Tom Lehmann/The Dough Doctor

674

### **New Forum Members / Re: An engineer, wanting to start a pizza business.**

Welcome!

There are many of us here who can help you with your endeavors. To help get you up to speed on all things pizza, there is also another web site that you will want to explore too <[www.pmq.com](http://www.pmq.com)> . There are also magazines dedicated specifically to pizza which are available through on-line subscriptions: Pizza Marketing Quarterly Magazine/www.pmq.com; and Pizza Today Magazine/www.pizzatoday.com

There are also quite a few good books on pizza production that are available from most on-line sources.

In the mean time, what is your concept for a store/pizzeria?

Tom Lehmann/The Dough Doctor

673

### **Prep Equipment / Re: question about Doughmate artisan box size**

Also remember that the Doughmate boxes will need to be cross-stacked (left open) until the internal dough ball temperature reaches 50F after which it can be covered/lidded. All of the other methods mentioned do NOT require this additional step in your dough management procedure which is something to consider if you will be making your dough after the sun goes down. I use the plastic bread bag method almost exclusively anymore, just bag it, put it in the fridge and forget it! :)

Tom Lehmann/The Dough Doctor

672

## [\*\*Dough Clinic / Re: Help please\*\*](#)

You'll have to excuse me but I'm a bit confused.

What ingredients were in the poolish? How much of the total flour was in the poolish? What was the temperature of the poolish?

I don't think enough of the flour is being fermented but answers to the above will tell.

Tom Lehmann/The Dough Doctor

671

## [\*\*Dough Clinic / Re: Dealing with poor flour\*\*](#)

Sure! Just reduce the dough absorption to 60%. This is a pretty good place to bench mark just about any pizza dough formula from. Unless you have a really "off the wall" flour it will almost always give you a usable dough, you can then decide if you want to stay with 60% or adjust the amount up or down for better overall dough performance and/or finished product quality.

Tom Lehmann/The Dough Doctor

670

## [\*\*Dough Clinic / Re: Dealing with poor flour\*\*](#)

Let's look at an order of progression, first adjust the dough absorption to a level that works with your mixing method and dough management procedure, then based on that dough absorption begin a series of tests with progressively higher or lower absorptions to achieve the desired finished crust characteristics. All flours are not created equal, some will carry more water than others. You cannot arbitrarily plug in a high absorption, like 75% and expect that all flours will produce a dough with acceptable dough handling properties or the finished crust characteristics one is looking for. You have to find out what is correct for YOUR specific flour. When dealing with an unknown flour you always want to first get a working dough formula and procedure, then once you have that you can begin adjusting the formula and/or procedure to move it closer to giving you the characteristics you're looking for.

Tom Lehmann/The Dough Doctor

669

## [\*\*Prep Equipment / Re: question about Doughmate artisan box size\*\*](#)

For the home pizza maker the term "cross-stacked" as indicated in my previous response, means left open/uncovered/unlidded. After the appropriate cross-stack period the dough box is lidded or covered in some manner so as to prevent drying of the dough during the fermentation period.

Tom Lehmann/The Dough Doctor

668

## [\*\*Dough Clinic / Re: Help please\*\*](#)

Yep, your problem is that you are not fermenting a sufficient amount of the flour. Kyrol flour tends to require quite a bit of fermentation to properly condition the gluten. After making the dough, scale and ball it and cold ferment the dough balls for 48-hours. After the cold fermentation period remove the dough from the fridge and allow it to temper AT room temperature until the internal dough ball temperature reaches 60F, then begin opening the dough balls into skins. Let us know if this makes things a bit easier.

Tom Lehmann/The Dough Doctor

667

## [\*\*Dough Clinic / Re: Take and bake dough suggestions?\*\*](#)

Do not use more than 24-hours CF for a T&B pizza. Adjust the dough formula by increasing the yeast level by 20% and reducing the dough absorption by at least 2% maybe more, depending upon what your present dough absorption is. Generally something in the 58 to not more than 60% range seems to work well, but again it will depend upon the flour you're using. Immediately after opening the skin place it on a silicone baking sheet and then onto a cardboard circle. Refrigerate for at least 1-hour, then dress and back into the fridge for another hour, then stretch wrap and refrigerate until ready to use. Bake directly from the fridge at 425F.

Tom Lehmann/The Dough Doctor  
666

## [\*\*Dough Clinic / Re: Help please\*\*](#)

Yes.  
Tom Lehmann/The Dough Doctor  
665

## [\*\*Dough Clinic / Re: sticky dough?\*\*](#)

I would really need to know more about the dough to answer your question.  
How long after the flour was removed from the freezer did you mix the dough?  
What kind of flour are we talking about?

Protein content?

Dough absorption?

How big of a dough are we talking about?

How was it mixed, by hand or machine? If by machine for how long?

How was the dough managed?

I've got an idea but I want to narrow the field before casting my vote.

Tom Lehmann/The Dough Doctor  
664

## [\*\*Newbie Topics / Re: Dough tears when balling? Can you over ball?\*\*](#)

First off, the "window pane" test for gluten development is used for determining the proper mix for a bread dough not a pizza dough. Pizza doughs are correctly mixed when the dough JUST takes on a smooth appearance. You do not want to mix the dough more than this. Allowing the dough to ferment for an hour before balling is just asking for the dough to tear during balling, especially with a strong flour like All Trumps. My suggestion would be to just scale and ball immediately after mixing, and then manage the dough as you wish from there.

Tom Lehmann/The Dough Doctor  
663

## [\*\*Starters/Sponges / Re: Poolish amount\*\*](#)

While that dough management procedure isn't designed for use with a poolish, it can be done. Use 1/3 of the flour, 1/2 of the water and all of the yeast in the poolish. Set temperature for the poolish should be 75 to 78F/23.9 to 25.5C, allow the poolish to ferment for 6-hours before incorporating it into the remainder of the dough ingredients.

Tom Lehmann/The Dough Doctor  
662

## [\*\*Newbie Topics / Re: Dough tears when balling? Can you over ball?\*\*](#)

Your best bet will be to allow the dough balls to rest, undisturbed at room temperature until they have softened sufficiently to be opened into skins without

tearing. If you want to make pan pizzas using the dough just grease a dark colored, deep-dish pan with Crisco (Butter Flavored Crisco is my favorite), but margarine or lard works well too. Flatten the dough ball into a puck shape and place into the pan, drape with a piece of plastic and allow to rest for 30-minutes, then using your hands, press and stretch the dough to fit the pan, don't worry if it fights you or pulls back, just cover it back up and allow to ferment for another 30 to 45-minutes, finish shaping the dough to the pan, it should stay put this time. Cover the panned dough with the plastic again and allow to final proof for 30-minutes, you're then ready to dress and bake.

Tom Lehmann/The Dough Doctor  
661

### **Starters/Sponges / Re: Poolish amount**

Most of the time the set temperature for a poolish is between 75 and 80F, it is suggested that you that the water temperature used in making the poolish be about 2F less than the targeted set temperature. I never recommend "room temperature" as there is no definition as to what it might be. For some it might mean 70F while for other it might mean 60F or as I once found out in Hermosillo, Mexico it meant over 100F/37.7C! :o

Tom Lehmann/The Dough Doctor  
660

### **Newbie Topics / Re: Newbie--Caputo's Tipo 00 dough recipe**

Rohfan:  
Unless it has been upgraded to a reverse spiral dough arm (not sure if it can be) it will most likely have a very basic dough hook which you will eventually come to hate as the dough keeps riding up on the hook and doesn't get properly mixed. This tends to be more problematic with dough sizes anything less than full bowl capacity.

You will want to experiment with your mixer to see if you can mix smaller size doughs using the flat beater for a portion of the dough mixing time and then changing over to the hook and mixing at a higher speed to keep the dough from climbing up the hook. If you plan to make some of the higher absorption doughs this may not pose as great of a problem as the dough is easier to mix at a higher speed allowing centrifugal force to pull the dough off of the hook for improved mixing action. I know a number of members here have a similar problem with their K5-A so maybe they will be able to share with you what they have found to work at resolving this irksome trait of the old "J"/"C" hook design.

Tom Lehmann/The Dough Doctor  
659

### **Starters/Sponges / Re: Poolish amount**

Perfect! :)  
Tom Lehmann/The Dough Doctor  
658

### **Neapolitan Style / Re: Bench flour**

If you go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and look under "Media" you will have access to my videos. In the last of the dough making videos we show the dough balls being opened both by using a dough sheeter to pre-open the dough and also opening it entirely by hand (similar to the first video you've referenced as wanting to learn from).

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: IDY vs ADY vs bread machine yeast**

Question #1: Yes you do. When substituting ADY for IDY you will need to use about 32% more ADY than IDY.

Question #2: IF, and that's a BIG "if" it is still as viable as it was when fresh/unopened, you would use the same amount.

An easy test to see if the yeast is still viable is to make a small dough in a cereal bowl (1/2 cup flour, pinch of yeast and a pinch of sugar) Put four tablespoons of warm water (100F) in the bowl, add the IDY and stir to suspend the IDY in the water, add the sugar immediately followed by the flour and stir, add more water as needed to make a dough, using your finger, oil the inside of a shot glass, then remove a piece of the dough large enough to fill half of the glass, cover with a damp piece of paper towel and check it for growth in 30-minutes. This will tell you if the yeast is still viable or not.

Another easy test is to make a slurry of 50 ml 100F water, 1-tablespoon flour and a pinch of sugar, stir this all together and pour into a test tube (I bet you have a case of then just waiting to be used for this), and then fit a balloon over the end of the test tube, place the tube into a glass or cup about 1/2 filled with 100F water. Check the back in about an hour to see if the balloon is beginning to inflate.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: How can I keep my pizza round and 16"?**

I've looked at the dough formula and procedure that you have referenced and I'd like to make a couple of comments. The dough formula calls for 63% dough absorption, do you know if this is the optimum dough absorption for the flour that you are using? Flour absorption changes and it is not uncommon for the absorption to change. My guess is that the absorption might be a little on the low side so you should consider incrementally increasing the dough absorption to see if that helps. Increasing the absorption makes for a softer, more pliable dough that will typically exhibit a reduced tendency to snap back aka "dough memory".

I also see that you are using metal fermentation containers and that you are NOT cross-stacking (leaving them uncovered until the internal dough ball temperature reaches 50F). This is a CRITICAL aspect to effective dough management as it allows for uniform cooling of the dough and also prevents or minimizes dough sweating which in nearly every case leads to a sticky/tacky dough at the time of opening. So, in my humble opinion these should be the first things to address, then if we need to we can dig deeper to resolve the problem. There are also some deviations in the dough formula which differ from what I normally use or recommend but we can address those later if we need to.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: IDY vs ADY vs bread machine yeast**

A 100-ml graduated cylinder would work I guess and you do know that there is a substitute for the balloon :-D but using one would probably require using a 250-ml graduated cylinder and a larger dough piece.

Or you could also fashion a simple gas trap.

Tom Lehmann/The Dough Doctor

**Dough Ingredients / Re: What exactly is the 1½ protein 1½ content in flour?**

There are seven recognized proteins in wheat flour but only two of them are responsible for forming what we call "gluten", these two proteins are glutenin and gliadin.

L-Cysteine hydrochloride aka L-cysteine is indeed a dough reducing agent in that it breaks the gluten bonds making for a softer, more extensible dough. Essentially all L-cysteine made today is synthesized as are many of the vitamins which are used in food production. If you cannot use L-cysteine check into using glutathione aka "dead yeast" it is 100% interchangeable with L-cysteine but is sourced directly from yeast by heating just enough to collapse the cell wall but not enough to denature the amino acid (glutathione). If yeast is acceptable glutathione will also be acceptable.

What application are you wanting to use the reducing agent in? For what purpose?

Tom Lehmann/The Dough Doctor

653

### **Pizza Cheese / Re: How grate size affects melting**

If you take a single mozzarella cheese and shred it to different particle sizes, from small cubes to a long shred you will see a progressively darker cheese color and the particle size diminishes (gets smaller), you will also see a significant change in the appearance of the top of the pizza as the cheese becomes more nondescript with the smaller particle size. For me, my preference is for a long, coarse shred as it gives better coverage and in my opinion, a better looking finished pizza.

Tom Lehmann/The Dough Doctor

652

### **Dough Clinic / Re: How can I keep my pizza round and 16"?**

OK, so now my old age is creeping up on me again and I'm confused. You said you were following the referenced dough formula and procedure so I opened it and that's where I got my information from, that's what you said you were following? Putting that aside, I presume you are bagging the dough BUT you are not pulling the bag slightly snug to the dough ball and twisting the open end into a pony tail and tucking it under the dough ball as you place it in the fridge, this, to a great extent, negates one of the great advantages of bagging the dough, that is the process which I'm reading into your reply leaves a significant dead airspace within the bag, thus insulating a good deal of the dough ball and not allowing for consistent cooling of the dough ball, not to mention that it provides a space for condensation to form (not a good thing). I would suggest incorporating the above procedure into your bagging process to see if it helps, it'll provide better dough ball cooling so at least it won't hurt. You should not be putting the bagged dough balls into any kind of container, a flat sheet pan is often used by pizzerias to place the bagged dough on in their coolers but dough boxes and lidded containers are counter productive in this case. A very popular reason for bagging the dough balls is the fact that they require no further attention once they are put into the fridge/cooler, there is no cross-stacking or down-stacking associated with bagged dough balls, for me this is a great convenience factor when making dough at home. Remember, experimenting is half of the fun, the other half is divided between learning from your experiments, eating your experiments, coming to the realization that you are rapidly making a whole new group of friends who just happen to love eating pizza as much as you do. :chef:

Tom Lehmann/The Dough Doctor

651

### **Dough Clinic / Re: How can I keep my pizza round and 16"?**

Now I understand what you are doing, I think that by twisting the open end of the bag into a pony tail and tucking it under the dough ball as you place it in the fridge will result in a more round dough ball after the 36-hour cold fermentation process, when we do it in a pizzeria or when I do it at home getting a round shape has never been an issue as the pressure exerted by the bag forces the dough into a pretty round shape. After the CF period we just set the bagged dough balls on the side to temper AT room temperature (3-hours is a long time, with plastic bags about half of that time is more typical). The bag is then rolled down around the dough ball and the bag is inverted allowing the dough ball to fall onto a floured surface, then flour the entire dough ball and begin opening it into a skin by your preferred method.

Tom Lehmann/The Dough Doctor  
650

**[Dough Clinic / Re: How can I keep my pizza round and 16"?](#)**

If you were using a commercially made frozen dough it most likely contained L-cysteine (almost universally used in commercial frozen dough) which always results in a soft and very extensible dough after thawing which would explain the need for a bowl. Even non-commercially made frozen dough will suffer much of this same fate as the static freezing (freezing at temperatures above -20F) will damage the yeast cells allowing for leakage of glutathione (very similar to L-cysteine) from the cells upon thawing of the dough.

Tom Lehmann/The Dough Doctor  
649

**[Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter](#)**

In bread production there is no difference in functionality between shortening and oil. There is no difference in finished moisture content of the bread either, between shortening and oil.

Fat is a tenderizer and as such it helps to provide the finished bread with a more tender eating crumb structure. Without any added fat, be it oil or shortening, the crumb will have a tough, more chewy characteristic (think of French bread) and as the amount of fat in the dough formula is increased the crumb structure will become progressively more tender eating, this is usually referred to as improved mastication properties when speaking about white pan breads where a tender eating crumb structure is a desirable characteristic. While at one time shortening used to be the most commonly used fat in white pan bread production, today oil in dome form is almost universally used due to its ability to be pumped and metered into the dough mixer(s) without the need to heat the fat or have heated delivery lines to the mixer. Just as in pizza dough production it is also common for the oil to be added to the dough after the dough has been mixed to some extent to reduce the possibility of the oil soaking into a portion of the flour thus rendering that portion of the flour incapable of producing gluten during the mixing process. What role does any fat (oil or shortening) play in white bread production? It helps to seal the cell structure for improved gas retention resulting in improved loaf volume characteristics, it also lubricates the dough which also contributes to improved loaf volume. It provides a method to regulate the mastication properties of the finished bread. The ability of a fat to retain flavors helps to provide depth and dimension to the flavor of the finished bread while at the same time imparting a type of mouthfeel to the bread which is perceived by the consumer as "richness". Since fat also inhibits moisture migration and moisture absorption the bread is not perceived as being as dry when fat is included in the dough formulation (moisture is not drawn from the mouth as readily). This is why breads made without fat are

commonly perceived as being "dry". Under certain circumstances the type and amount of fat can impact perceived crumb firmness, for example, oil is always a liquid, so if stored in a cool environment it will have essentially no impact upon the firmness of the finished loaf, on the other hand butter will recrystallize to nearly its pre-baked firmness as the loaf cools so if the loaf is stored at low temperatures (below 60F) it can result in a perceived firmer bread. This can be a critical quality aspect as many breads are frozen for distribution and then thawed at the point of sale, if the bread is not fully up to ambient store temperature when the consumer picks up the loaf they can perceive that the loaf is firmer and reject it for a softer loaf which is perceived as being fresher. The use of fat in the dough formulation can also impact the appearance of the finished loaf in that the baked crust will have a more attractive, lustrous hue to it (the color itself doesn't change but the way the crust reflects light does). Lastly the oil provides a source of enhanced lubrication for the slicer blades during the slicing and packaging operation.

Note: Butter is a standardized product so the properties of the butter can influence some of the above cited effects, for example many U.S. butters have a very narrow slip point so they go from rock hard to sloppy soft within a narrow temperature range while real Danish butter does not exhibit these characteristics, it is still soft and pliable at refrigerated temperatures while not turning soft and sloppy at elevated temperatures (this is where Danish pastry got its name from). Margarine, on the other hand, is a man made product which can be formulated for just about any application with any slip point desired which explains why it has a broad application in the U.S. baking industry. It can be formulated to mimic Danish butter, U.S. butter or it can be so soft as to allow it to be spread on fresh bread right out of the fridge while not melting into an oil at room temperature (you might know this as a "soft spread" margarine). A somewhat unique product to the bread making industry is what is referred to as a "liquid shortening", this is really nothing more than a plastic shortening to which oil has been incorporated and it usually also includes an anti-staling agent such as a blend of mono-diglycerides which work to help reduce the staling rate of the bread. Since these are usually added along with the fat it is a convenience factor to the baker to have these materials included into the liquid bread shortening.

One last thing, butter naturally has 18 to 20% water and table grade margarine, being formulated to replicate butter also has the same water content. In some applications this water has to be taken into account when calculating the total dough absorption, for the most part it isn't but at high fat levels (above 8%) many bakers will account for the water in the butter/margarine.

I probably missed a few points here but this should give you a pretty good idea of how these different fats function in a white bread system.

Tom Lehmann/The Dough Doctor  
648

### **Dough Clinic / Re: Pepperoni**

No, you didn't miss it, you're tight though, that subject is pretty far from my area of expertise. Outside of smoking some beef, venison pork and salmon and sugar curing half of a hog from time to time I don't have a clue about how commercially cured meats are made.

Tom Lehmann/The Dough Doctor  
647

### **Neapolitan Style / Re: Completely cover dough when proofing?**

I've seen a towel used quite successfully, a dry towel I might add. The dough did not dry out at all. This was when I was in the Philippines. There is sufficient

humidity in the air there (85+% R.H.) that the dough couldn't dry out if it wanted to, the towel was placed over the dough to keep the flies off of it, they are absolutely attracted to the fermentation aroma. There are places in the U.S. where you might get away with it in the summer but not in the winter too, for this reason I've always recommended that if you are going to cover your fermentation container with a towel, make it a damp towel, the moisture from the towel will help to humidify the air between the top of the dough and the towel which will go a long ways in preventing drying of the dough while its fermenting plus it will also keep the flies off of the dough. Back in the 50's it was common at pizzerias to mix a dough and leave it in the mixing bowl to ferment, the bowl was almost always covered with a wet/damp towel to keep drafts off of the dough and to prevent it from drying out. You have to remember that most pizzerias back then didn't have air conditioning so in the summer those kitchens were awfully humid and you could get away with it back then but today with air conditioning in that same shop it ain't gonna work the same way, not to mention the chatter that you're going to get from your food safety inspector.

Tom Lehmann/The Dough Doctor  
646

### **Detroit Style / Re: Lloyd Pans - Bottom Burning**

I make all of my thick crust and pan style pizzas (including Detroit style) in my home oven as 450F using a middle rack position.

When baking in a deck oven if I encounter problems with the bottom of the pizza getting too dark I just place a pizza screen under the pan to address the problem, it's amazing what a small air gap will do :)

Tom Lehmann/The Dough Doctor  
645

### **Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

Let's do the math..

Your dough formula calls for 10% total fat in the form of butter or margarine, both of these will consist of 80% fat and 20% water. So, in 10% butter/margarine there is 80% fat. 80% of ten is 8, so if you want to replace 10% butter or margarine with shortening you would only need to use 8% shortening, the other 2% can be added to the dough formula as additional water.

One of the problems with adding an emulsifier to a yeast raised donut dough formula is that it can result in a very gummy eating characteristic if the donut is consumed when still VERY fresh (that's when yeast raised donuts are at their best). It can also result in a higher than desired level of fat absorption.

Tom Lehmann/The Dough Doctor  
644

### **Off-Topic Foods / Re: Somewhere South.....**

I've been watching it since it first came on here (first episode here was last week/PBS).

Tom Lehmann/The Dough Doctor  
643

### **Dough Clinic / Re: Yeast question and ratios**

The type or amount of yeast used has nothing to do with the dough yield. The amount of yeast used can be varied as a means of regulating the amount of fermentation the dough receives during a period of time under specific temperature conditions. For example an emergency dough that will be ready to

make pizzas from in a matter of a couple to a few hours will contain significantly more yeast than a dough which will be fermented at room temperature for an extended period of time at room temperature. If the dough that is to be fermented for a long period of time at room temperature were made with the same yeast level as the emergency dough it would be extremely over fermented (excessively weak and have poor oven spring properties to name but a few of the over fermented characteristics). The three main types of yeast that are used are Compressed yeast (CY) aka fresh yeast/block yeast/wet yeast; Active dry yeast (ADY) aka dry yeast; and Instant dry yeast (IDY) aka instant yeast/bread machine yeast/quick rise yeast. Each of these yeast types are handled differently. CY can be crumbled and added directly into the flour or it can be suspended in the dough water with no special handling precautions, that's the good news, the bad news is that it must be kept under refrigeration and it is perishable with a shelf life that can range from a week or so to a few weeks depending upon the age of the yeast and the storage conditions. ADY is essentially the same yeast as CY but it has been dried to a lower moisture content for storage stability, because of this there is more leavening power pound for pound in ADY than there is in CY, thus to achieve fermentation similar to that of CY the ADY must be used at a lower level (lesser amount). The substitution for using ADY to replace CY is to use 50% of the CY as ADY (use 1/2 as much ADY as CY). IDY is again essentially the same as CY but it has been made using a different drying process and it has been dried to a moisture content even lower than that of ADY making it the most concentrated of the three on a pound for pound basis. When replacing CY with IDY the substitution is to use only 38% as much IDY as CY to get equivalent fermentation.

Is there a difference in performance of finished crust flavor between the three different yeast types? No, they have been engineered to have essentially identical performance characteristics.

Why one over the other? Convenience and shelf life stability. CY can be added to the dough very easily without any special handling or addition methods BUT it is quite perishable and must be kept refrigerated for the duration of its somewhat limited shelf life. ADY has a rather long shelf life (6-months unopened) but may be shorter after opening, on the down side it must be pre-hydrated and activated in 100F water prior to addition to the dough. IDY has a very long shelf life (1 to 2-years unopened and 30-days or more after opening), it is also easy to use as it does not require pre-hydration and activation prior to addition to the dough, instead it is just added (dry) right on top of the flour. The one exception to this is when the dough will be mixed by hand, the IDY then needs to be pre-hydrated in 95 to 100F water BUT it does NOT require activation as the ADY does. The one cautionary note regarding IDY is that it should never be put directly into the cold dough water, to do so will damage the yeast and result in a soft dough condition with diminished or inconsistent fermentation properties.

A quick search through the archives here will turn up quite a bit of excellent discussion on these different types of yeast.

That's it in a nutshell.

Tom Lehmann/The Dough Doctor  
642

### **Off-Topic Foods / Re: Somewhere South.....**

She does seem to come across as pretty arrogant but so do a lot of other "chefs" so I just dismiss that. I did like the first show on dumplings, I'm planning to make some cherry soup this summer with dumplings so it was of more than a passing interest to me. The second show on pickles and sauerkraut was also interesting as I was raised on a German farm, need I say more? ;D

And I might add that I developed a special fondness for Korean Kimchi during my many trips to Korea, I like to refer to it as Korean sauerkraut. I still remember when flying into Kimpo International Airport and making the final approach and looking out the window and seeing all those kimchi pots on the roof tops, GOOD STUFF! :drool:

Tom Lehmann/The Dough Doctor  
641

### **Neapolitan Style / Re: Completely cover dough when proofing?**

Yael;

We did a study a number of years ago on kitchen sanitation using the homes of a randomly selected group of our own employees. We did swab tests in the kitchen as well as the main bathroom, what we found was very interesting to say the least! The most dangerous room in the average house (from a microbial stand point) was the KITCHEN! The #1 offender was the kitchen towel and the #2 offender was the counter top. Based on this we looked at the "chef's" towel, the one that our television chefs love to wear at their waist. We found that it was a literal petri-dish of bacteria (moist and warm). Based on this we stopped using them at AIB and we included it in our instruction materials as well as restaurant audits. I keep thinking of the old adage "That which doesn't kill us will just make us stronger". There must be something to it.

Tom Lehmann/The Dough Doctor  
640

### **Off-Topic Foods / Re: Somewhere South.....**

We used it in combination with dried squid on pizza in preparation for the Asian Games in Seoul a number of years ago. We didn't have much of a selection in cheese so we just used a mozzarella cheese which was available there at the time. When combined with fresh vegetables the dried squid came across a lot like a mild version of anchovy. When the kimchi was added up front it lost too much of its character but when we added it right at the end of the bake it was delicious! I've not made any Korean themed pizzas for a very long time, you've got me to thinking now that when the garden comes in I might run over to one of our excellent Korean food stores (Fort Riley is very close by and has several excellent Korean grocery stores (just like the one shown in the last episode) so kimchi is always easy for me to get.

Damn! If we didn't have this "stay home" order in place and if the restaurants were open we could go out for some Korean dinner, oh well, maybe another day. :'(

Tom Lehmann/The Dough Doctor  
639

### **Dough Clinic / Re: novel yeast**

The yeast was released for commercial testing (I cannot disclose much more than that). To see if there were any of what we fondly refer to as "hidden" issues which are brought to light only with long term testing. I had planned to meet with the manufacturer at Pizza Expo this year (the only meeting I had time for) but we all know how that turned out, so I'm, going to have to make a telephone call to see where they're at with the yeast. When I looked at it originally I encountered a couple of little idiosyncrasies that I had not planned on but we were able to overcome those pretty quickly so I think it holds a lot of promise.

Tom Lehmann/The Dough Doctor  
638

## [\*\*Off-Topic Foods / Re: Somewhere South.....\*\*](#)

If you want to do a Korean or Asian themed pizza try using sesame oil and put some sesame seeds on the rim of the crust before baking (brush the edge with 1-egg white whipped into 1-pint of water, this will be a binder to hold the sesame seeds in place on the crust). If you use a pan or disk put the seeds on the pan/disk so they get baked into the dough..delicious!

Tom Lehmann/The Dough Doctor

637

## [\*\*Dough Clinic / Re: Freezing dough?\*\*](#)

Active cultures are commercially preserved by freezing but at much lower temperatures than you can do at home (-20 to -45F) but you can still freeze it as a means of preservation but because it is an active culture there is not real way of telling just how long it will remain viable. An interesting test would be to freeze it in an ice cube tray, individually package enough cubes to make a dough and then begin test baking at 30-day? intervals to see how well it holds up in your home freezer. Be sure to make and document (pictures) a control made with the sourdough before freezing.

Tom Lehmann/The Dough Doctor

636

## [\*\*Neapolitan Style / Re: Completely cover dough when proofing?\*\*](#)

We used to have cloth (canvas) sleeves in all of our overhead intermediate bread proofers but alas, no more due to the sanitation issues. Ditto for bagel boards too. The "kicker" is that some of the required stuff is actually worse than the cloth or wood! For example, wood bagel boards and bench tops are actually more sanitary than the "plastic" they dictate that we use today. To the best of my knowledge there was never a problem with cloth or wood (wet/damp cloth is a different story) but there was always a "potential" for a problem, if we went through life thinking about what might potentially happen we would never get out of bed in the morning, but then a car might "potentially" crash into your house hitting your bedroom and you, safe and secure bed, sometimes ya just can't win! :-D

Tom Lehmann/The Dough Doctor

635

## [\*\*Off-Topic Foods / Re: Somewhere South.....\*\*](#)

There was a M.A.S.H. (television series) episode where someone had stepped onto what was thought to be a land mine..Oops! Turned out to be the lid of a buried kimchi pot. :-D

Tom Lehmann/The Dough Doctor

634

## [\*\*Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter\*\*](#)

If it contains water it is part of the total dough absorption equation.

How are you using the simple syrup?

As for adding the sugar later in the mixing process, it sounds like you have a coarse granulation sugar that doesn't dissolve too readily. Can you get a finer/smaller particle size sugar?

You might also try adding half (5%) of the sugar right up front as this will not significantly interfere with gluten development and then add the second half about half way through the mixing process, then after mixing, allow the dough to rest for 10-minutes (this will give the late addition sugar a chance to further hydrate) and then mix/knead for an additional minute or so.

Tom Lehmann/The Dough Doctor  
633

### [\*\*Dough Clinic / Re: Freezing dough?\*\*](#)

Oops! I misread your post, thought you were wanting to freeze the starter. :-[  
There is no need to vacuum seal the frozen dough. It should be able to be frozen in  
a home freezer for up to 2-weeks without too much of an issue, after that you're on  
your own as viability becomes quite inconsistent.

To thaw the frozen dough, remove it from the freezer, unwrap and place into  
suitably sized container (lightly oiled), cover (but not air tight) and place in the  
fridge to thaw overnight, on the following day bring it from the fridge and allow to  
warm just until you can easily handle the dough then treat it just like you would  
fresh dough.

Tom Lehmann/The Dough Doctor  
632

### [\*\*Neapolitan Style / Re: Completely cover dough when proofing?\*\*](#)

Like I said, "If it doesn't kill us it just makes us stronger". ^^^

Tom Lehmann/The Dough Doctor  
631

### [\*\*Dough Clinic / Re: Yeast question and ratios\*\*](#)

We have some good charts here that will serve to guide you in determining how  
much yeast to use when fermenting under specific temperature conditions.

Tom Lehmann/The Dough Doctor  
630

### [\*\*Dough Ingredients / Re: Semolina Flour Shelf Life\*\*](#)

It keeps as well as any regular flour BUT whole-wheat flour is a totally DIFFERENT  
matter with a room temperature shelf life of 2 to 3-weeks on the outside.

Refrigerated or frozen not a problem. The issue is with the germ/germ oil that's  
present, it is not very stable at all wanting to go rancid at the drop of a hat.

Tom Lehmann/The Dough Doctor  
629

### [\*\*Dough Clinic / Re: Two Random Questions For The Dough Doctor\*\*](#)

When making large quantities of dough, the same container is almost universally  
used for both mixing and fermentation, unless you're taking hours to mix your  
dough the crust that forms on the bowl will not be so hard so as to be impossible to  
incorporate back into the dough.

The VCM (vertical cutter mixer) doesn't chop the gluten strands into little pieces, it  
does a fine job of developing the gluten. Horizontal versions of the VCM are used in  
some commercial bread making applications where thousands of pounds of bread  
dough are produced every day. The only problem with the smaller (vertical VCMs )  
is that they have no provision for cooling the dough so as multiple doughs are  
mixed the bowl needs to be periodically cooled using ice water or the friction  
created during the mixing process will drive the dough temperatures through the  
roof. Also, since dough mixing times are very short in the VCM it is VERY EASY to  
over mix a dough. Considering that a normal mixing time for a bread type dough is  
about 70-seconds you can see how 10-seconds can make a big difference. Pizza  
doughs are mixed even less! The same applies to the food processor when it comes  
to mixing the dough but the mixing times will be different.

Tom Lehmann/The Dough Doctor

**Neapolitan Style / Re: Completely cover dough when proofing?**

Yael;

Actually they have found that wood has certain anti-microbial properties while those scratches in the plastic are difficult to clean and constitute harborage for the bacteria.

Tom Lehmann/The Dough Doctor

627

**Dough Clinic / Re: LDMP**

From a functional standpoint the addition of diastatic malt to a dough made with a malted flour is a moot issue, however if the flour you're using is not malted the addition of diastatic malt to the dough will help to improve the fermentation of the dough by converting some of the starch into sugar as a nutrient for the yeast to feed upon, it will also provide a significant contribution to the crust color of the baked product. The amount to add will vary with the strength (degree L/intner value) of the diastatic malt product. Addition of excessive diastatic malt can result in a gummy crumb texture.

Non-diastatic (non-enzyme active) malt is really just another type of sugar that can be added to the dough. It is unique from other sugars in that it can provide a very unique "malty" (think malted milk balls/candy) at higher levels or a more subdued flavor at lower levels.

Tom Lehmann/The Dough Doctor

626

**Dough Clinic / Re: The effect of acids on dough strength?**

What it sounds like you're experiencing is what we call a "bucky" dough condition. While acids do indeed break down proteins, there is a point in the degradation of the protein where just before fully relaxing they tighten up (think of it like a muscle cramp) making the dough all but impossible to do anything with. At this point the only salvation for the dough is to put it back into the mixer and remix the dough which seems to help quite a bit.

Now, if by "tenacious" you mean the dough was pliable but exhibited a lot of memory (snap back) but didn't exhibit any major tearing when trying to open it, a condition like that would be more indicative of an under fermented dough. This could be due to a number of things but my first suspicion would be a poor performing sourdough starter. A good way to test for this would be to make another dough using the same starter but increase the amount of starter added to the dough by at least 25%. My experience has been that plastic starters (like sponges) do not acidify as well or as quickly as a liquid starter does. This is because the flour is more concentrated and it is the flour that tends to buffer the system from pH change as measured by TTA (titratable acidity). You'll have the same acids present just in less quantity and quantity is what it's all about.

As for hard water v/s soft water, we have discussed this topic many times. The calcium content in hard water acts to strengthen the gluten forming proteins in wheat flour, it also acts as a buffer to pH change. These changes are not dramatic but they are there. In commercial operations where we have stores or bakeries in different areas or municipalities with variances in hard and soft water we adjust for this by including 0.25% calcium sulfate in all of the dough formulas by doing this regardless of the hardness of the water being used, the dough reacts in the same manner as if all of the water was hard water.

Tom Lehmann/The Dough Doctor

625

## [\*\*Chitchat / Re: A pizza question that's got everyone at work bamboozled\*\*](#)

A man after my own heart! Use math!

3.9524 6-inch pizzas, you will have to decide who gets the one with less dough in the crust. :-D

Tom Lehmann/The Dough Doctor

624

## [\*\*Dough Clinic / Re: Two Random Questions For The Dough Doctor\*\*](#)

Rolls;

If you watch the dough being mixed in a food processor the blades do cut through the dough but at the same time the dough is being rolled around/moved, otherwise the dough would eventually be pureed. Additionally, those gluten strands that we talk about are really quite small and bond back together again very rapidly. This is the reason why doughs that are made by high speed mixing processes tend to be a little tacky or some might say sticky immediately after mixing but literally within seconds take on a more normal feel.

Tom Lehmann/The Dough Doctor

623

## [\*\*Dough Clinic / Re: The effect of acids on dough strength?\*\*](#)

Ascorbic acid is very quickly converted to dehydro-ascorbic acid which is an oxidant, much like ADA (azodicarbonamide, or potassium bromate) but much faster acting. How fast? It has fully reacted before the dough leaves the mixing bowl, so look at AA as an acid in this application, instead focus on Lactic Acid, Acetic Acid, Citric Acid, Fumaric Acid, and the like.

After mixing the dough, how much fermentation (at what temperature) do you give the dough balls before opening into skins?

Your friend is correct about both mixing (mix just until the dough begins to smooth out, and don't try to make cannon balls out of the dough when rounding)

Tom Lehmann/The Dough Doctor

622

## [\*\*Stones/tiles/steel, Pans & Accessories / Re: Did I just ruin my baking Steel?\*\*](#)

This is one of those cases where dark is good and darker is even better!

Don't worry, you're good to go! :chef:

Tom Lehmann/The Dough Doctor

621

## [\*\*Dough Clinic / Re: Salt for a tougher dough?\*\*](#)

The enzymes and acids in the sourdough starter denature the proteins and while it is true that salt will strengthen the gluten forming proteins if they have been denatured there is nothing left to strengthen. True, all of the protein has not been denatured so you will get some strengthening, but probably not as much as you might be hoping for.

You might try adding 2 or 3% vital wheat gluten to see if that helps any.

Tom Lehmann/The Dough Doctor

620

## [\*\*Other Types / Re: Anyone ever tackle pull apart or rip apart pizza?\*\*](#)

We used to call them "pizza rolls". We make a variation of this at AJ's using just a piece of cheese and call them "cheese bricks". We got the idea from the Totino's

Pizza Rolls back in the 60's.  
Tom Lehmann/The Dough Doctor  
619

**New York Style / Re: Too watery fresh mozz**

Have you tried putting it on later in the bake?  
Tom Lehmann/The Dough Doctor  
618

**Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

Yes, that's why yeast raised donut doughs are only bulk fermented for 1-hour.  
Tom Lehmann/The Dough Doctor  
617

**Neapolitan Style / Re: Completely cover dough when proofing?**

What it boils down to is that in our own homes we can pretty well do whatever we please, and if we get sick, well that's our problem but if you're a commercial food establishment let's see? How many people could you potentially sicken, or perhaps worse? That's where the issue is at.

When I was a kid growing up on the farm we used to make potato salad all the time, we never refrigerated it, just laid a towel over the bowl on the table for the next meal, think about that..POTATO SALAD! Most every summer I would get what we called the "summer flu", it wasn't pleasant but I always managed to live through it. It wasn't until I took my first class in food pathogens and food safety that I found out that it wasn't a summer flu (whatever that is) that I had, it was a plain and simple case of food poisoning, most likely due to staphylococcus aureus (staphylococcal food poisoning). It wasn't a big deal and it never made the headlines but today, if that were to happen in any food establishment we would be reading about it in headlines, that's the type of publicity that a food establishment really doesn't want which is why they usually do their best to take the necessary precautions to prevent this from happening.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
616

**Neapolitan Style / Re: Completely cover dough when proofing?**

It really doesn't require much at all, what you are probably observing is the effect of pressure on the dough which inhibits its height in the container. A larger size container will not demonstrate this as well as a smaller size container (assuming the same amount of dough in both containers and all things equal).

Tom Lehmann/The Dough Doctor  
615

**Dough Clinic / Re: Flour and water**

The only real way to determine maximum dough absorption is by conducting a series of test bakes with each bake identical with the exception of a progressively higher dough absorption for each dough. I recommend increasing the dough absorption in increments of 2% until you reach a level where you either cannot handle the dough anymore or the dough fails to perform at giving you the finished product characteristics you're looking for.

The "W" factor has little to do with it.  
Tom Lehmann/The Dough Doctor  
614

## **Dough Clinic / Re: Making bagel dough with 00 flour**

N.Y. style kettled bagels are typically made using a high protein content flour (13 to 14+%) which provides both the shape as well as the chewy eating characteristics. I've personally never made bagels using a "00" flour but there are many different types of "00" flour as well as the GM "00" type that you have. What is the protein content of your flour? That should tell a big part of the story.

Here is a basic bagel dough formula.

Flour: 100%

Salt: 2%

Sugar: 0.6%

Water: 53%

Yeast (CY) 0.75%

Mix: Mix in low speed for 2-minutes then in 2nd. speed if possible for about 10-minutes, if this is not possible mix for about 16-minutes in low speed. The dough is going to be VERY TOUGH.

Targer finished dough temperature is 76 to 78F.

Take the dough to the bench, remove from bowl and allow to rest for 5-minutes.

Then scale into 3-ounce pieces. After all of the dough is scaled begin shaping each piece into a rope about 6 to 7-inches long, wrap around your first three fingers to form a ring, then seal the two ends together (you can do this by rolling the formed bagel on the bench with the seam facing down. Place onto pans heavily dusted with corn meal, and place in the fridge for 24-hours (DO NOT, DO NOT COVER IN ANY WAY).

Remove the formed bagels from the fridge and allow to set AT room temperature for 20 to 30-minutes (DO NOT OVER PROOF).

Carefully place proofed bagels into boiling water to which 2.5% non-diastatic malt syrup has been added (2.5% based on the weight of the boiling water). The bagels will sink to the bottom of the water pot but should float in about 30-seconds. Allow bagels to boil for 30-seconds on each side then remove from the water using a screen or slotted spoon and place into a cold water bath for a few seconds, remove from the cold water and place onto an oiled parchment paper lined pan (a perforated pan is preferred, but lacking that you can bake on a solid oven deck or on a large pizza screen covered with the oiled parchment paper. Toppings can be applied at the time the bagels are about to be placed into the oven for baking. The bagels should be baked at 400F for about 20 to 25-minutes.

Tom Lehmann/The Dough Doctor

613

## **Dough Clinic / Re: Making bagel dough with 00 flour**

To use powder in place of syrup use 80% as much powder as syrup. Like the name implies it's a "basic formula", sure, you can add some non-diastatic malt powder to replace the sugar in the dough formula if you want to, not a problem.

Tom Lehmann/The Dough Doctor

612

## **Chitchat / Re: Haircuts in an Age of Lockdowns and Self-isolation**

I've sported a full beard (for over 20-years now) and a flat top (something you don't see too often these days) since the 60's. Many barbers today don't even know how to cut a flat top so I'm getting ready to change over to a crew cut when my flat top gets too shaggy. When I do, that'll probably be the end of my visits to a barber shop.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Making bagel dough with 00 flour**

12% protein should work OK for you. Cover = apples: Uncovered = bagels

When you make them be sure to cover a few to see for yourself.

I was once on the precipice of being charged with manslaughter during one of our bagel classes after I asked one of our students to take a full rack of just formed bagel dough to the retarder/cooler, little did I know that when he did so he also covered all of the racks of dough with rack bags, by the following morning the hole has all but disappeared and when they baked they actually rolled over! Being the instructor I had to retain my composure so we made it into a "learning lesson", not wanting to lose several hundred bagels I said, "Let's try something different to see what happens", I fired up one of our air impingement ovens (375F) and we baked a few of the "bagel bombs) just to see what would happen. You have heard me say many times that we can learn from our mistakes as well as our successes, well those bagels turned out ABSOLUTELY BEAUTIFUL, great shape (small hole more like a steamed bagel) but otherwise great! If there was a complaint or fault with the bagels it was with the color/appearance of the bagels after baking, they had a bright shine (more like that on a pretzel) and they looked almost like a plastic bagel. We found out later that this was the first successful baking of bagels in an air impingement oven. Why? Because prior to this everyone was following the correct dough management for making bagels. It's ironic that both bagels and pretzels are theorized to have been made accidentally when the baker's formed dough piece/pieces fell off of the oven peel and landed in the bucket of water used to swab out the oven. So another accident took the bagel to yet another level.

Tom Lehmann/The Dough Doctor

610

**Chitchat / Re: Haircuts in an Age of Lockdowns and Self-isolation**

Peter;

Now's the time to give it a "whirl". Even if it ends up looking like the dog chewed your hair off nobody will even notice, that seems to be the new fashionable look today, and if anybody should comment, just tell them its the new "social distancing" look. :-D

Tom Lehmann/The Dough Doctor

609

**Dough Clinic / Re: Creating something new and standardised.**

Moneeb;

I see a number of issues here with what you are doing. The dough formula is out of balance as is the dough management procedure for a P.J. style of deep-dish pizza.

Here is your dough formula in bakers percent along with suggested changes:

Flour: 100%

C.Y.: 5% (reduce to 1%18-grams)

Water: 55.5% (adjust temperature to 60F/15.5C)

Oil: 5.5%

Salt: 1.38% (increase to 2%/36-grams)

Sugar: 0.5% (increase to 3%/54-grams)

Suggested changes to your dough management procedure:

Immediately after mixing cut into desired weight pieces, form into balls, lightly oil each dough ball and place into individual plastic bread type bags, pull the bag slightly snug to the dough ball and twist the open end into a pony tail, tuck the

pony tail under the dough ball as you place it in the cooler to cold ferment for at least 24-hours. Remove from cooler and allow the temper AT (AT) room temperature until the internal dough ball temperature reaches 50F/10C, roll the bag down around the dough ball and invert the bag allowing the dough ball to fall onto a floured surface, flour both sides of the dough ball and shape to fit the pan, place into a dark colored, deep-dish pan that has been well oiled, cover the pans and allow to final proof/tide until the dough has risen about 1/2-inch/12.5-mm, then place in the fridge for storage until needed. Note: The panned dough will not keep from one day to the next. You can incorporate any left over risen dough into fresh dough if the amount does not exceed 15% of the fresh dough weight, or you can make it into another product like bread sticks or garlic knots.

Question: What is a "convertible" conveyor belt oven? Do you mean an air impingement oven?

Tom Lehmann/The Dough Doctor  
608

### **Dough Clinic / Re: New Oven Blues**

Three things come to mind here;

- 1) Diameter of baking container (skillet/Dutch oven, not sure which you're using) as compared to the inside dimensions of the oven chamber.
- 2) Bottom heat only. Bread typically does not like to be baked with a lot of bottom heat (you just found that out) :)
- 3) Bad door seals allowing too much heat to escape from the oven.

Assuming you didn't use a shoe horn to get the pan in the oven we can set that one aside for now unless you have something to add?

Your IR thermometer should tell you if the door seals are sealing as they should, let's assume they are.

That leaves the bottom heat only explanation (#2). Here is a test for that theory, move one of the racks to a high position (hopefully you have more than one rack in your oven?) place some bricks/stones/ anything that will absorb a lot of heat and release and release it back into the oven. Preheat the oven (you will need to make sure the bricks, etc. are fully up to temperature) then place the bread in the oven and turn the temperature down to 400F. Allow the bread to bake (I'm guessing 20-minutes?) undisturbed before checking it. If you see any kind of improvement (no charred bottom and at least some top crust color) this would be an indication that you're on the right track. If not we'll need to rethink. When I used to make camp bread using my Dutch oven I used to put some hot coals on top of the lid to get the necessary top heat for crust color development.

Tom Lehmann/The Dough Doctor  
607

### **Prep Equipment / Re: question about Doughmate artisan box size**

That's the reason why I like to ball immediately after mixing, place into box, wipe the top of the dough balls with oil and place them directly into the cooler/fridge. Once the dough has proofed like that it is hard to cool it down at a consistent rate so you end up with fermentation varied all over the board.

Tom Lehmann/The Dough Doctor  
606

### **Dough Clinic / Re: Creating something new and standardised.**

In that case I think this may be your best approach;  
Prepare a sponge (50% of the flour and 50% of the total dough absorption/water

weight plus 1/3 of the total yeast). Use 70F/21C water, mix for 4-minutes (target temperature is 75 to 78F/23.8 to 25.5C) and set aside to ferment at room temperature for 4-hours.

Add fermented sponge to the mixing bowl along with the other ingredients (except for the oil), mix at low speed for 2-minutes and add the oil gradually, continue mixing at low speed for another minute then mix at medium speed for 5 to 8-minutes or just until the dough takes on a smooth appearance.

From this point process the dough as you normally do.

Note:

I do not recommend using semolina flour or any of the "additives" mentioned at this time.

If you want the dough to proof/rise faster in the pan increase the dough temperature, do not increase the yeast any more than what it already is. 5% CY is a LOT of yeast.

Your dough as you have presented is severely lacking in fermentation which is why I'm suggesting the use of a fermented sponge to provide additional flavor and dough conditioning.

If you need more crust color you will need to increase the sugar level (see my previous recommendation).

You are baking your pizzas at 500F, if you are trying to make a pizza similar to P.J.s have you tried using 450F like P.J. s does?

Tom Lehmann/The Dough Doctor

605

### **Dough Clinic / Re: Making bagel dough with 00 flour**

We made them all the time, just use a HIGH COLOR CHEDDAR CHEESE POWDER and add it right on top of the flour just like any other dry ingredient, then mix the dough in the normal manner. I'm betting that you didn't add the necessary additional water to compensate for the dry cheese powder..right? I don't remember what the water correction was for the cheese powder but you can determine it for yourself very easily by placing a known weight in a small bowl and SLOWLY adding water while stirring JUST until a thick paste is formed, then divide the weight of water added by the weight of the cheese powder and multiply by 100. This will give you the percent additional water to add based on the weight of cheese powder you're adding. For the product that we were using 5 to 8% worked pretty well for us.

By the way, this is the same cheese powder that is used on Cheetos. When you look at it you will say "No Way!" the stuff is almost fluorescent, but trust me, nothing else will give you the color you're looking for. Flavor, like you said, it ain't nothin' to write home to Mama about.

Tom Lehmann/The Dough Doctor

604

### **Dough Ingredients / Re: yeast**

Go to Italy and/or Egypt and start a sourdough starter using spelt (the most commonly used grain in the region in "ancient" times), and hopefully whatever you get growing will be similar to what might have been fed to those who were building the pyramids, or painting pictures on walls, but keep in mind that environmentally, things have changed over the last 2,000-years or so it's still going to be a bit of a crap shoot if you end up with something original or not.

Tom Lehmann/The Dough Doctor

603

## [\*\*Prep Equipment / Re: question about Doughmate artisan box size\*\*](#)

A lump or ball of dough will not cool down very well at all, especially if it is HOT. I suggest flattening the dough out as much as possible making it thinner and with a greater surface area, it will cool faster and more thoroughly thus preventing more damage to the dough due to over fermentation.

Tom Lehmann/The Dough Doctor

602

## [\*\*Dough Clinic / Re: Dough management question - sough dough starter\*\*](#)

When you say the dough was hard to open, in what way was it hard to open? From your pictures it looks as if it should have been pretty easy to open at 24-hours. You also mention that you mixed the dough until it came together as a ball but it appears that you did not mix it until the dough just began to take on a smooth appearance, this would explain a sticky dough off of the mixer and the roughness as well as tearing seen in the first dough ball picture. If you are experiencing an excessively soft and weak dough condition it is entirely possible that your starter is stronger than you might think it is so you would need to use less to compensate for this.

Also, regarding your dough formula, when showing the ingredient percentages you should be showing the total dough absorption percent in bakers percent. You are showing it in "true %" but not in bakers %. Bakers % for absorption = total weight of all water added to the dough divided by the total flour weight in the dough (do not include the flour in the starter) X 100.

Tom Lehmann/The Dough Doctor

601

## [\*\*Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter\*\*](#)

You should not be proofing the donuts on paper, this is why we always proof our donuts on a tight mesh 6mm X 6mm wire screen as this allows for air circulation to the bottom side of the dount. I also think you would be better served having more oil in the frying wok. The donuts DO look a lot better now! :chef:

Tom Lehmann/The Dough Doctor

600

## [\*\*Dough Clinic / Re: I need some help altering my dough recipe to cook at a higher temperature.\*\*](#)

I'd like to help you but I really need to know what you are presently doing so I can make some effective recommendations. Please provide your complete dough formula and dough management procedure (be sure to include all times, temperatures, dough weights and pizza sizes). In any deck oven the best you are going to get is about a 7 to 8-minute bake, and this might be stretching it a bit.

Tom Lehmann/The Dough Doctor

599

## [\*\*Dough Clinic / Re: Does my dough look "off" after Kitchen Aid and folding?\*\*](#)

Regardless of how long the dough was mixed, it is still under mixed. Do you have a plain "J" aka "C" hook or do you have a reverse spiral dough arm for your mixer? Unless you have a reverse spiral dough arm you may never be able to mix a small size dough and achieve any significant level of gluten development. Remember, you should not go by a time recommendation, instead always mix just until the dough begins to take on a smooth appearance.

Tom Lehmann/The Dough Doctor

598

## [\*\*General Pizza Making / Re: Does my dough look "off" after Kitchen Aid and folding?\*\*](#)

31 and you got feed back. :-D  
Tom Lehmann/The Dough Doctor  
597

## [\*\*Dough Ingredients / Re: Fleischmann's 1/2s pizza crust yeast?\*\*](#)

The yeast is for leavening and the L-cysteine is for making a dough that is easy to mix and exhibits little or no dough memory/snap-back when opening the dough into a skin without any real fermentation time on the dough. If it were me, I'd have formulated that product using glutathione aka dead yeast instead of L-cysteine, that way it would not have shown up on the label, or at the very least it would have had to be labeled as containing both live and dead yeast cultures, either way it would sound a lot more consumer friendly.

Probably wouldn't hurt to have a few packets of this stuff on hand just in case you want to experiment with making a short time dough, like equal amounts of the Pizza Yeast and regular yeast in conjunction with a total fermentation time of 4 to 8-hours as opposed to 24 or more hours.

Tom Lehmann/The Dough Doctor  
596

## [\*\*Dough Clinic / Re: Does my dough look "off" after Kitchen Aid and folding?\*\*](#)

Dough is typically a bit more sticky and may tend to tear a bit more but otherwise manageable.

Tom Lehmann/The Dough Doctor  
595

## [\*\*Dough Clinic / Re: Does my dough look "off" after Kitchen Aid and folding?\*\*](#)

Can you mix your dough at a higher speed? At a higher speed centrifugal force will pull the dough off of the hook providing better mixing action.

Tom Lehmann/The Dough Doctor  
594

## [\*\*Dough Clinic / Re: Fermentation timing factors\*\*](#)

I think I'll rack this one up to another "Don't believe everything you read on the internet". You use a fridge, at accepted refrigeration temperatures (34 to 40F) because you want to significantly slow the rate of fermentation to allow holding the dough in a viable condition for a period of time (hours to days). Due to the insulating properties of the dough placing it in the fridge will not just immediately stop the fermentation process like turning off a light switch, but it will significantly slow it allowing for gradual fermentation as well as time for the acids and enzymes associated with the fermentation process to work on the dough to develop flavor. The higher the storage temperature the faster the fermentation rate. A wine fridge at 50F WILL NOT slow fermentation as well as a refrigerator at 38F. This doesn't mean that a wine fridge cannot be used to store dough in, it certainly can, just like you can store the dough at room temperature if you want to BUT the dough has to be specifically formulated to allow for this, just like you have to specifically formulate the dough if you want to hold it at room temperature. One also has to be cognizant of the fact that when the dough is fermented at different temperatures you will get a different flavor imparted to the finished product. Remember that temperature is the "driver" of fermentation, all things equal, the higher the temperature the faster the rate of fermentation, that's a fact of life, and it also

explains why the dough showed more signs of advanced fermentation when stored in the wine cooler (50F) than it did previously when stored in the fridge after the same fermentation time.

Tom Lehmann/The Dough Doctor  
593

### [\*\*Dough Clinic / Re: Over Worked Dough?\*\*](#)

I agree with Foreplease, that the dough balls needed more rest time. Whenever you encounter something like that just step back and give the dough more time, it will eventually relax and open very easily.

Tom Lehmann/The Dough Doctor  
592

### [\*\*Dough Clinic / Re: Active dry yeast vs fresh yeast ratio?\*\*](#)

To replace ADY with CY use twice as much CY.

By the way, the ADY really should be pre-hydrated and activated in 100F water prior to addition to the dough to get the best performance from it. IDY can be added just like CY, just add it right on top of the flour as long as you are machine mixing, if you're hand mixing the IDY needs to be pre-hydrated in 95F water (no need to activate) prior to addition to the dough.

Tom Lehmann/The Dough Doctor  
591

### [\*\*Newbie Topics / Re: How do I modify my pizza making if I have active dry yeast for bread machines?\*\*](#)

If you have ADY pre-hydrate and activate it prior to addition to the dough. Put the ADY in about 5 times its weight of 100F water (use a thermometer), stir to suspend the yeast in the water and allow to activate for 10-minutes, then stir well and add to the dough water, rinse out the container in the dough water too and you're ready to go.

Tom Lehmann/The Dough Doctor  
590

### [\*\*Dough Clinic / Re: Creating something new and standardised.\*\*](#)

IDY, ADY and CY all perform essentially the same when used at the correct substitution levels so there is no real difference between them. Many people prefer to use IDY due to its ease of use, long shelf life, and uniformity. Mixing times normally run around 8 to 10-minutes but this is HIGHLY variable and dependent upon the type of mixer being used as well as the type of agitator the mixer is equipped with.

Just mix the dough until it begins to take on a smooth appearance, that's all the mixing you need for a pizza dough.

Tom Lehmann/The Dough Doctor  
589

### [\*\*Dough Clinic / Re: Fermentation timing factors\*\*](#)

A small amount of sugar will provide a very slight increase in the fermentation rate, but after that it will slow it down but sustain the yeast for a longer fermentation time.

Tom Lehmann/The Dough Doctor  
588

### [\*\*Dough Ingredients / Re: Replacing AP with All Trumps?\*\*](#)

The A.T. flour is one of the highest protein flours we typically work with as it is 14+% protein content. Not knowing the protein content of your AP flour (the nutritional panel on the bag will give you a good indication of what it is) I can't be too specific on the changes but I would expect the following:

Longer fermentation time.

Increased fat level.

Increase in dough absorption.

More rest times or a longer rest time needed when fitting the dough into the pan.

Tom Lehmann/The Dough Doctor

587

### [\*\*Dough Clinic / Re: Fermentation timing factors\*\*](#)

Not that I'm aware of.

Tom Lehmann/The Dough Doctor

586

### [\*\*Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter\*\*](#)

Stainless steel like the one in the lower right hand corner. DO NOT take the donuts off of the screen, instead place the donuts and screen all into the frying fat (about 100-mm deep, the donuts will float off of the screen on their own, then use your frying sticks to turn the donuts. If you put handles onto the screen you can just lift the screen out with the handles and the donuts come along for the ride, allow to dip for a minute (literally) and apply glaze to the donuts (they should still be so hot as to be unpleasant to hold in your hand).

Tom Lehmann/The Dough Doctor

585

### [\*\*Dough Clinic / Re: Doubling NY style dough recipe?\*\*](#)

Dough "recipes" based on volumetric portions such as teaspoons, tablespoons, cups, coffee cans, etc., typically have to be modified in some way when increasing or decreasing the size of the dough/recipe but dough "formulas" which are expressed in bakers percent and based on weight measurements such as pounds, ounces, kilograms, grams, etc., can be easily manipulated in size without any dough formulation changes. This is but one reason why the majority of pizza makers here work with dough formulas as opposed to dough recipes.

If you want to learn more about bakers percent I'm sure a search of archived posts will provide additional information, I've also written articles of the use of bakers percent too.

Tom Lehmann/The Dough Doctor

584

### [\*\*Dough Clinic / Re: Fermentation timing factors\*\*](#)

Absolutely! The temperature rise is due to the heat of metabolism resulting in a temperature gain of approximately 1F per hour.

Tom Lehmann/The Dough Doctor

583

### [\*\*Dough Ingredients / Re: Replacing AP with All Trumps?\*\*](#)

Proofing comes after the dough is placed into the pan, I think you are referring to fermentation?

The very first item on my list of suggested changes was indeed "longer fermentation " time.

Due to the higher protein content the dough will require a higher dough absorption

and you will still need to allow the dough to ferment for a longer time to help "mellow" condition/break down, some of that protein, failure to do so will result in a dough that is tougher, more elastic and harder to work with. It will also exhibit more dough memory characteristics when you are trying to shape the dough to the pan. With proper adjustments to the dough formula and dough management procedure you can get your All Trumps flour to perform similarly to the 11% protein all purpose flour.

Tom Lehmann/The Dough Doctor

582

### **Dough Ingredients / Re: Replacing AP with All Trumps?**

No, just mix the dough until it begins to take on a smooth appearance, the amount of mixing you put into the dough will have no impact upon the toughness/chewiness of the finished crust BUT it can/will impact how the dough handles. By the way, I've never had to proof a pan dough for more than about 75-minutes on the outside, most are in the 45 to 60-minute range. If I'm in a pizzeria where we're making a lot of pizzas we proof for only about 20-minutes and then take to the cooler where they continue to proof to the required height and then go into hibernation until needed, this way we can use them directly from the cooler. That's how P.H. used to make all of their pan pizzas at one time so it's not a new process. If your yeast level is too low it's possible that you can end up with a dreaded gum line just under the sauce which is why we don't like to manage fermentation by reducing the yeast level.

Tom Lehmann/The Dough Doctor

581

### **Dough Clinic / Re: My dough burnt, why?**

The stickiness was most likely the result of the hand kneading process which resulted in an under mixed dough condition. You might try using an autolyze made with all of the water and 75% of the flour. Allow it to hydrate the flour for 1-hour and then add the remainder of the dough ingredients and begin your hand mixing and kneading process.

Without knowing more about your dough formula and process that's about the best advice I can offer for now.

Tom Lehmann/The Dough Doctor

580

### **Dough Clinic / Re: Trying to Tweak An "Ultimate Pizza Dough Recipe"**

In preparation for your experiments to improve your pizza I would highly suggest that you first purchase a good electronic scale that can be used to weigh your ingredients allowing you to convert your "recipe" into a dough formula based on actual weight measures as opposed to volumetric portions. Also pick up a simple dial/stem type thermometer as it will come in handy for setting your water temperature and measuring dough temperature. With these two handy tools you'll be ready to have fun getting the finished pizza characteristics that you're looking for.

Tom Lehmann/The Dough Doctor

579

### **Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe**

I've also got a good Hoagie bun formula and procedure posted in the Recipe Bank at the PMQ web site <[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor  
578

### **Dough Clinic / Re: Crust Full of Air**

There are those here that might be willing to do a DIY home root canal for those characteristics! :-D

But since you asked;

Mix the dough for an additional 3-minutes.

Reduce the dough absorption by 5%

Reduce the yeast by 25%

With these changes you should see more of a bread like crumb structure in your finished crusts.

With all of that said, it would help to know what your present dough formula and dough management procedure is, but lacking that information give the above a try and let us know if you see any improvement.

Tom Lehmann/The Dough Doctor  
577

### **Dough Clinic / Re: Air bubbles to big**

While some will use a "bubble popper" to deflate the bubbles as they begin to form (my bubble popper is nothing more than a piece of 6.5-mm diameter aluminum rod with a 90 degree bend on one end leaving a 50-mm leg which I ground a point on, the other end is bent into a "U" shape to form a handle). Most pizzerias will have one of these hanging near their oven for use just in case a bubble might get out of hand. Some will also address the bubble issue from a dough formula/dough management procedure aspect. In your specific case, while you didn't provide any information on actual dough temps, I tend to agree that the issue might be due to an over fermented dough condition. To test this theory make another dough using a 25% reduction in total fermentation time. To do this just reduce the fermentation time by 25% at each of the fermentation stages. If you see an improvement you can fine tune the fermentation further, if not we will have to look at things from a different perspective but we'll need to know what the dough looks like after each fermentation stage as well as internal dough temps from mixing until you're ready to open the dough into skins for dressing.

Tom Lehmann/The Dough Doctor  
576

### **Newbie Topics / Re: How to get consistent**

First of all, it doesn't appear that you are suspending the IDY in a small portion of 95F water prior to addition to the dough. Second, you don't say if you are covering the container when you place it in the fridge (you should oil the top of the dough and leave it UNCOVERED until the internal dough ball temperature reaches 50 to 55F (I normally target 50F, just be consistent with the temperature), after the dough ball reaches the targeted temperature cover it and kiss it good night. When removing the dough from the fridge you should leave it in the fermentation container (still covered) and allow the dough balls to warm to 55 to 60F (internal dough ball temperature) before opening them into skins.

Try these changes to your process and let us know if you see any improvement.  
Tom Lehmann/The Dough Doctor  
575

### **Dough Clinic / Re: Crust Full of Air**

From what is being described, I have only seen something like this once before and

it was the result of a very hot and weak dough.

We really need to see your dough formula and dough management procedure and be sure to include the dough temperature after mixing and at points along the way. If your dough is getting to a temperature of 90F/32.2C or more at any time this would validate the above as a potential cause.

Tom Lehmann/The Dough Doctor

574

### **Dough Clinic / Re: Hand mixing vs Commercial mixer**

What kind of mixer are we talking about? A picture of the mixer and mixing attachment would be helpful.

Also, how are you mixing the dough? Speed and time? What is the finished (mixed) dough temperature?

Tom Lehmann/The Dough Doctor

573

### **Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe**

NO! Use IDY at only 40% of the CY amount (weight). To use the IDY just add it dry right on top of the flour.

Tom Lehmann/The Dough Doctor

572

### **Dough Clinic / Re: Trying to Tweak An "Ultimate Pizza Dough Recipe"**

Ditch the "eyeballing" suspend the yeast in a known quantity of water and subdivide. For example, if you want 0.5-gram of yeast just put 1-gram into 99-grams of water (95 to 100F) stir well to suspend the yeast, then measure 50-grams of the suspension and you will have something very close to 0.5-gram of yeast. Be sure to include the water in the suspension as part of the total dough water.

Tom Lehmann/The Dough Doctor

571

### **Newbie Topics / Re: How to get consistent**

IDY does need to be per-hydrated when the dough is to be mixed by HAND, but it is not necessary when the dough is to be mixed by MACHINE. Also, IDY does not need to be activated as ADY does. Notice that I said to suspend it in a small portion of 95F water, as soon as the yeast is suspended it can be added to the dough water (you don't need to wait 10-minutes to activate the IDY as you do for ADY)

Details, details, details! :-D

Tom Lehmann/The Dough Doctor

570

### **Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe**

Let us know how it turns out with the higher yeast level. Be sure to make a few diagonal "French" cuts across the top of each bun immediately before you place it in the oven as this will allow for more uniform expansion of the dough, especially with the high yeast level.

Tom Lehmann/The Dough Doctor

569

### **Dough Clinic / Re: My dough burnt, why?**

Warm water? Hand warm water ???

In all of the testing that we did with our students we found that "hand warm" water was actually too warm/hot. Your skin temperature is just under 98.6F so "warm" would be even hotter. Typical dough water temperature is around 75F. There is a possibility that your dough temperature is too hot which results in a sticky dough condition at the very least. Time to break out the old thermometer. :-D

Tom Lehmann/The Dough Doctor  
568

### [\*\*Neapolitan Style / Re: Hand mixing vs Commercial mixer\*\*](#)

"Purdy, purdy, purdy"! :drool:

Try mixing at low speed to incorporate the ingredients for about 2-minutes, then go to the next higher speed for the actual development of the dough. Be sure to mix the dough to a point where its "JUST" beginning to take on a smooth appearance.

Tom Lehmann/The Dough Doctor  
567

### [\*\*Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe\*\*](#)

Re-read.."immediately before you place it in the oven".

Tom Lehmann/The Dough Doctor  
566

### [\*\*Newbie Topics / Re: Please help my white pizza bottom!! Should I consider a baking steel/stone?\*\*](#)

The top crust doesn't look like it has much color either. Are you using a "00" flour?

Tom Lehmann/The Dough Doctor  
565

### [\*\*Dough Clinic / Re: Cornicione\*\*](#)

The main factors are:

Maximize dough absorption.

Optimize dough fermentation.

Open the dough into a skin by hand and do it properly.

Correct baking temperature for the type of crust being made.

Tom Lehmann/The Dough Doctor  
564

### [\*\*Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe\*\*](#)

Not too bad for the first horse out of the gate. :)

The next time you make them form them with blunt ends and allow to final proof for a longer time.

Here is the correct way to form them:

Form the dough piece into a rectangle about 10-inches wide and 1/4-inch thick, fold the two ends so they just touch in the middle, and roll up like a jelly roll, set aside (seam side down) to rest for a few minutes, then roll them under your palms to 8-inches in length, place onto pans for final proofing with the seam side down.

Note: If the dough doesn't roll well LIGHTLY dampen the work surface with water and lightly moisten your hands. Like everything else, practice will make perfect.

Tom Lehmann/The Dough Doctor  
563

### [\*\*Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll\*\*](#)

## [recipe](#)

One other thing, it looks like the final proof was too dry and or the dough absorption was too low for your specific flour.

Tom Lehmann/The Dough Doctor  
562

## [Newbie Topics / Re: Please help my white pizza bottom!! Should I consider a baking steel/stone?](#)

There's your problem. If the flour is NOT malted in some way at the mill you need to bake your pizzas at temperatures over 750F/399C if you expect to get any crust color on your pizzas.

All is not lost though, you can either add a small amount of diastatic (enzyme active) malt (about 0.25% of a 20L diastatic malt powder, if you cannot get that let us know what you have access to and one of use here can tell you how much to use. You can also just add some sugar to the dough formula. At your oven temperature I'd suggest 3% sugar for starters to see if that gives you a decent crust color.

Tom Lehmann/The Dough Doctor  
561

## [Dough Clinic / Re: help finding a homemade "philly cheesesteak" bun/roll recipe](#)

I think 5% additional dough absorption would be a good place to start. For all practical purposes, there is NO difference in performance between CY and IDY or even ADY for that matter when each is used at the correct substitution level. IDY will provide overall more consistent performance than CY and it also has a much longer shelf life. A good many of us here have transitioned to IDY. I for one, can't even tell you when I last used CY.

Tom Lehmann/The Dough Doctor  
560

## [Dough Clinic / Re: NY Style with spiral mixer](#)

Previously answered in response to your email.

Tom Lehmann/The Dough Doctor  
559

## [Dough Ingredients / Re: Where can diastatic malt be found?](#)

Non-diastatic malt is often considered as a sweetener or type of sugar but with a flavor component added to it. Due to the flavor component it is not a good sweetener if you are trying to achieve a sweeter tasting baked product but if you are looking for a "nutty" flavor aspect or a malted milk type flavor (depends upon the amount you use) or a darker crust color, look no further.

Tom Lehmann/The Dough Doctor  
558

## [Newbie Topics / Re: What does a Pizza Stone supposed to smell like? Is mine bad?](#)

If you can smell it, it's volatile, if they're volatile you should be able to place your stone in the oven and cook-off the volatiles. Try placing your stone in the oven at pizza baking temperature and let it bake for an hour or more, if you have a broiler maybe put it in or near the broiler heat. This should drive off any volatiles. You mentioned soap, did you ever wash it with soap? I never wash mine, ever! If it really needs cleaning (seldom) I just scrape it and if deemed necessary I might hit it with a little sandpaper. Just to confirm though, this is NOT a glazed ceramic tile

we're talking about..right?  
Tom Lehmann/The Dough Doctor

557

**Newbie Topics / Re: How do I modify my pizza making if I have active dry yeast for bread machines?**

Yes.  
Tom Lehmann/The Dough Doctor  
556

**Newbie Topics / Re: What does a Pizza Stone supposed to smell like? Is mine bad?**

Regarding the soda, if there is any oil/fat of any kind in/on the stone the soda will saponify the fat rendering a soapy taste which could make matters even worse.  
Tom Lehmann/The Dough Doctor  
555

**Dough Clinic / Re: Pizza crust on drier side**

If it is a softer crumb structure that you are seeking you can increase the fat content up to about 8% without any difficulties. The only thing that increasing the dough absorption will change is the handling properties of the dough as any additional water will just need to be baked out (it is very difficult to increase the moisture content of the crumb by a significant amount without adding something to retain that additional water. So, if you want to have a more moist crumb you best bet will be to include some mashed potato flakes in the dough formula. I would suggest starting at 2% and going up in 2% increments from there. For every 1% mashed potato flake that you add you will need to increase the dough absorption by an additional 2%.

If you want to know what is in the "additive cocktail" that you are using all you need to do is to look up the E.U. numbers shown in their ingredient listing and that will identify the functional ingredients. Depending upon what is actually included you might be able to eliminate it but we would need to know the constituent ingredients before making a decision. In many cases I've found that when cocktails such as this are used the cost will exceed the benefit by a significant margin. I'm betting that included in the ingredients are salt, sugar, DATEM, ascorbic acid and some type of a fat to eliminate dusting and separation.

Tom Lehmann/The Dough Doctor  
554

**Dough Clinic / Re: I need some help altering my dough recipe to cook at a higher temperature.**

Deck ovens have their limitations. The more pizzas you put into the oven the longer and more often the door is open/opened thus reducing top heat. With Marsal deck ovens they have tremendous heat recovery in the deck which is why the bottoms are getting too dark or burned. I also know their advertising that you don't need to rotate pizzas in their ovens, great advertising claim, and it works with just one or two pizzas in the oven, with more pizzas than that, don't believe it. Without knowing your dough formula and dough management procedure, I feel you may be out of oven capacity. Your baking time is not too out of line with what we have found when baking with a full deck of pizzas.

Can you make your pizzas bake any faster? Maybe but we need to know where you are presently at with dough formulation, scaling weight and dough management as

you may need to make changes to all of these.

Tom Lehmann/The Dough Doctor

553

**Dough Clinic / Re: Dough too soft/limp (before cooking) after 4 day rise?**

By my calculation you are trying to make a 4-day dough using 1.69% IDY (0.2 divided by 11.8 X 100 = 1/69491%) This is WWAAYY too much IDY. For a 4-day dough I only use 0.375% (11.8 X 0.375 (press the "%" key) and read: 0.04425-ounce(1.2567-grams).

Tom Lehmann/The Dough Doctor

552

**Dough Clinic / Re: 24hr Bulk Cold Ferment done...now what? Something normally goes wrong here**

Your ADY amount id 0.6%, not 0.006% (3 divided by 500 X 100 = 0.6)

That's a lot of yeast for the way you are fermenting the dough. Plus I don't advise allowing the dough to come up to room temperature after the cold fermentation period, instead, allow it to temper AT (NO TO) room temperature until the internal ball temperature reaches 60F.

Tom Lehmann/The Dough Doctor

551

**Dough Ingredients / Re: Where can diastatic malt be found?**

To match the equivalent of flour that is malted at the mill you will need to use 0.25% of a 20L diastatic malt powder with an un-malted flour.

Tom Lehmann/The Dough Doctor

550

**Dough Clinic / Re: What are black spots in dough?**

They're not harmful and they will go away during baking, nothing to worry about.  
Pretty common.

Tom Lehmann/The Dough Doctor

549

**Dough Clinic / Re: 24hr Bulk Cold Ferment done...now what? Something normally goes wrong here**

Yael, "core", like the core of the earth. :-D

Tom Lehmann/The Dough Doctor

548

**Dough Clinic / Re: Pizza crust on drier side**

Potato starch is nothing more than finely ground dehydrated mashed potato, so if you have potato starch go ahead and use it.

Tom Lehmann/The Dough Doctor

547

**Dough Clinic / Re: Dough too soft/limp (before cooking) after 4 day rise?**

::) ::) ::) ::) ::)

Tom Lehmann/The Dough Doctor

546

**Dough Clinic / Re: Creating something new and standardised.**

You did ask for a finished crust akin to a P.J.s, that's pretty close! To reduce the

crust browning just reduce the sugar until you get the color you're looking for. For a more open crumb structure reduce the dough mixing time by 2-minutes and increase the total yeast by 1%, let's see where that gets us.

Tom Lehmann/The Dough Doctor  
545

**Dough Clinic / Re: Pizza crust on drier side**

::) ::) ::) ::)  
Tom Lehmann/The Dough Doctor  
544

**Prep Equipment / Re: Cheap dough tray in UK**

Aluminum sheet pans work well too, place the dough balls on a lithely oiled sheet pan (18 X 26") and cover with a food contact approved plastic bag. I just wrote an article on this for PMQ Magazine, it will be in the second part of a two part article. The first part is discussion on how to use dough boxes.

Tom Lehmann/The Dough Doctor  
543

**Dough Clinic / Re: W380 soup**

Does the flour carry the water initially?

How are you mixing the dough? What does the dough look like after mixing? After 12-hours? After 24-hours?

More information is needed.

Tom Lehmann/The Dough Doctor  
542

**Dough Clinic / Re: Confused with different ways of making dough**

ZULU202;  
If you will contact me directly at <thedoughdoctor@hotmail.com> I'll send you a copy of my dough management procedure which should put you on "terra firma" and from there you can experiment as you wish.

Tom Lehmann/The Dough Doctor  
541

**Dough Clinic / Re: Welcome Back Tom (Dough Doctor)!!!**

Thank you,  
Tom Lehmann/The Dough Doctor  
540

**Newbie Topics / Re: Preferred Yeast**

While CY may be more "sexy" to use the IDY, when used properly, will give you much more consistent results and it has a significantly longer shelf life too.

Tom Lehmann/The Dough Doctor  
539

**Dough Clinic / Re: Welcome Back Tom (Dough Doctor)!!!**

Thanks guys, I really appreciate it!  
Tom Lehmann/The Dough Doctor  
538

**Dough Clinic / Re: W380 soup**

What is being described sounds a lot like a high starch damage flour.

Carries high absorption beautifully due to the damaged starch but exhibits only about 90-minutes of fermentation tolerance after which time the dough "lets-down" flattens out.

How do the dough balls look at 1 and 2-hours?

Tom Lehmann/The Dough Doctor

537

### **Pizza Toppings / Re: Raw chicken?**

Since all chicken, like eggs are considered to be E-coli positive I am more concerned over cross contamination than being able to cook it to 160F (the industry accepted target temperature).

Tom Lehmann/The Dough Doctor

536

### **Prep Equipment / Re: Scale to get started**

I use a KD-8000. It has a sufficiently large platform and plenty of capacity (remember capacity = weight of container + contents), and it runs on regular flashlight batteries, for a very long time I might add. Cost is about \$50.00.

Tom Lehmann/The Dough Doctor

535

### **Dough Clinic / Re: Par baking pizza temperature**

leto;

Your assumption is indeed correct.

Tom Lehmann/The Dough Doctor

534

### **Shop Talk / Re: two man pizza shop ?**

The one question that just begs to be asked is: What is your business concept?

Tom Lehmann/The Dough Doctor

533

### **Neapolitan Style / Re: How to use a spiral mixer**

You use a spiral mixer just like any other dough mixer, add tempered water first, followed by the flour, salt, yeast, sugar (if used) and any other dry ingredients, mix at low speed just until all of the flour is whetted, then add the oil while mixing at low speed for 1-minute and finish mixing at second or high speed just until the dough takes on a smooth appearance.....you're done mixing.

Tom Lehmann/The Dough Doctor

532

### **Dough Clinic / Re: Trouble with sourdough cold ferment**

I don't think it's the cold fermentation that is the problem but instead I think it's all the extra time you are giving the dough before opening it. By nature, sourdoughs are more acid than other types of doughs and acids degrade proteins (it is the two gluten forming proteins that create what we fondly refer to as "dough") all that additional time in the fridge is just allowing that much more time for the acids to further degrade the flour proteins which results in the weak dough that you're experiencing.

Tom Lehmann/The Dough Doctor

531

### **Neapolitan Style / Re: How to use a spiral mixer**

Oxygenate the flour? You're pulling my leg, right? :-D :-D :-D

Tom Lehmann/The Dough Doctor

530

### [\*\*New Forum Members / Re: Looking to make great Pizza at home !\*\*](#)

Welcome! You came to the right place to up your pizza game!

I'd suggest that you begin by researching some of the past discussions on cracker type thin crust pizza. We have had some very good discussions along with instructions for making it that might help you get started, then let us know where you need help. Just for a reference, you say you eat mostly chain pizza, which one has the crust closest to what you would like to make, someone here might have already reverse engineered/replicated it already for you.

Tom Lehmann/The Dough Doctor

529

### [\*\*Shop Talk / Re: two man pizza shop ?\*\*](#)

I'll give it 5-years....on the outside, my gut instinct says 3-years.

Burn out is the biggest obstacle.

Tom Lehmann/The Dough Doctor

528

### [\*\*Resources / Re: how long will flour stay good for?\*\*](#)

White flour:

Room Temperature storage in metal or plastic containers (5-gallon pails) = 1-year.

Refrigerated storage in plastic bags or plastic pails = 2+ years.

Frozen in plastic bags placed in plastic 5-gallon pails and sealed = 10-years +.

Whole-wheat flour: Room temperature = 2 to 3-weeks (rancidity is the issue).

Whole wheat flour: Refrigerated: 4 to 6-months.

However you store the flour it is suggested that you break it down into quantities that you can use in 2 or 3-weeks so you will be putting multiple bags into a plastic pail, then you can remove just what you need for a few week use without disturbing the rest.

Things to look for: 1) The flour clumps. Flour doesn't clump, this is caused by an Indian Meal Moth infestation and it is their webs that result in the clumping. 2) Flour beetles or cigarette beetles can infest flour and are seen as what looks like coarse black pepper in the flour (usually at the top of the bag).

Whole wheat flour: Frozen 8 to 12-months.

NOTE: If you freeze the flour always break it down into smaller bags for use over a week or so. Don't use flour directly out of the freezer, instead allow it to temper AT room temperature for 24-hours before opening the bag. This will prevent condensation from forming in the flour left in the bag which can lead to mold development in the flour.

Pick your poison.

Tom Lehmann/The Dough Doctor

527

### [\*\*Dough Clinic / Re: NY style in electric deck oven\*\*](#)

Alex, that's a hard question to answer without knowing a lot more about your oven, but for starters I personally start at the highest temperature your oven will bake at (both top and bottom the same) and let the chips fall where they may regarding the total baking time. Use the bake characteristics to guide you in making further temperature adjustments if necessary.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Dough resting at room temperature before tossing**

It doesn't do any good to put them back into the cooler as it is all but impossible to effectively cool them once they have fermented and become less dense, but all is not lost, I NEVER find it necessary to toss out any unused dough balls.

- 1) They can be incorporated into new dough at up to 15% of the new dough weight.
- 2) The dough balls can be partially opened, placed on screens and stored in the cooler in a wire tree rack (cover with a food contact approved bag after 20 to 30-minutes).

3) Make into bread sticks or garlic knots.

4) Make into dessert pizzas by opening into skins, brushing with melted butter and sprinkling with a cinnamon-sugar mixture, then make a cheese base (1# cream cheese, 1# sour cream, 1# ricotta cheese, 8-ounces powdered sugar, 2 whole eggs (about 100-grams/4-ounces) and mix until smooth, add cream to thin if necessary, you want the consistency of mayonnaise. Spread about 3/16-inch over the skin leaving a 1/4-inch edge exposed. Top with sliced fruit, berries, sliced grapes, etc. If you wish you can also use drained fruit cocktail. Bake just like your regular pizzas and finish with a powdered sugar and water icing drizzled over the top after cooling for about 15-minutes. Store under refrigeration. Serve lightly reheated or cold. We have discussed this dessert pizza before so a search through the archives should bring it up with more detail.

If you are so inclined you can also just stop after applying the cinnamon and sugar, sprinkle with a ready made streusel mix and bake the same as your regular pizzas. Cut into strips or squares and serve with a side cup of powdered sugar-water icing as a dessert option.

Use your imagination to come up with ways to drive your business with what you have been tossing out.

Tom Lehmann/The Dough Doctor

525

**Newbie Topics / Re: Freezing dough question**

Always before. This results in less damage to the yeast during the freezing process.

Tom Lehmann/The Dough Doctor

524

**Dough Clinic / Re: NY style in electric deck oven**

Not a bad looking pizza at all. See, that wasn't so hard after all, was it? :chef:  
:drool:

You're well on your way to making even more great pizzas!

Tom Lehmann/The Dough Doctor

523

**Dough Ingredients / Re: Diastatic Malt - How to adjust for different Lintner strengths?**

Spot on! ^^^

Normally malted flour has approximately 0.25% 20 degree L dry malt powder. So if you have a 60 degree L malt powder you would use 1/3 as much 0.25 divided by 3 = 0.08333333% to achieve that level of malting. There is nothing chiseled in stone regarding how much malt to use but if you use too much the first thing you will notice is a sticky dough condition, then excessive crust color development during baking and if you really go for broke you might even experience a weakening of the dough accompanied by the stickiness.

Tom Lehmann  
522

### [\*\*Dough Clinic / Re: Very airy dough\*\*](#)

Any yeast calculator that doesn't take temperature into consideration is NOT a calculator. Temperature is the #1 driver of fermentation/yeast activity. There is no way one can calculate the amount of yeast to use without first knowing the temperature that the dough will be fermented at.

Tom Lehmann/The Dough Doctor  
521

### [\*\*Pizza Ovens / Re: Black & Decker 5 minute pizza oven + steel? Indoor pizza oven?\*\*](#)

I'm betting a cheap Walmart or Costco run of the mill toaster oven would work just fine for your limited application. I've made pizza a number of time in my son's afore mentioned toaster oven with decent success with thin crust pizzas. I haven't tried making anything close to a deep-dish or even a thick crust pizza in it so I can't comment.

Tom Lehmann/The Dough Doctor  
520

### [\*\*Dough Clinic / Re: Very airy dough\*\*](#)

Amen to that!! ^^^

It's not just the yeast, but the combined effects of acids (produced during fermentation), and enzymes on the starch and proteins which work to degrade the starch and proteins making them more digestible plus the degraded proteins are further degraded during baking which helps to further contribute to the flavor of the baked crust.

If you want to see what a short or no fermentation dough tastes like just buy some commercial (Rich's) frozen dough and make a pizza skin out of it, dress it and bake it. Commercially made frozen dough is produced with essentially no fermentation but it does have the added additional yeast needed to allow it to perform much like an emergency dough.

Tom Lehmann/The Dough Doctor  
519

### [\*\*Dough Clinic / Re: Crust on Dough?\*\*](#)

It is called desiccation, to put it another way; your dough balls dried out. So, how do you prevent it from happening again? Simple, just very lightly oil the dough balls and place them into individual plastic bags (like bread bags). DO NOT use the ZipLock bags. In a pinch you can even use those thin bags that you can get in the produce department at your local supermarket. Drop the lightly oiled dough ball into the bag, twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge. To use the dough on the following day, remove the dough from the fridge about 90-minutes before you want to open it into skins, then turn the bag down around the dough ball and invert the bag over a floured work surface the dough will fall from the bag inverting it as it falls free. Flour both sides of the dough and begin opening it into a skin by your normal method. Something you said though sounds strange, you said the dough was in a regular pizza box (2-inches high at most). Mighty small dough balls?? Am I missing something? I'm assuming the dough was not already opened as you mentioned "dough balls", with several in the same box.

Tom Lehmann/The Dough Doctor

### **Dough Clinic / Re: Best hydration / protein percentage**

Actually, the Farinograph report will not give you the information that you are looking for. The Farinograph absorption is that amount of water needed to be added to the flour to give a dough with a specific viscosity a full development. It serves only as a reference point by all who use it. To make application of the Farinograph absorption data one needs to develop what is called a Farinograph factor which is specific to the product being made. For example most U.S. commercial bakeries producing white pan bread will use a Farinograph factor of about 1.04 to possibly as high as 1.07. This means that for their specific product, made by their specific bread making process and equipment they will multiply the Farinograph absorption by 1.04 to 1.07 to get the STARTING dough absorption for that specific lot of flour, they will then make adjustments as necessary to the actual dough absorption for optimum processing and finished product quality characteristics. Because MAXIMUM dough absorption is specific to the product as well as the dough management process being employed the only real way to determine it is to make a series of dough with increasing dough absorption values until you find the HIGHEST absorption that the dough will carry while still allowing for decent handling properties and providing the desired finished product characteristics. Once you have done this you can divide that number by the Farinograph absorption value of THAT SAME FLOUR to find YOUR Farinograph factor, now with your Farinograph factor you can take any other flour for which you know the Farinograph absorption value and calculate the STARTING MAXIMUM dough absorption for that flour in YOUR shop.

You cannot calculate MAXIMUM dough absorption on just the protein level of the flour, there are just too many variables with the protein which include strength characteristics of the protein and especially the fermentation tolerance characteristics of the flour, and to some extent how the flour was milled can also impact the absorption properties too, for example, if there is more starch damage in the flour it will exhibit a greater dough absorption than a like flour with a lower level of starch damage BUT with fermentation the damaged starch will be quickly hydrolyzed into sugar, thus releasing its water and the dough will turn to soup.

Tom Lehmann/The Dough Doctor

517

### **Dough Clinic / Re: Crust on Dough?**

So you're using a "dough box" as opposed to a "pizza box"....got it!

When one opens a dough ball into a skin the dough ball is transformed either manually or mechanically or by a combination of both methods into a flattened shape known as a dough skin aka pizza skin upon which the sauce, cheese and other toppings are placed immediately before being placed into the oven for baking.

Since you were using a dough box, in the future should you have a change in plans all you will need to do is to lightly oil the dough balls (you can do that without disturbing them in the box unless they have already begun to proof (rise), in that case you might want to re-round the dough (flatten and reform back into dough balls), then lightly oil and place back into the dough box, leave the lid off for the first 2-hours when you put them into the fridge to ensure consistent cooling, then cover the box for the duration of time in the fridge. If you don't have room in the fridge for the dough box refer to my previous instructions for bagging the dough balls. If you don't leave the dough box open for those 2-hours the dough will not cool properly and can result in an over fermented dough condition by the time

you're ready to use it (it would depend upon how much fermentation the dough balls had already received at the pizzeria), you will also experience a wet, sticky dough when you go to use the dough due to condensation forming inside the dough box as a result of not leaving it open. Some of that condensed water will be absorbed into the dough and can manifest itself later on in the form of bubbles forming on the dough during the baking process.

Tom Lehmann/The Dough Doctor

516

### **Dough Clinic / Re: Very airy dough**

Your dough formulation needs either diastatic malt or sugar if you are going to use "00" flour in a home oven. Your pizza is super limp and is severely lacking in any crust color. Both diastatic malt and sugar will provide crust color and might also help with yeast performance too. If it were me, I'd be using just a quality bread type flour that is already malted at the flour mill, I think you'll find it to be much more compatible with your home oven. "00" type flours typically perform best when you can bake on the north side of 750F/399C.

Tom Lehmann/The Dough Doctor

515

### **Dough Clinic / Re: Help with poolish dough recipe**

Why are you using such warm water for both the poolish and the dough? You should be targeting not more than 82F for the poolish (actually I like to target 75F) and 75 to not more than 80F for the finished dough temperature. I don't look for a "mature poolish, instead I go by the flavor I'm looking for which I typically get in about 8-hours. If your poolish is much warmer than 80F I would think it would be a candidate for full collapse by 14-hours. You still want to see some activity in the poolish. Hopefully your salt is 13.7-grams and not 113.7-grams (typo?). After the bulk fermentation I would just scale and ball and CF overnight, you will need to experiment to see how long you will need to allow the dough balls to set at room temperature before opening, with your absorption I'm guessing maybe 90-minutes?

Tom Lehmann/The Dough Doctor

514

### **Dough Clinic / Re: How badly did I Screw up?**

Did the dough formula that you "followed" say it was suitable for freezing? My emergency dough formula is intended for immediate use only! It has not been formulated for freezing. Doughs that are formulated for freezing will have high sugar, salt and yeast levels, they will be mixed to near full gluten development and they will not be fermented prior to the freezing process, additionally the dough balls are almost always flattened to about 1.5-inches thick to facilitate rapid freezing if the dough. Dough that is not blast frozen (-35 to -55F) will have an effective shelf life of 10 to 15-days.

As for the dough that you have, you might try reballing it and allowing it to cold ferment over night, then remove from the fridge and allow to set AT room temperature until the internal dough ball temperature reaches 60F, then open into skins and try making a pizza.

Without seeing what you actually did I can't comment on much.

Tom Lehmann/The Dough Doctor

513

### **Neapolitan Style / Re: Dough management for summer festival**

Following the old KISS principal;

## Mix

Finsihed dough temp @ 70 to 75F.

Take immediately to bench for scaling and balling.

Oil the dough balls and bag individually (we have discussed this method a number of time previously).

Refrigerate overnight.

Box in cardboard cases and transport to event.

Store under refrigeration

Use the dough directly from the refrigerated cases.

Open into skins, dock well, dress to the order and bake.

Tom Lehmann/The Dough Doctor

512

## [\*\*Dough Ingredients / Re: Diastatic Malt - How to adjust for different Lintner strengths?\*\*](#)

Store it like you would brown sugar, remember it's extremely hygroscopic. Never refrigerate it, it won't hurt it but it will only promote condensation...not a good thing.

Tom Lehmann/The Dough Doctor

511

## [\*\*Dough Clinic / Re: Help fine tune a cold fermented NY/American dough recipe\*\*](#)

I will address some of your questions to help you get started with food for thought.

Flour: I would recommend using the KABF as it has a higher protein content and is better suited to longer fermentation times.

Absorption: I suggest beginning with 62% for long fermentation times and then work up from there.

Fat: You can use olive oil if you wish, I suggest using a pomace grade olive oil as it will provide a better flavor when used IN the dough.

Yeast: Use IDY at 0.25%. Add it directly to the flour. IDY is very stable and is easy to use.

Salt: If you like things salty go for 3%, but I recommend 2 to 2.5%.

Sugar: 2 to 3% should work fine for you.

Process: An autolyse really isn't needed with dough absorption in this range. If you "have" to use it this is a good time to catch up on some reading. No yeast in an autolyse if you do put it in it is a biga and totally different.

Adding Ingredients: Add the water, then add salt and sugar (no need to stir or whisk), add flour with IDY last on top of the flour. Mix at low speed just until you don't see any dry flour, then add the oil and mix one more minute at low speed, go to medium speed and mix JUST until the dough takes on a smooth appearance (typically about 8-minutes). Targeted finished dough temperature is 75F.

Take dough DIRECTLY from the mixer to the bench, scale and ball, lightly oil each dough ball, place in fridge UNCOVERED until the INTERNAL dough ball temperature reaches 50F then cover for the duration of CF. Cold ferment for 72-hours (experiment).

To use the dough, remove from fridge, allow dough balls to warm AT (NOT TO) room temperature until the internal dough ball temperature reaches 60F.

Depending upon your skills, if you find it difficult to open the dough at this temperature open the dough at 50F, so I'd suggest trying one at 50F and deciding if you want to allow it to warm more or not...your call.

Bake on a dark colored/seasoned screen or pan or if you have one, a stone or steel.

Bake at 500F if possible.

Tom Lehmann/The Dough Doctor  
510

**Dough Clinic / Re: Help fine tune a cold fermented NY/American dough recipe**

Please let us know how it turns out and if you can, send some pics.  
I don't know what you plan to store the dough balls in but to get started you might use the individual plastic bag method. We have discussed this method here previously so I won't go into the details: oil dough ball, place in plastic bread type bag, twist to close, tuck twisted end under dough ball as you place in in the fridge, bring out and allow to set AT room temperature for about 2-hours before opening into skins for immediate use. NOTE: These is no cross-stacking or leaving anything open with this method....very convenient. :)

Tom Lehmann/The Dough Doctor  
509

**Dough Clinic / Re: Final Dough Temp and freezing dough balls**

Absolutely! It's the final dough temperature that is causing the dough to ferment even though its in the freezer. In a home freezer it can easily take a day or more for a 500-gram dough ball to thoroughly freeze (it ain't frozen until the core is frozen). In one test we did many years ago the core of a 500-gram dough ball still wasn't frozen after 3-days in a home freezer! The good news is that the dough, even though it has been fermented will perform pretty well out to something in the 10 to 15-day range, after that it's a crap shoot as to how well the dough will perform, if at all. For home use, who cares if the dough doesn't perform up to snuff? You can always make a few adjustments and skate by, but in a commercial application that bucket doesn't hold water as the dough has to ALWAYS perform up to the customer's expectations, even in view of abuse bestowed upon the dough at the hands of the distributor, merchandiser, and the end user!

You can hedge your bets and get optimum performance from your dough by doing the following:

Target finished dough temperature at 65 to 70F.

Mix the dough to near full gluten development.

Scale and ball IMMEDIATELY after mixing.

Flatten the dough balls to 1 to 1.5-inches thick.

Lightly oil the dough "pucks".

Place on aluminum sheet pan (better heat transfer) for freezing.

Dough should go into the freezer ASAP after mixing and forming.

Plastic bag the dough pucks only AFTER the core temperature reaches the +15 to +10F range.

To use the frozen dough:

Remove from freezer and allow to temper AT (NOT TO) room temperature until the core temperature reaches 55 to 60F.

Place into the fridge to begin the cold fermentation process.

Note: Frozen dough formulas will typically contain 1.5 to 2 times the normal yeast level for the product being produced, this is to adjust for the yeast cells destroyed and/or damaged during the freezing process. In a home use setting failure to do this will usually result in a slower than normal fermentation rate that may not even be noticed as we automatically adjust for it by just allowing the dough to ferment or proof longer, commercially though this is not a viable solution, hence the higher yeast levels.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor

[\*\*Newbie Topics / Re: What are the Surprising benefits of consuming pizza to promote Good Health?\*\*](#)

Tscarborough;

Your question leads me to believe that you may have never been on a "pizza" date!

:o :-D :-D :-D

Tom Lehmann/The Dough Doctor

507

[\*\*Dough Clinic / Re: Final Dough Temp and freezing dough balls\*\*](#)

Peter;

I most cases cold water won't cut it due to the longer mixing time needed, but if you can live with 10 to 15-days shelf life you can put the greater gluten development on the back shelf and maybe get away using straight ice water, or something close to it. In many cases we have to use ice as part of the water, if you do this be sure to weigh the ice and subtract an equal WEIGHT of water from the formula.

Chilling the flour can help if you are not mixing to a greater level of gluten development, otherwise it is counter productive as it takes longer to develop the gluten in cold or frozen flour which lengthens the mixing time which creates more heat due to bowl friction.

In commercial operations we use mixers with direct expansion jacketed mixing bowls the get so cold that they will freeze the dough to the bowl if the mixer stops with the bowl cooling turned on. They also super cool the flour by injecting carbon dioxide into it, however they also add glutathione or L-cysteine to the dough to reduce the dough mixing time. It needs to be noted that all of this produces a dough that is VERY TOUGH and hard, it is so tough that highly specialized horizontal mixers with dual drive are a standard feature. I might also add that both L-cysteine and glutathione are counter productive to achieving a long (16 to 20-weeks) shelf life so commercial frozen dough will also contain some type of a coated (think time release) oxidant such as ascorbic acid, azodicarbonamide, or possibly one of the newer enzymatic oxidants, which kicks in after mixing to counter the effects of the reducing agent used (L-cysteine or glutathione).

Tom Lehmann/The Dough Doctor

506

[\*\*Dough Clinic / Re: kindly help please\*\*](#)

Here is a process that might work for you, I can't say for sure as I don't know anything about your shop conditions or much else for that matter.

This is an adaption of an emergency pan dough method, please keep in mind that the dough as presented is good for a single day but you can always try it on the second day to see if it will perform to your expectations, if not, any remaining unused dough at the end of the day can be made into bread sticks or garlic knots and par-baked for later use or it can also be incorporated into new dough at up to 15% of the new dough weight.

Flour (12 to 12.8% protein content) 100%

Salt: 2%

Sugar: 2%

Fat: 4%

IDY: 0.5%

Water: (65F) 62% This may need to be adjusted as all flours are a bit different.

Put water in mixing bowl, add salt and sugar, add flour and IDY.

Mix about 2-minutes at low speed or just until you don't see any dry flour, then add the oil/fat.

Mix one more minute at low speed, then mix about 8-minutes at medium speed or JUST until the dough has a smooth appearance.

The dough is now done mixing. Check the finished temperature, you want it to be in the 75 to 80F range.

Take the dough directly to the bench for processing. It must be completely processed within 20-minutes.

Scale and ball the dough. Place into dough boxes and lightly oil the top of each dough ball.

Place in cooler in a cross-stacked manner until the INTERNAL dough ball temperature reaches 55F. Then down-stack.

Allow the dough to cold ferment for 18 to 24-hours.

On the following day, remove dough from cooler and immediately place into dark colored, greased deep-dish pans. Flatten the dough into the pan as well as possible OR you can pass flatten the dough balls on the bench and place into the pan.

Cover the pans with a large sheet of plastic or some other manner and allow to proof for 60-minutes in a warm location.

Press the dough out again (in the pan) and allow to continue proofing for 20 to 30-minutes, if the dough hasn't pulled away from the pan don't touch it, if it has pulled away gently press the dough again to fit the pan.

Here is where you will need to experiment:

Place two pans of dough in the cooler, then in 30-minutes place two more pans in the cooler, then in 15-minutes 2 more pans and again after another 15-minutes (in total there will be a difference of 2.5-hours between the first two pans and the last two pans going into the cooler. After the last two pans are in the cooler remove the first two pans, dress and bake (about 7.5-minutes at 475F) in an air impingement oven. At the same intervals that they went into the cooler remove the pans of dough (in the same order) and dress and bake. Assess each pizza after baking to determine which proofing time provides you with the best finished pizza. The process may need to be tweaked a bit for your specific shop conditions but this should get you on the right track and close to where you want to be.

This process will allow you to work your deep-dish pizza straight out of your cooler inventory so as long as you have an inventory in the cooler you will have deep-dish pizzas to bake. Unless you have a LOT of deep-dish pans you will need to repeat this process at some point during the day to rebuild your inventory in the cooler.

Tom Lehmann/The Dough Doctor

505

### **Dough Clinic / Re: Final Dough Temp and freezing dough balls**

First off, your salt level is rather low at only 0.76%, for flavor, dough strength and controlling the rate of fermentation I'd suggest increasing it to 1.75% or as high as 2.5%.

As for the finished dough temperature, in most cases I would say that 70 to 75F might be a bit to cold for a cold fermented dough going into a walk in cooler, but for a reach-in commercial cooler it is the recommended temperature range, and since a home fridge is nowhere as efficient as a commercial reach-in cooler I think you will be fine using the same dough for your CF process.

Tom Lehmann/The Dough Doctor

504

### **Dough Clinic / Re: Storing Brioche Hamburger Rolls**

Rolls;

To retain maximum freshness in the buns, if you are going to use the walk-in cooler, first turn it off and allow it to warm up to room temperature or better yet, 85 to 90F. Refrigerated temperatures are the temperature at which bakery foods stale at their fastest rate. The slowest staling is experienced at 85 to 90F., but not for more than 3 to 4-days as after that mold is going to be the issue not staling.

My advice:

Brush with melted butter or Ghee.

Allow to cool to 95 to 100F.

Place into plastic bags and close using a twist tie.

Store in a warm area until used on the following day.

Tom Lehmann/The Dough Doctor

503

### **Dough Clinic / Re: Final Dough Temp and freezing dough balls**

You're in a conundrum in that you want to use the same dough for freezing (0.5%, or more IDY recommended) and for cold fermentation (0.2 to 0.4% IDY recommended). So you have to compromise, low end for frozen dough and high end for CF which is, in my opinion, 0.5% IDY.

Tom Lehmann/The Dough Doctor

502

### **Dough Clinic / Re: Final Dough Temp and freezing dough balls**

Sure! ^^^

Tom Lehmann/The Dough Doctor

501

### **Dough Clinic / Re: Storing Brioche Hamburger Rolls**

Absolutely! No different from most of the premium breads, rolls and pastries sold at the local supermarket. The only reason why some pastries have to be refrigerated is because they have some kind of perishable filling inside them (like my favorite....the chocolate eclair) or a cheese Danish which may not need refrigeration if the cheese mixture is applied pre as opposed to post bake. Even the butter that you're putting onto the crust immediately after baking will not warrant refrigeration.

Just store at room temperature, and even if it's a little warmer it won't hurt at all.

Tom Lehmann/The Dough Doctor

500

### **New Forum Members / Re: San Diego newbie, seeking the perfect pizza dough recipe**

Do you have a scale capable of weighing in grams?

Please tell us something about your oven.

What kind of pizza are you wanting to make?

Tom Lehmann/The Dough Doctor

499

### **Dough Clinic / Re: Storing Brioche Hamburger Rolls**

Rolls;

Sweet dreams..... :-D

Rom Lehmann/The Dough Doctor

498

## [Newbie Topics](#) / [Re: What style of pizzas yield good results without a stone/steel?](#)

I bake my American style pizza right on the screen. Just make sure your screens are seasoned, if they are not seasoned the pizzas will stick to the screens and you will have a difficult time separating the two. As you continue to use your seasoned screen(s) they will continue to darken (a good thing) which will further improve the baking properties of the screen. Do NOT wash a seasoned screen, just wipe it down with a clean towel or paper towel after each use. Once you begin to get some color on your seasoned screens they do not need to be oiled for each use (I do suggest lightly oiling the screens before each use even after seasoning) for the first few bakes though.

Tom Lehmann/The Dough Doctor

497

## [Pizza Ovens](#) / [Re: Doyon Pizza Oven?](#)

It sounds like you are looking at the Doyon Jet Air Pizza Oven (PIZ3). You should be able to Google this to get more information on the oven.

Tom Lehmann/The Dough Doctor

496

## [Pizza Ovens](#) / [Re: Doyon Pizza Oven?](#)

I've not personally used one of these ovens but I've seen them at Pizza Expo and I don't know anyone who has one.

Tom Lehmann/The Dough Doctor

495

## [Dough Clinic](#) / [Re: kindly help please](#)

Jimmy;

My email address is <thedoughdoctor@hotmail.com>

Tom Lehmann/The Dough Doctor

494

## [Dough Ingredients](#) / [Re: Diastatic Malt - How to adjust for different Lintner strengths?](#)

To achieve a stronger (darker) crust color just increase the amount of malt or sugar.

As for storage of the diastatic malt, like I said, condensation is the big issue. If the package is unopened there is no problem at all BUT you MUST be sure to allow the malt to THOROUGHLY warm to room temperature before opening or you will get condensation on the malt which over time, will lead to severe lumping. Because the stuff is so hygroscopic the condensation will quickly be absorbed into the malt powder, this will be repeated each time the package is opened for use. I have personally seen a near full bag turned into a single block of malt in just a few months, and this was with refrigerated storage (opened for use two to three times a week). The condensation issue is pretty well negated with room temperature storage but remember that each time the package is opened you are allowing more humid air to replace the desiccated air inside the package and the above process continues however at a much slower rate.

The key to effective storage of diastatic malt powder is to minimize the head space in the package, leave it in the original packaging and fold the package down tight to the contents after opening and after each use, secure well using a rubber band and hope for the best. It should go without saying that those living in a drier climate will experience fewer issues than those living in an area with high

humidity. The same can be said for summer and winter, with fewer issues in the winter due to the drier air and more in the summer when the relative humidity is significantly higher.

Tom Lehmann/The Dough Doctor  
493

### **Chitchat / Re: Haircuts in an Age of Lockdowns and Self-isolation**

After some trepidation I did cut my own hair, in fact, I've cut it several times now and I have to say that I'm more than pleased with it. I'm using a #4 attachment for the sides and a #6 for the top. Then go to the #2 for the back of the neck and trimming close around the ears. It's so easy that I can't see ever going back into a barber shop again.

Tom Lehmann/The Dough Doctor  
492

### **Dough Clinic / Re: I'd like to know what is going on**

A lot of what you mention as differences could possibly be due to differences in the VWG. There are different types of VWG and when you get it from different manufacturers there is a possibility it could perform differently. Is there any way you can make the same dough in the city but using the same brand of VWG as was used in the rural town?

Differences in the water, especially the hardness/mineral content might be a contributor but in this case I don't think it's the culprit.

Since you are using IDY, how do you add the IDY to the mixer?

How about the age of the IDY that you used in the city? How long have you had it? How has it been stored?

Tom Lehmann/The Dough Doctor  
491

### **Newbie Topics / Re: Scaling dough recipe**

In addition to Yael's questions, do you have a reverse spiral dough agitator or a "J" hook on your mixer?

Planetary mixers without a reverse spiral dough arm are notoriously sensitive to the amount of dough in the bowl.

Tom Lehmann/The Dough Doctor  
490

### **Newbie Topics / Re: When to mix in butter?**

Yep, just add it right up front, no need to delay its addition at the 6% level. I add the solid fats tight on top of the flour. HOWEVER, if you melt the butter (or any solid fat) it now acts like an oil, at least until it re-solidifies, so if it's melted it should be treated as an oil. If it's only softened you don't need to delay its addition either, which brings up a good point, if the butter is cold it may be too hard and not get thoroughly incorporated into the dough within most dough mixing time parameters, so it's best to use the butter at room temperature.

Tom Lehmann/The Dough Doctor  
489

### **Dough Clinic / Re: I'd like to know what is going on**

Yael brings up a good point with the mountains, while we know that altitude will affect how a pizza (dough in general) bakes, we know that we may need to make adjustments in our dough formulation to account for this, it can also affect how the dough looks and feels, so it would be good to know the altitude that the "rural"

town" was located at.

Tom Lehmann/The Dough Doctor  
488

### [\*\*Dough Clinic / Re: Transporting dough over long distances\*\*](#)

I'm not sure I'd go that route with the double yeast. Instead, just go with 0.5% IDY and then proceed as you have outlined, I think you will have a much better end result.

Tom Lehmann/The Dough Doctor  
487

### [\*\*Dough Clinic / Re: Thickness of Pizza\*\*](#)

Generally speaking, the thickness of the pizza will be determined by the type of pizza you are making, not be the amount of toppings applied to it. An example of this would be the difference between an American thin crust (think Domino's) and a Pizza Hut pan style pizza where for all practical purposes the amount of toppings is the same for both pizzas but the amount of dough and the finished crust are significantly different.

Tom Lehmann/The Dough Doctor  
486

### [\*\*Newbie Topics / Re: yeast amount for final mix using poolish\*\*](#)

You don't say how much yeast is being provided by the poolish but you are correct, if the poolish is still active and healthy you normally don't need to add any more yeast.

Tom Lehmann/The Dough Doctor  
485

### [\*\*Newbie Topics / Re: Scaling dough recipe\*\*](#)

With a smaller size dough sometimes the dough can get kicked around in the bowl by the "J" hook and receive some gluten development in the process but when the dough is of any size it just clings to the bottom and sides of the bowl getting very little actual agitation in the process. Or at some point the dough will develop gluten after which it then clings for dear life onto the hook and won't come off so it gets almost no further development when this happens. The only options are to continually stop the mixer and pull or cut the dough off of the hook (not very effective) or to increase the mixer speed thus allowing centrifugal force to hopefully pull the dough off of the hook.

In any case though, you only need to mix the dough JUST until it begins to take on a smooth appearance, more mixing than that is not needed nor is it usually desirable as it contributes to a more bread like crumb structure in the finished crust as opposed to the desirable open, porous crumb structure which contributes to the crispiness of the finished crust. The "window pane" test for assessing gluten development is used almost exclusively for bread and buns but seldom for pizza.

Tom Lehmann/The Dough Doctor  
484

### [\*\*New Forum Members / Re: Hello to anyone who actually reads these things\*\*](#)

It sounds like you were making a high absorption dough and trying to bake it on a screen as opposed to a stone or baking steel. Yep, that'll get you into trouble more times than not. :-D

Tell us what kind of pizza you're trying to make...a N.Y. style? How do you mix your dough, by hand or machine? This is one site where T.M.I. is seldom ever an issue,

unless it gets too personal.

Share with us what you are trying to achieve and somebody here will be glad to chime right in and help you get to where you want to be with your pizza making endeavors.

Tom Lehmann/The Dough Doctor  
483

**Dough Clinic / Re: NY style dough prep in summer; what's different**

A yellow flag jumped out when you said "reducing the water temperature to room temperature". To me, this says that the water temperature might be too warm resulting in a hot dough condition which most certainly will contribute to the stickiness you've been experiencing. My question to you now is: What is the finished dough temperature? A common water temperature is 60 to 65F and a typical finished dough temperature is in the range of 75 to 80F. Let's see how your numbers compare to these for starters.

Tom Lehmann/The Dough Doctor  
482

**Dough Clinic / Re: Protein flour as additive?**

Nice try, but chick pea and lentils don't contain any gluten forming proteins. All you are adding is a protein supplement, you would get a similar result by adding a protein drink base to the flour. In short, it will not increase the strength of your flour, it will make it more nutritious (from a protein stand point), but not any stronger.

Tom Lehmann/The Dough Doctor  
481

**New Forum Members / Re: Pizza in Alaska**

Welcome! You came to the right place.

Let us know what kind of equipment you have (scale, mixer, something about your oven) and what kind of pizza you're interested in making.

What part of Alaska?

Tom Lehmann/The Dough Doctor  
480

**New Forum Members / Re: New member Hydrator**

For the olive oil, go with 2% and you'll be fine.

Tom Lehmann/The Dough Doctor  
479

**Dough Clinic / Re: NY style dough prep in summer; what's different**

My concern is the word "around", an estimate would be "around" but a thermometer only gives a specific temperature. In any case I'm sure CDennis will set us straight.

Tom Lehmann/The Dough Doctor  
478

**Dough Clinic / Re: NY style in electric deck oven**

To a great extent yes, but you may find that you will need to place a screen under the deep-dish pizza if the bottom gets too much bake.

Tom Lehmann/The Dough Doctor  
477

## [\*\*Dough Clinic / Re: Dang, forgot to take dough out of fridge - Suggestions?\*\*](#)

In a pizzeria we can force the dough balls by flattening them to about 1/2-inch in thickness and placing them onto a warm (100 to 120F) surface and lightly oiling to prevent drying, by this method the dough is usually ready to open in less than 10-minutes. We actually developed a shelf liner which could be installed over a heated holding shelf just for this purpose.

Tom Lehmann/The Dough Doctor

476

## [\*\*Dough Clinic / Re: Why does more gluten mean a longer ferment?\*\*](#)

Gluten is the material formed by the wheat flour proteins glutenin and gliadin, these proteins are generally present in greater quantity when there is more total protein in the flour. It is the formed gluten that is responsible for binding the dough together and giving it the unique elastic properties that we look for in a dough. During fermentation the yeast produces byproducts (acids, alcohol and carbon dioxide) which work to weaken the protein (think of marinating a tough piece of meat), plus the yeast also carries with it enzymes which work to convert some of the starch into sugar for the yeast to feed upon (these are amylase enzymes) another enzyme present is protease/proteolytic enzymes which hydrolyze proteins and weaken them to provide the desired extensibility properties needed so the dough can be easily opened into a skin without excessive dough memory characteristics aka "snap-back", so no, it is not the yeast itself doing the work on the proteins but instead it is their byproducts that do the work and the longer you allow the dough to ferment the more impact those byproducts will have upon the characteristics of the finished dough.

Tom Lehmann/The Dough Doctor

475

## [\*\*General Pizza Making / Re: dissolving salt in a % of recipe water?\*\*](#)

If you are mixing the dough by hand there may be some advantage to dissolving the salt in a portion of the dough water but if you are using a dough mixer there is no need to do it unless you are using a coarse salt. When I mix my doughs using a mixer I always put the water in the bowl first, then add the salt and sugar (if used) followed by the flour. No need to stir/whisk or mix the salt into the water. I then add the IDY on top of the flour and mix using the delayed oil addition mixing method.

Tom Lehmann/The Dough Doctor

474

## [\*\*Newbie Topics / Re: What is the worst pizza you have eaten?\*\*](#)

I've always said that I never had a pizza that I couldn't learn to like but I had to make an exception when I tried Wheat State Pizza here in Manhattan, Kansas a number of years ago :(

They didn't last very long either....gee, can't imagine why???????

Tom Lehmann/The Dough Doctor

473

## [\*\*Neapolitan Style / Re: Is this ready?\*\*](#)

You also need to see what the top looks like to make an accurate determination.

Tom Lehmann/The Dough Doctor

472

## [\*\*Dough Clinic / Re: Very airy dough\*\*](#)

Adding the salt later in the dough mixing process is commonly used in bread production as a means to develop the gluten more rapidly during the mixing process. On many cases it is added about 5-minutes before the end of the mixing process, but again, that's for bread production only. In pizza dough production we are not looking for nearly as much gluten development (we typically mix only enough to achieve a smooth appearing dough) so it is more common to add the salt right up front (usually with the water) but many also opt to add it on top of the flour too. Remember, we are not looking for the gluten development of a bread dough. Both salt and sugar can/will inhibit or slow yeast activity but this only happens if you leave the yeast in contact with the salt or sugar for any appreciable length of time. When putting the salt into the water it is common to then put the flour in the bowl and the yeast on top of the flour (machine mixing only). When mixing the dough by hand the yeast is commonly mixed into the water containing the salt (yeast can be mixed directly into the water but ADY needs to be activated and IDY needs to be hydrated separately before adding it to the water), the flour is then immediately added and the mixing process started. It should also be noted that for hand mixing the oil is generally added to the water too as this ensures better dispersion but when machine mixing it is better to mix the dough about 2-minutes (until you don't see any dry flour in the bowl) and then add the oil, this delayed oil addition procedure prevents the oil from interfering with the gluten development.

Tom Lehmann/The Dough Doctor

471

### [\*\*Dough Clinic / Re: Dang, forgot to take dough out of fridge - Suggestions?\*\*](#)

Consider every mistake to be a learning opportunity and you'll never stop getting smarter! :-D

Tom Lehmann/The Dough Doctor

470

### [\*\*Neapolitan Style / Re: Is this ready?\*\*](#)

Agreed! You're ready to begin making pizza! ^^^

Tom Lehmann/The Dough Doctor

469

### [\*\*Dough Clinic / Re: NY style dough prep in summer; what's different\*\*](#)

I agree, adding the ADY suspension at 6-minutes before the end of the dough mixing procedure is a bit different (although this is very close to one of the manufacturer's recommended procedures for adding IDY) Note: ADY suspension and IDY are two very different animals). I don't think it would cause any real issues however, I really don't like to add liquids late in the dough mixing process (especially if those last minutes will be hand kneading) due to concerns of not getting the liquid (ADY suspension) in this case, thoroughly incorporated into the dough.

I've said it many times, flour is the #1 biggest variable when it comes to dough ingredients. It's the nature of the beast.

As a note of interest: This is the time of the year when flour mills are getting into using the new year crop so don't be surprised if you find that you need to make adjustments to the dough absorption. New crop year flour is like that "box of chocolates".

Tom Lehmann/The Dough Doctor

468

### [\*\*Dough Clinic / Re: Very airy dough\*\*](#)

It really doesn't increase gluten formation, it just strengthens the gluten which makes the dough more elastic. By putting the salt into the dough water the dough forms more quickly, giving us the smooth appearance faster with less mixing time so there is less heat build up due to bowl friction as well as less wear and tear on the mixer. Remember, the target for mixing a pizza dough is to achieve the smooth appearance as quickly as possible (long mixing times make it more difficult to consistently hit our target finished dough temperature), not to fully develop the gluten. Additionally, from the time a dough begins mixing until it begins to change in density is roughly 30-minutes, depending upon dough temperature and yeast level, so if a dough can be mixed in 10 to 12-minutes we will have 18 to 20-minutes to get the dough processed and in the cooler but if we mix the dough for 20-minutes, that time is reduced to just 10-minutes (the yeast activates during the mixing cycle) and you can only guess as to what that long of a mixing time will do to the finished dough temperature.

Why do we mix a pizza dough?

- 1) Disperse ingredients uniformly throughout the dough mass.
- 2) Hydrate ingredients.
- 3) Develop just enough gluten to retain dough ball shape and reduce/eliminate stickiness.
- 4) Achieve desired/targeted finished dough temperature.

Tom Lehmann/The Dough Doctor

467

### **Neapolitan Style / Re: Is this ready?**

I'm not you, but if I were, I'd remove the dough from the container (very carefully) and place it onto an oiled plate, flattening the dough as I did so (to about 1-inch in thickness, then lightly oil the dough and cover it with a piece of plastic. Remove it from the fridge about 30-minutes before opening.

Tom Lehmann/The Dough Doctor

466

### **Sauce Ingredients / Re: Growing Your Own Tomatoes**

Cooking down the tomatoes doesn't change the pH, think of it like this, if you have a cup of white vinegar and measure the pH it should be about 2.5 to 2.7, if you add a cup of water to it will the pH change? Answer: no, only the TTA titratable acidity (concentration of acidity will change). Citric acid is used by manufacturers to ensure food safety of their canned tomatoes mostly because it is effective and it is also the main acid present in the tomato so it will have little to no impact upon the flavor of the canned product. Tomatoes are all over the board when it comes to pH. The pH of the tomatoes is dependent upon the variety and also upon the ripeness. Commercially, only the first picking is used for canned tomato products but even with that there is some amount of variability of ripeness within that grouping so it is necessary to adjust the pH of the tomatoes at the time of processing. When growing tomatoes at home you can hand pick your tomatoes at peak ripeness, which is impossible to do on a commercial basis. With all of the new tomato varieties being developed for the home gardener it is always wise to know the pH of your tomatoes at the time of processing, remember most new varieties are of a low acid type (not conducive to home canning as is), failure to do so may prove to be fatal.

Tom Lehmann/The Dough Doctor

465

### **Prep Equipment / Re: Warped Dough Trays**

I've used the trays/dough boxes from WRH Industries <[www.wrh.net](http://www.wrh.net)> Paul Bartley V.P. Sales & Marketing <[pbartley@wrh.net](mailto:pbartley@wrh.net)> for years without a single problem. I can highly recommend them.

Tom Lehmann/The Dough Doctor  
464

### **Newbie Topics / Re: Neapolitan dough and warm up time**

There is nothing fixed about the length of time the dough needs to rest at room temperature after CF before it is opened into a skin. Pizzerias will typically look for an internal dough ball temperature of 50F before beginning to open them while many home pizza makers look for something closer to 60F. A lot of it will depend upon your abilities at opening the dough. Remember that the colder the dough is (within the 50 to 60F range) the easier it is to open if you are not proficient. If you typically make 3 pizzas at a time you might want to target the 50 to 55F temperature range for your opening temperature, then as you become more proficient (faster) you can increase the opening temperature to make the dough balls easier for you to open.

Tom Lehmann/The Dough Doctor  
463

### **Neapolitan Style / Re: Is this ready?**

In one word.....no. several hours, not a problem, overnight.....probably not unless you reballed the dough.

Tom Lehmann/The Dough Doctor  
462

### **General Pizza Making / Re: oven temp puzzles me**

Chet;

Are you talking C or F. in temperature? "C" (Celsius) would make prefect sense but "F" (Fahrenheit) would be way to cold of an oven for baking pizzas. This is not to say that it cannot be done but I would seriously question it. Many of those old wood fired or coal fired stoves (I was raised with one) had a major problem, that was getting too hot. I can remember things being baked and at some point the oven door was cracked open to reduce the heat. I'm guessing that those pizzas might have been baked at a much higher temperature than what you might be thinking. Is there anything else that you can provide us on those pizzas? Size, thickness, what were they baked on? In general terms what type of pizza were they closest to?

Any additional information will help.  
Tom Lehmann/The Dough Doctor  
461

### **Dough Clinic / Re: dough storage while cooking?**

To answer your second question, as a rule once the dough is ready to begin opening and the dough is being held at room temperature, you window of time to open the dough is about 2-hours before you begin to see strange things happening. It's hard to answer your last question as it depends upon room/fermentation temperature, yeast level, dough absorption and flour strength. I'll make a S.W.A.G. and say that you should be able to begin using a 24-hour dough after about 18-hours.

Tom Lehmann/The Dough Doctor  
460

## [Newbie Topics](#) / [Re: marble, quartz or a granite top as a bench for shaping/stretching pizzas?](#)

If the health department will allow it, butcher block without a doubt, my second choice would be man made quarts....about as close to indestructible as you can get.  
Tom Lehmann/The Dough Doctor  
459

## [Dough Clinic](#) / [Re: Is this as expected?](#)

Looks about par for the course, I just tear those bubbles open and go on with life.  
Tom Lehmann/The Dough Doctor  
458

## [Shop Talk](#) / [Re: Oven questions](#)

The pressing question is, where are you planning to make the dough? How about storing the dough? There are bread trucks and there are bread trucks, what size box does yours have? There won't be a lot of room after you add an approved sink, storage, prep, mixing, work space and oven, then add the sales area. For the oven, gas (propane) or electric. Remember gas storage or a generator. Would really like a little more information.

Tom Lehmann/The Dough Doctor  
457

## [New Forum Members](#) / [Re: sweet pizza dough](#)

pepe123;  
Papa Murphoy's has a sweet tasting crust. We used 5% sugar in the dough formula to replicate their level of sweetness. Remember though that you will need to bake your pizzas at a lower temperature (400 to 450F) to control crust color development during baking. Of course, if you want it sweeter you can always add more sugar but keep in mind that with 5% sugar you will need to increase the yeast level (0.5 to 0.65% IDY with 5%) and even more as you increase the sugar level.

Tom Lehmann/The Dough Doctor  
456

## [General Pizza Making](#) / [Re: oven temp puzzles me](#)

Hopefully she has sufficient sugar in the dough formula to give some crust color development at that low of a baking temperature. Also keep in mind that she is making a focaccia type of pizza which in many cases really doesn't have a lot of crust color development as it is what many might describe as a bready type of pizza.

Tom Lehmann/The Dough Doctor  
455

## [Chicago Style](#) / [Re: Thin crust dough recipe from Dino's Gourmet Pizza \(St. Paul, MN\)](#)

I have to admit, that is one of the more bizarre "recipes" I have ever seen for pizza dough!

Written up in such a haphazard manner that we can't decipher it how do the employees manage to follow it accurately? The "pinch" of salt makes absolutely no sense at all (why even put it in?). The 1/2-cup of garlic powder is another one, garlic powder, like onion powder is a very effective reducing agent and anything over 0.15% in the dough will soften the dough. I'm betting that 1/2-cup exceeds this amount by a good margin. The only reason for using it at this level would be to enable using the dough very soon after mixing and the pictures of the skins seem

to confirm this (very little to no real fermentation). The 1-Tsp. cinnamon isn't enough to contribute a flavor so why include it? The lemon juice is just a source of citric acid which helps to acidify the dough, this might possibly be done in light of the fact that the dough is a very short time dough or possibly a no-time dough. Commercially we acidify doughs too but we use vinegar since acetic acid is a by-product of yeast fermentation. If I read the flour correctly there is 23.5-pounds of flour in the recipe with 3-quarts (6#) of water, 1-quart of milk (about 28.16-ounces of water), 8-eggs (12-ounces water) and 2-quarts of oil, for simplicity let's call it 10.75-pounds of liquid so  $10.75 \div 23.5 \times 100 = 45.74\%$  absorption equivalency. I'd say this relates well to the pictures of the dough and the finished pizzas. The question is what kind of yeast is used and how much lemon juice is being added.

By the way, 1-pound of cinnamon would contain sufficient cinnamic aldehyde to stop the yeast dead in its tracks.

Tom Lehmann/The Dough Doctor  
454

### [Shop Talk / Re: Dough balls, par baked](#)

For the dough you have two options, refrigerated dough balls that you might be able to have made by a local bakery to your specification (we can help you with that). You will need to have the bakery refrigerate the dough balls and get them to you ASAP and then you will hold them under refrigeration (cold fermentation / CF) for 1 to 3-days. The process for managing CF dough is discussed in many posts here. The other option is to buy a commercially made frozen pizza dough (most distributors will carry it), the frozen dough is available as dough balls, dough pucks, and also as pre-sheeted skins. The dough balls and pucks can be thawed (slacked out) in the fridge overnight for use on the following day, or they can be slacked out overnight, placed at room temperature until the INTERNAL dough temperature reaches 50 to 55F and then placed back into the cooler for 24-hours. The dough MUST then be used in its entirety on the day after that 24-hour period. Any dough not used for pizza can be converted to other products such as garlic knots or bread sticks as opposed to being tossed out.

As you are trying to keep things simple without added labor I would suggest looking into one of the smaller electric air impingement ovens made by companies such as Edge, XLT, Lincoln or Middleby-Marshall. Remember that you will also need to add a small prep-station for assembling the pizzas as well as a cutting station unless you plan on using your existing kitchen for these tasks. Keep in mind that whatever oven you choose, electric or not, your local code will most likely call for it to be installed under a hood so be sure to check before ordering.

Tom Lehmann/The Dough Doctor  
453

### [Chicago Style / Re: Thin crust dough recipe from Dino's Gourmet Pizza \(St. Paul, MN\)](#)

Might it also say one (1) cup lemon? I'd start at 1/4-cup and see what happens, then work up in 1/4-cup increments from there to 1-cup.

As strange as the recipe is it wouldn't surprise me if they used ADY but I'd rise above that and use IDY instead and add it on top of the flour.

Keep us posted on your progress.

One other thing, regarding their flour blend, you can essentially duplicate it using the Pillsbury Bread Machine aka Bread Flour available from most supermarkets.

Tom Lehmann/The Dough Doctor  
452

## [\*\*Shop Talk / Re: Oven questions\*\*](#)

Here's my approach;

Make your dough specifically for hot press forming (Summerset or Do-Pro).

Ferment dough balls 18 to 24-hours prior to press forming.

After press forming, stack 5-high with a piece of parchment paper between each skin.

Place in cooler for 2-hours, then form into groups of 3-stacks each and plastic bag.

Store in cooler until ready to transfer to truck for use.

Store under refrigeration in truck.

To fill an order, remove a skin from the stack, place on a seasoned screen, dress to the order and place on the infeed side of the oven conveyor.

Remove baked pizza from the outfeed side of the conveyor, transfer pizza to a cutting station and place screen into dough box for cooling (they cool very fast) and reuse.

This is a very similar method to that used by some of the fast casual pizza places.

Additional things for consideration:

You will need to have a state operating license and in addition to that you will most likely need to have a local license if you operate in a different county, city or town.

If you cross state lines you will need to be licensed for that state also. If you haven't already noticed, everyone is going to have their hand out.

Contact your local codes department to make sure what you intend to do is going to be approved, and GET IT IN WRITING!

Tom Lehmann/The Dough Doctor

Tom Lehmann/The Dough Doctor

451

## [\*\*Chicago Style / Re: Thin crust dough recipe from Dino's Gourmet Pizza \(St. Paul, MN\)\*\*](#)

The KA bread flour is perfect. ^ ^ ^

Tom Lehmann/The Dough Doctor

450

## [\*\*General Pizza Making / Re: Dilemma: Four pies-one stone\*\*](#)

I think if it were me, I'd just make the necessary number of pizzas (completely cooked), and hold them in some type of insulated container (anything to help keep them as warm as possible, then using a screen, place then back into the oven for warming and crisping (this should only take a few minutes for each pizza). If the pizzas are thin enough you may not even need a screen, just place directly on the stone to reheat (even faster). This is what many of the slice places do with very good results.

Tom Lehmann/The Dough Doctor

449

## [\*\*Newbie Topics / Re: Too stretchy dough?\*\*](#)

Depending upon the type of "00" that you are using that might be wwaayy too much fermentation. Plus if you are not proficient at opening the dough the "00" flours are not the most forgiving to work with.

If you want to continue with the "00" flour try using the dough after overnight fermentation, then after 24-hours and lastly after 48-hours, see if you see an improvement at one of these times.

You don't mention anything about your oven so I assume you are able to achieve a sufficiently high baking temperature (750+F.) to achieve a decent crust color.

It is also suggested that you hydrate the IDY by suspending it in a small portion of 95 to 100F water before adding it to the dough water (be sure to include the water that the IDY is suspended in with the total dough water amount/%)

Tom Lehmann/The Dough Doctor

448

### **Dough Clinic / Re: Cheese Not Melting Well**

Assuming you are using refrigerated cheese as opposed to frozen?

Assuming you have pulled the fingers from the top of the oven for cleaning?

Tom Lehmann/The Dough Doctor

447

### **Shop Talk / Re: Minimum Temp**

If you want to do a "Neo style" 600F but if you want to go traditional Neo you'll be looking for an oven that should be able to reach north of 800F.

Tom Lehmann/The Dough Doctor

446

### **Dough Clinic / Re: Cheese Not Melting Well**

Some stores use a VCM (vertical cutter mixer) to cut their cheese. Be sure to use the sharp metal cutting blade as opposed to the dull one used for mixing dough.

You might post this question over at the PMQ Think Tank <[www.pmq.com](http://www.pmq.com)>.

Tom Lehmann/The Dough Doctor

445

### **Dough Clinic / Re: Differences in store bought dough for digestibility**

I think what you are seeing has nothing to do with digestibility but instead everything to do with density. Frozen dough performance can be all over the board, especially when comparing doughs from different manufacturers. For example, how the dough has been stored (temperature and temperature fluctuation) and where the dough is at with regard to its projected shelf life will play a significant role in how the dough ultimately performs for the end user. This does not even take into account differences in dough formulation and processing which will also have a significant impact. It sounds like one of the doughs that you got was either at the end or close to the end of its shelf life or it might have been abused in some manner during distribution or storage either by a distributor or at the point of sale (more common than what you might think). By design, frozen dough has little to no fermentation so in essence products made from it would be construed as being less digestible than products which are made from a fermented dough (fermentation is a form of digesting, just ask any ruminant) so in a sense you might say that eating a product made from a fermented dough is actually eating a product which has been partially digested already (actually better tasting than it sounds).

Tom Lehmann/The Dough Doctor

444

### **Newbie Topics / Re: Is This accurate?**

The neat thing about working in bakers percent as opposed to true percent is that you can change any ingredient without changing the percent of any of the others. As long as you know your dough formulation it's also very easy to formulate in bakers percent to give you any size dough you want to make. Just divide the sum of the bakers percent of your formula by 100 and then divide your desired dough weight by this number, this will give you the flour weight needed to make the new dough size, now you can calculate the amount of each ingredient for the new dough

size. For example: The sum of bakers percent is 162% divided by 100 = 1.62. We want to make a dough weighing 500-grams. Divide 500 by 1.62 = 308.64-grams (flour needed to make a 500-gram dough from your dough formula). Now just calculate the ingredient amounts based on 308.64-grams total flour weight.

Tom Lehmann/The Dough Doctor

443

### **Dough Clinic / Re: hi gluten flour for nystyle pizza**

When I speak of "HIGH" protein content flour I'm referring to a flour with a protein content in the 13 to 14+% range which would be pretty typical for use in making a New York style pizza. For most other styles a protein content of 12 to 12.8% works well (Pillsbury Bread/Bread Machine Flour) which is available at many supermarkets is a good choice. For deep-dish and thick crust pizzas I normally lean towards a flour in the 11.0 to 11.8% protein range.

Tom Lehmann/The Dough Doctor

442

### **Dough Clinic / Re: Differences in store bought dough for digestibility**

All bets are "off the table" anytime a commercially made frozen dough has been subjected to thaw and re-freezing as the dough at that point is no longer considered to be commercially frozen (commercially frozen = freezing at -30 to -38F in a mechanical blast freezer with 600 to 800 linear feet of airflow per minute over the product or cryogenically frozen using liquid carbon dioxide or liquid nitrogen at -45 to -55F in the product zone. This establishes a small ice crystal formation in the dough which is less deleterious to the yeast cells and gluten network but when thawed and re-frozen at a higher temperature a much larger and more angular ice crystal is formed which is very deleterious to yeast survival as well as continuity of the gluten network in the dough. In short, commercially frozen dough that has been abused will not perform as well as the same dough that has not been subjected to the abuse.

Tom Lehmann/The Dough Doctor

441

### **Dough Clinic / Re: Trying to get a good crisp... Thoughts?**

Let's start by reviewing your dough formula and EXACT dough management procedure (be sure to include all times and temperatures), in all probability I'm guessing that's where we'll find the problem at.

Tom Lehmann/The Dough Doctor

440

### **Dough Clinic / Re: Balling dough**

If you are going to degas the dough by mixing it you will need to mix the dough a bit longer to allow it to be balled without tearing.

Tom Lehmann/The Dough Doctor

439

### **General Pizza Making / Re: How long in advance to putting it in the oven can you fully stage a pizza**

Staging a sauced pizza too far in advance of baking can/will promote the development of the good old "dreaded gum line". The time will vary with your sauce and if you have oiled the skin or not. If you put a spoon of sauce on a saucer and leave it undisturbed for a period of time you will see syneresis taking place (loss of moisture from the sauce) if you note the time it takes for this to appear this

will tell you how long you can hold the sauced skins prior to baking. You can also help to prevent damage to the dough by VERY LIGHTLY oiling the skin before the sauce is applied. This will create a barrier to moisture migration into the dough as the moisture leaves the sauce.

Pre-saucing is generally not a good idea as it does nothing good to the finished pizza so my advice is to keep the time as short as possible.

Tom Lehmann/The Dough Doctor  
438

### [\*\*Dough Clinic / Re: Trying to get a good crisp... Thoughts?\*\*](#)

OK, so the dough collapsed when you "pulled" the dough out of the box. You are not lifting it out using a plastic scraper, right?

Then, after you got the dough out of the box, what did you do? Details, details :chef:

Tom Lehmann/The Dough Doctor  
437

### [\*\*Shop Talk / Re: Minimum Temp\*\*](#)

A friend of mine has the TC oven as described in Craig's attachment and I was thoroughly impressed with it! ^^^

Tom Lehmann/The Dough Doctor  
436

### [\*\*Dough Clinic / Re: Which yeast? Making 20 pizzas 20 hours from now\*\*](#)

When you're up to needing 20 pizzas in as many hours this is not really the most opportune time to be experimenting with something that you have not ever used. Save the time for experimenting for those single or 2 or 3 pizza days.

You made the right decision! ^^^

Tom Lehmann/The Dough Doctor  
435

### [\*\*General Pizza Making / Re: Adding cinnamon to dough\*\*](#)

We make our dessert pizza bases by opening a regular skin then brushing it with melted butter and sprinkling well with a cinnamon-sugar mixture, add a streusel topping and bake just as you would any other pizza, allow pizzas to cool about 5-minutes and add a drizzle of powdered sugar-water icing. We add fruit slices and chopped nuts when we want to add the "WOW" factor.

In any case, regardless of how you make it, it makes for a tasty combination.

Tom Lehmann/The Dough Doctor  
434

### [\*\*Dough Clinic / Re: Trying to get a good crisp... Thoughts?\*\*](#)

I caught another tid-bit in what you said about the dough being pretty wet when you went to open it into a skin. I'm guessing that you are covering the dough boxes right away as opposed to allowing them to remain open until the internal dough ball temperature drops to 50 to 55F, then you can cover the boxes and kiss them good night. Does this sound familiar?

All of that condensation collecting on the dough ball tells me that the dough did not cool very efficiently which added to the amount of fermentation that the dough actually received, that combined with the water can be enough to result in the dough collapsing.

I don't recommend using a metal scraper of any kind on a plastic dough box, use only a plastic scraper.

Please P.M. me.

Tom Lehmann/The Dough Doctor

433

### **Newbie Topics / Re: Seeking suggestions on how to approach troubleshooting disappointing results**

Since your experimental program calls for assessing the impact of the various processing steps I would suggest that you begin with a dough formula that you have confidence in for producing a decent pizza, it sounds like you might already have that.

Then begin by making your pizza a number of times to assess its "standard deviation" if you will. You will need to do this several times to reduce the "human" factor in the variables. In essence, you are now producing a CONSISTENT pizza, regardless of quality, it MUST be consistent. If you don't do this you will never know if a change in quality characteristic was due to your normal variability or if it was due to the experimental variable.

With this done you are now ready to actually begin your experimenting. Select the variable that you want to test, let's say baking temperature. Prepare the dough by your standardized formula and procedure with the only experimental variable being the baking temperature (note: you will also need to adjust the baking time with the temperature as the two go hand-in-hand, so you will need to adjust the time to give a bake as close as possible to the control (your standard product).

Make experimental adjustments to baking time and temperature to cover the ENTIRE spectrum for baking the pizza. Compare your experimental results to the control pizza that should be made on every test day. If you cannot make a control pizza on each test day document your control pizza with pictures showing diameter, height, top and bottom color, and crumb structure. Also be sure to document the mastication properties. You would be amazed at how much your perception of the quality characteristics will change over time if this is not done, at least documenting it for the control will provide some kind of a fixed reference point for comparison purposes.

Once you have done your testing on each of the variable it will be time for Stage II, this is where you begin looking at "cross variables" such as higher dough absorption with baking time and temperature as the experimental variables. This is going to be a long but rewarding study for you.

I've spent over 50-years doing it and I'm still learning new things all the time.

Tom Lehmann/The Dough Doctor

432

### **Dough Clinic / Re: Diastatic malt vs. non-diastatic**

Like many things, a little diastatic malt can be a good thing if your flour is not already malted but too much of a good thing can really mess things up. A recommended use level for 20L diastatic malt is 0.25% based on the total flour weight....use more only if you dare. If the diastatic malt that you are using has a higher L (Lintner) value like maybe 60L you would use only 1/3 as much.

No, flour manufacturers don't post anything about the flour absorption properties.

The actual dough absorption used in making pizza doughs will vary with the following:

- 1) Type of pizza being made.
- 2) Dough making process.
- 3) Finished dough temperature.
- 4) Type of dough management employed and fermentation time/temperature.
- 5) Individual's proficiency/skill at opening the dough into a skin.

6) The type of oven to be used.

It is impossible for the flour manufacturer to know all of these parameters so any recommendation for dough absorption would be a total guess. If you want a S.W.A.G. here's mine for a starting point only:

Thin crispy & cracker type doughs: 50%

American style pizza doughs: 60%

Wood fired oven doughs: 65%

Neapolitan style doughs: 70+%

Like I said, this is just a S.W.A.G. as the final absorption will depend upon any number of factors including the absorption properties of the flour being used.

Tom Lehmann/The Dough Doctor

431

### **[Stones/tiles/steel, Pans & Accessories / Re: Scale](#)**

Many of us here have the KD-8000 and I've not heard any complaints about it yet, at least none that I can recall. One of the best things about the scale is that it operates on regular flashlight batteries, I've had mine for years now and use it all the time and it's still operating on the original batteries supplied with the scale!

Tom Lehmann/The Dough Doctor

430

### **[Dough Clinic / Re: Diastatic malt vs. non-diastatic](#)**

Let me hear an "AMEN" to that! ^^^

Tom Lehmann/The Dough Doctor

429

### **[Dough Clinic / Re: Diastatic malt vs. non-diastatic](#)**

Maybe your flour is already malted either through the addition of diastatic malt or enzymes (alpha amylase)? The bag will tell the story if the flour is malted/treated with enzymes or not. Additionally, flours that are high in starch damage do not fare well at all in the presence of any amount of diastatic malt or alpha amylase.

Tom Lehmann/The Dough Doctor

428

### **[Dough Clinic / Re: Diastatic malt vs. non-diastatic](#)**

Non-diastatic malt is a non-active (no enzyme activity) form of malt. It is used for both its unique flavor and as a source of sugar for crust color development. Unlike diastatic malt, you can go quite high with non-diastatic levels without creating significant dough handling problems (stickiness). Most bagel manufacturers use non-diastatic malt as they can use it for both flavor and color without developing the stickiness associated with diastatic malt. A number of years ago I had to make an emergency trip to up-state New Hampshire to visit a wholesale bagel manufacturing facility that was having a problem with the dough sticking to their bagel forming belts and nearly shutting down production. First thing I asked was "Are you using diastatic malt?" The answer was, "No, we use non-diastatic malt syrup". They confirmed that the malt syrup was indeed non-diastatic. When I got to the plant late that day I went directly to the ingredient scaling room and sure enough, the label on the 55-gallon drum said "DIASTATIC MALT SYRUP"!. So why did they answer "no" to my question? It seems that they checked their formula sheet, not what they were actually using....Oops! Yes, the wrong product was shipped to them by their supplier. I called the supplier and got the non-diastatic malt delivery started while we cleaned up the mess out on the production floor, a

short time later we had the NON-DIASTATIC malt syrup and production resumed with no further issues. Lessons learned that day:

- 1) Always check ingredient name and product code number against your order manifest at the time of delivery.
- 2) When someone asks a question about an ingredient being used don't just look at the formula sheet, look to see what is actually being used.
- 3) Bagels are made from a pretty simple and basic formulation, the malt syrup was the only ingredient where a simple mix-up could result in disaster, they should have been aware of that and gone directly to the #1 suspect to begin their own investigation. A little education goes a long ways.
- 4) The lesson that I learned, NEVER ASSUME ANYTHING, that's been well known for a very long time but sometimes we need a reminder.

Tom Lehmann/The Dough Doctor

427

### **Dough Clinic / Re: Bromated flour**

Actually bromate is converted to bromide (a non-carcinogen) during the baking process and it wasn't until the 1970's that the Japanese developed a method for detecting bromate in PPB (parts per billion), it was then discovered, that in some cases bromate was a residual in some breads but it was only measured in PPB where as previously it could only be measured in PPM (parts per million) so it was then considered unsafe. When you look at the big picture of things that are carcinogens it is safer to eat bread made with bromated flour (not to exceed 15-PPM potassium bromate) than it is to breathe the air in most major cities. And then you have the issue of nitrates, and trans fats and don't forget acrylamides, the list just goes on and on. My personal advice is "Don't be stupid and drink from the bromate bottle, use moderation and enjoy life!"

Tom Lehmann/The Dough Doctor

426

### **Dough Clinic / Re: Bromated flour**

It does serve a functional purpose in flour where long fermentation times are the order of the day. Do I think bromated flour is necessary? No, not in view of the fact that we have some excellent performing enzymatic oxidants that serve as a replacement for it. Do I go out of my way to avoid it? No. Is it really necessary in pizza production? When bromate came under scrutiny many years ago we looked at just how important bromate was in pizza production. We found that as long as one had access to high protein flours capable of forming strong gluten with good fermentation tolerance it was not needed at all so in my humble opinion the use and necessity of bromate in pizza dough is a moot issue, in white pan bread and many variety breads of commercial manufacture it is a totally different story but again we now have some excellent performing bromate substitutes (as previously mentioned) so even in bread production it's a moot issue. It's certainly not like back in the 50's and 60's where bromate was being used at the outrageous levels of up to 75-ppm. One of my technicians once described the flavor of bread when made with bromate levels this high as "tasting like a swimming pool" and he was correct in his assessment. If you are old enough to have ever had continuous mixed bread aka batter whipped bread back as late as the 60's you have been exposed to these high levels of bromate.

Tom Lehmann/The Dough Doctor

425

### **Dough Clinic / Re: Bromated flour**

HansB;

I'm putting my money on a meteor over bromate! :-D

Tom Lehmann/The Dough Doctor

Elchimi;

Since there is a readily available effective substitute for it it's really not all that commonly used anymore. It is used in some flours (at a very low level) due to demand for it in some markets. So, why don't the flour millers add the new bromate replacers to the flour? The answer is because none of them that I'm aware of are designed for stand alone addition to flour so for that specific application there is still not a suitable direct replacement.

Tom Lehmann/The Dough Doctor

424

### **Dough Clinic / Re: Bromated flour**

Actually, California doesn't ban it they just require that any product which contains it be labeled with the warning that this product contains potassium bromate, a known carcinogen and may cause cancer in some individuals (or something to that effect), yum, yum, I think I'll have another helping! Because of this and the fact that none of the chain stores or food manufacturers want the publicity associated with the use of bromate no one uses it in California and distributors don't carry it for that reason. Now, in Canada it's a different story as its use is officially/legally banned there.

Tom Lehmann/The Dough Doctor

423

### **Dough Clinic / Re: Crust dry spots**

They are due to either excessive drying of the dough ball (depending upon how the dough balls are stored it can be limited to a small area or a large area of the dough ball) or it might be dusting flour adhering to the dough ball (pretty common).

Tom Lehmann/The Dough Doctor

422

### **Newbie Topics / Re: Does thin crust mean crispier crust ?**

No, a thinner dough skin or crust does not always relate to a crispier finished crust.

Rather than going through a whole litany of things that can be done to provide for a crispier finished crust it would help if you could share with us your dough formula, dough management procedure and also tell us about your oven and how you are baking your pizzas.

Tom Lehmann/The Dough Doctor

421

### **Dough Clinic / Re: Bromated flour**

Because the potassium iodate was found to interfere with some medical tests. The AMA asked the baking industry if it was possible to eliminate the use of iodate for this reason and the baking industry did as requested. Wanna know what replaced potassium iodate?

Answer: ADA/Azodicarbonamide. I was the one who did all of that work.

Tom Lehmann/The Dough Doctor

420

### **Newbie Topics / Re: Does thin crust mean crispier crust ?**

Finished dough temperature?

Type of dry yeast?

Dough ball weight?

Pizza size?

Tom Lehmann/The Dough Doctor

419

**Dough Clinic / Re: First cook in my Ooni Koda 16**

65% absorption seems a bit on the low side for a dough made with 25% whole-wheat flour. What did the crumb structure look like? Was the dough slightly sticky or tacky when it was opened into a skin? If it wasn't the absorption was too low.

Tom Lehmann/The Dough Doctor

418

**Dough Clinic / Re: Either my dough is bland or my tastebuds are dead. Can I get some criticism?**

If you are trying to get that "pizzeria" flavor (not sure what that really is) you might try some of the following;

- 1) Reduce the honey to 2% of the total flour weight (325-grams).
- 2) Adjust IDY to 0.374%
- 3) Scale and ball the dough immediately after mixing.
- 4) Targeted finished dough temperature is 75 to 80F.
- 5) Lightly oil the dough balls and place into individual plastic bread type bags (NOT ZipLock Bags), twist the open end to form a pony tail and tuck under the dough ball as you place it into the fridge.
- 6) Cold ferment for 48-hours (this is how many pizzerias manage their dough).
- 7) Remove dough from fridge and allow to warm AT (NOT TO) room temperature until the internal dough ball temperature reaches 50 to 55F, then roll the bag down around the dough ball and invert over a flour dusted part of your work surface.
- 8) Flour both sides of the dough ball and open into a skin for immediate use.

Let us know if this moves you closer.

Also keep in mind that loss of smell is a possible indication of C-19 (smell is a BIG part of the flavor equation) :-D. Unless you have a control/target crust to evaluate against it is indeed possible to lose all ability to distinguish changes in taste or aroma/flavor.

Tom Lehmann/The Dough Doctor

417

**Dough Clinic / Re: Either my dough is bland or my tastebuds are dead. Can I get some criticism?**

Hey! I was in Dhahran for 3-years, went to Khobar many times, just a hop, skip and a jump away.

Small world!

Tom Lehmann/The Dough Doctor

416

**Neapolitan Style / Re: How to get cheese to blend into sauce?**

My preference is to tear the cheese as opposed to slicing it, this gives a thin edge to the cheese allowing for more of the transition that you mention.

Tom Lehmann/The Dough Doctor

415

**Stones/tiles/steel, Pans & Accessories / Re: Long Handled Wooden**

## [Launching Peel](#)

Mr. Peel or American Metal Craft are some options.

Tom Lehmann/The Dough Doctor

414

## [Stones/tiles/steel, Pans & Accessories / Re: Long Handled Wooden Launching Peel](#)

They're like rocks at a stone quarry, not terribly difficult to find.

Lots of previous discussion on peels too.

Tom Lehmann/The Dough Doctor

413

## [Dough Clinic / Re: Either my dough is bland or my tastebuds are dead. Can I get some criticism?](#)

I was working in the Aramco Bakery training the entire bakery staff from production to maintenance and sanitation. I was living at Steinekie Hall (spelling?) Except for the meals that I had at the bakery I used to eat at the Dining Hall (my good friend Hind Leithead) was in charge of Dining Services for Aramco, her husband was Head of Airport Operations. I was the second to the last contractor to leave the country when they nationalized in 1980. Later, I served again as a consultant when the Saudi's built the frozen dough/pizza plant in Riyadh. I was at the Latif Bakery a number of times but I never paid much attention to their breads for the reasons mentioned above. I've still got pictures of me riding motorcycles on the desert and skiing on the sand dunes and a whole bunch of stories!!!

Tom Lehmann/The Dough Doctor

412

## [Dough Clinic / Re: Either my dough is bland or my tastebuds are dead. Can I get some criticism?](#)

That, my friend, would be a very safe assumption :-D. My ability to weld stainless steel, and access to the necessary equipment, along with my understanding of fermentation and access to malt (it was a certified bakery ingredient) made me a very popular person during my time over there. Almost got caught on two different occasions, would not have been a pleasant outcome. I used to say that the best kept secret was what we were making in those brew tanks (we used to call them liquid ferments).

Tom Lehmann/The Dough Doctor

411

## [Dough Clinic / Re: First Attempt Making Pizza with a Natural Sourdough Starter: No Elasticity!](#)

In all probability it was the problem. I'm guessing that it was either too strong for your flour or you used too much. I'd suggest making it again but use only half as much of the SD starter, if the dough performs better you'll know you're on the right track to solving the problem.

Being able to see your dough formula and procedure would also be very helpful too.

Tom Lehmann/The Dough Doctor

410

## [Newbie Topics / Re: Dough Ball Weight](#)

I've literally hand cut thousands of dough balls and I still continue to weigh each one. In our pizza class we used to show our students how to speed up the hand

cutting process by forming the dough into a rope and cutting the dough to length, use a scale to establish the length needed for the weight that you want, then begin cutting to length (length = weight). The best that I was EVER ABLE TO MANAGE was 7-consecutive pieces all within 1/4-ounce (that's 7-grams) of each other. Use a scale, it's a lot more accurate and consistent!

Tom Lehmann/The Dough Doctor

409

**Dough Clinic / Re: First Attempt Making Pizza with a Natural Sourdough Starter: No Elasticity!**

Unless you have a way to actually measure the pH and TTA (titratable acidity) of the sourdough starter you have no idea of what it actually is, that's one of the issues with sourdough starters, you never know for sure exactly what you have so it is not uncommon to have to experiment to determine the amount needed to achieve the desired results.

Tom Lehmann/The Dough Doctor

408

**Dough Clinic / Re: Either my dough is bland or my tastebuds are dead. Can I get some criticism?**

It's hard to beat fermentation and all of its nifty by-products for flavor. Malt, either to hydrolize a portion of the starch to support long fermentation times or to provide a level of flavor by itself is a big part of the total flavor picture too. Note: This is based on the assumption that one likes the "fermentation" flavor, I know that not everyone does.

Tom Lehmann/The Dough Doctor

407

**Dough Ingredients / Re: The effect of yeast percentages on taste**

Wow! That's a lot of ADY considering that most people probably use not more than 0.5 to 0.75% at the very most. 1 to 1.5% ADY would be more in line with a no-time/emergency dough that would be ready to go in about 2-hours after mixing. But in the end, if it gives you the flavor profile that YOU want, I cannot argue with you.

Tom Lehmann/The Dough Doctor

406

**Dough Clinic / Re: Confusing terminology in using the term "malt"**

This is what happens when one tries to cross reference terms from two different disciplines (brewing and baking) as many times the same word or expression has significantly different meanings. For example, the words "Do you have worms?" has an entirely different connotation to a fisherman than it might have to a doctor. :-D In the baking industry the word "malt" has a much more limited meaning and to some extent application, than it has in the brewing industry. In the baking industry barley is the primary source of malt and this is required, by law, to be stated on a bag of "malted wheat flour". In the baking industry malt is used either as nondiastatic (powder or liquid) as a source of sugar (maltose) for flavor and/or crust color development or as diastatic for the amylolytic conversion of a portion of the starch (primarily damaged starch) to sugar (maltose) as a yeast nutrient.

Additionally, some research has shown that that a reduction of starch can contribute to a softer crumb structure in the finished product resulting in a potential improvement in perceived freshness of some bakery products.

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Failed Neapolitan dough**

Try removing the dough from the plate and re-ball it, then place it in the fridge to relax for several hours, it should be relaxed sufficiently for use by dinner time. Let us know how this works out for you.

Tell us about your oven too.

Tom Lehmann/The Dough Doctor

404

**Dough Clinic / Re: Failed Neapolitan dough**

For me personally, I'd have gone with 0.05% IDY for what you were doing. It sounds like you are mixing the dough by hand so all you really need to do is to mix it sufficiently to have a cohesive dough and let biochemical gluten development take care of the rest of it for you. One other thing: When mixing the dough by hand it is highly recommended that the IDY be hydrated in a small portion of the dough water (tempered to 95 to 100F), just put the IDY into a small container of water and stir to hydrate the yeast making a uniform yeast suspension, you can then add the IDY suspension directly into the remainder of the dough water in the mixing bowl.

Tom Lehmann/The Dough Doctor

403

**Neapolitan Style / Re: Dough tearing/blistering**

Please tell us something about your fridge, maybe a picture?

Tom Lehmann/The Dough Doctor

402

**Dough Clinic / Re: Dough is a little chewy and tough**

Oil is a tenderizer so adding 2% might help.

Tom Lehmann/The Dough Doctor

401

**Dough Clinic / Re: Trying to get a good crisp... Thoughts?**

I think your fermentation of the dough prior to scaling and balling is contributing to the problem. Try this, reduce the IDY by 50%, adjust the water temperature to give you a finished dough temperature of 75 to 80F, then immediately after mixing the dough scale and ball it, place in UN-OILED dough box, lightly oil the top and sides of each dough ball (use canola oil), allow box to remain UNCOVERED for 2.5-hours, then cover/lid the box and allow to CF for 24-hours. Remove dough box from cooler (keep it covered) and allow the dough balls to temper AT (not to) room temperature until the internal dough ball temperature reaches 55F. Then remove dough ball from box and begin opening the balls into skins by your preferred method. The dough balls may deflate a little but not completely and they should open into skins pretty easily, there should be an improvement in oven spring which will promote crispiness in the finished crust.

Tom Lehmann/The Dough Doctor

400

**Neapolitan Style / Re: Dough tearing/blistering**

The old stand-by is to put the water in first, then the flour and dry ingredients and mix just until you don't see any dry flout in the bowl, add the oil and continue mixing (at a higher speed if possible) just until the dough takes on a smooth

appearance. At that point the dough is sufficiently mixed, the dough might feel a little tacky but not sticky. Finished dough temperature should be in the 75 to 80F range when mixing is completed.

Tom Lehmann/The Dough Doctor  
399

### [\*\*Dough Clinic / Re: Confusing terminology in using the term "malt"\*\*](#)

amolapizza;

You are not alone in your confusion. All too often we find that to many in the in all but the wholesale baking industry malt is just malt, some don't even realize that there is a difference (diastatic v/s nondiastatic) and well as a difference in Lintner Value. We see this happening here from time to time too. When you toss in dry v/s liquid confusion reigns supreme. This is why it's always important to identify the exact type of malt product we're using or referencing in a dough formulation.

Remember my story about the New Hampshire bagel producer that mistakenly got the wrong (diastatic) malt product that literally shut down their production lines. Malt is an ingredient that has different applications in different industries which is why there are so many variants and making it important to identify specifically which product is being used or referenced. To the home baker it may not be a "big deal" if the wrong product is used since we are dealing with small amounts of dough but to a large scale producer, beginning with a pizzeria and going up from there it becomes a "very big deal" if the wrong malt product is used.

Tom Lehmann/The Dough Doctor  
398

### [\*\*Newbie Topics / Re: Practice Dough\*\*](#)

Why not just make a typical N.Y. dough formula such as:

Flour: 100% (Pillsbury Bread/Bread Machine Flour which is widely available at supermarkets at a very reasonable cost)

Salt: 1.75%

IDY: 0.4%

Sugar: 2% (optional)

Oil: 2%

Water: 62% (65F)

Target finished dough temp: 75 to 80F

Make it as you do your regular dough and cold ferment for a minimum of 24-hours (48-is better).

Scale into 19.5-ounce dough balls, oil each dough ball, drop into individual plastic bags (like bread bags), twist the open end into a pony tail and tuck it under the dough ball as you place it into the fridge to CF.

To use, just roll bag down around the dough ball and invert over a flour dusted surface or a bowl of flour.

Flour dough ball and open into a skin by your preferred method.

If you don't want to make pizza you can always make a calzone, or brush the skin with melted butter and then sprinkle generously with a cinnamon-sugar mixture and bake. After cooling drizzle with a sugar-water icing or cut into strips and dip in the powdered sugar-water icing (you might recognize these as "Dipin' Sticks"), or just dock it well and bake at 400F as a flat bread.

Tom Lehmann/The Dough Doctor  
397

### [\*\*Newbie Topics / Re: Practice Dough\*\*](#)

The total formula sum of bakers percent is 168.15 divided by 100 = 1.6815  
You want to make two dough balls each weighing 29.5-ounces = 59-ounces +  
2-ounces for bowl loss = 61-ounces of dough will be needed.  
Divide 61 by 1.6815 = 35.68-ounces of flour needed X 28.4 = 1013.38-grams of flour.

Ain't math great?! :D  
Tom Lehmann/The Dough Doctor  
396

### **Dough Clinic / Re: VWG percentage and hydration**

Pan Pizza Dough formulation:

Flour: 96%  
VWG: 4%  
Salt: 2%  
Sugar: 2%  
Shortening: 4%  
IDY: 0.4% or ADY: 0.5% or CY: 1%  
Water: 65%/variable (65F)

Mix dough just until it takes on a smooth appearance.

Target finished temperature: 75 to 80F.

Take to bench and scale (8.75-ounces/variable) and ball.

Lightly oil dough balls and CF for 24-hours.

Remove from cooler and allow to temper AT (NOT TO) room temperature for 2-hours.

Use a rolling pin or pastry pin to GENTLY open the dough to fit the pan.

Place the opened dough into a greased or oiled dark colored deep-dish pan.

Allow to proof for approximately 45-minutes (exact time will need to be determined by experimentation)

Dress as desired and bake at 450F.

Thin Crust Pizza Dough:

Flour: 95%  
VWG: 5%  
IDY: 0.4% or ADY: 0.5% or CY: 1%  
Salt: 2%  
Sugar: 2% (optional)  
Oil: 2%  
Water: 65%/variable (65F)

Mix until dough JUST comes smooth.

Target finished dough temp: 75 to 80F.

Take directly to the bench and scale at 2-ounces (for a 9" skin) and form into balls.

Lightly oil the dough balls and CF for 48-hours.

After CF remove from cooler and allow to temper AT (NOT TO) room temperature until the internal dough ball temperature reaches 50F.

Open into skins by your preferred method.

Dress and bake.

NOTE: A good way to CF the dough balls is to place each one into an individual plastic bag, twist the open end to form a pony tail and tuck the tail under the dough ball as you place it in the cooler.

Garlic breadsticks can be made using either dough by opening the ball to about 12-mm in thickness, forming into a rectangle shape and cutting into strips about 20-mm wide. Transfer cut strips to a greased baking pan and allow to proof for 30-minutes, then bake at 450F. As soon as breadsticks come out of the oven brush generously with a commercial garlic butter or make your own by combining butter with commercial garlic powder. then sprinkle with grated parmesan cheese and serve.

I'm not exactly what you mean by "stuffed garlic bread" please describe.

Subway Bread/Hoagie Buns:

Flour: 95%

VWG: 5%

Salt: 2%

IDY: 1% or ADY: 1.5% or CY: 3%

Shortening: 6%

Sugar: 4%

Water: 58%/variable (65F)

Mix the dough to a smooth consistency plus an additional 5-minutes (this will be variable depending upon the characteristics of your local flour).

Target finished temp: 80 to 85F.

Take dough directly to the bench, scale into 7-ounce pieces, form into balls, cover with a sheet of plastic and allow to rest for 20-minutes.

Using your hands, roll each dough ball into a hot dog shape (lightly dampen your hands with water if necessary) about 7-inches long.

Place formed dough piece onto a baking paper lined or lightly greased sheet pan with dough pieces spaced 2 to 3-inches apart.

Cover to prevent drying and allow to final proof for 45 to 60-minutes. You will need to experiment to determine the time best suited to your specific conditions.

Using a VERY SHARP SERRATED knife or razor blade cut 3 to 4-diagonal cuts (about 2-mm deep) across the top of each dough piece.

Spray with water and bake at 425F.

Note: If the finished buns are too flat reduce the water, if you want more spread increase the water (absorption).

This type of buns is typically not fermented, Subway uses frozen dough which is not fermented either.

Tom Lehmann/The Dough Doctor

395

### **Dough Clinic / Re: Confusing terminology in using the term "malt"**

The amount of diastatic malt FLOUR added to wheat flour is variable depending upon the amylose activity of the flour being malted. Flour in the U.S. is typically malted to a Falling Number of 200 to 250. As a general rule you can get close to this by adding 0.25% of a 20-L diastatic malt powder to an unmalted flour.

Tom Lehmann/The Dough Doctor

394

### **Dough Clinic / Re: VWG percentage and hydration**

It's easy to convert from bakers percent to weight measures.

First thing to do is to decide either how much flour you want to use or how much dough you want to make.

If you know how much flour you want to use :

Using your calculator, enter the flour weight then press "X" and enter the ingredient percent that you want to find the weight for, now press "%" and read the answer in the display window. Remember, your ingredient weights will be expressed in the SAME weight measures that the flour weight was expressed in (pounds, ounces, grams, kilograms, etc.).

If you know how much dough you want to make:

First find the sum of all of the bakers percents in your dough formula (it will usually be something between 165 and 175%), now divide this number by 100 (move decimal place two places to the left).

Using your calculator, enter the total dough weight that you want to make then press the division sign and enter the sum divided by 100 and press "=" and read the flour weight needed to make your new dough weight in the display window. Once you have the flour weight follow the above (first) procedure for finding the individual ingredient weights.

Tom Lehmann/The Dough Doctor  
393

### **Dough Clinic / Re: Dough balls too flat**

A little bit but not all that bad for the flour you're using. I would recommend reducing the total dough absorption to 62%. Remember that dough absorption is ALWAYS variable, especially with "00" flours.

Tom Lehmann/The Dough Doctor  
392

### **New York Style / Re: Reversing cold fermentation**

Depending upon the flour strength, amount of yeast used, proficiency at temperature control I would, with trepidation, say yes for home pizza making only. Try to keep the time the dough is frozen as short as possible. Keep in mind that you may need to be re-ball the dough at some point.

Tom Lehmann/The Dough Doctor  
391

### **Focaccia Style / Re: Had 'no knead' dough in fridge, turned it into focaccia**

Looks GREAT!!!! :chef:

I also like to add some shredded Parmesan cheese to it too, but that's just me.

Tom Lehmann/The Dough Doctor  
390

### **Dough Clinic / Re: Advantage of Bulk or not to bulk**

If you do a quick search you should find some of the previous discussions we've had here on the topic, there is actually quite a bit to bulk fermenting prior to balling.

Tom Lehmann/The Dough Doctor  
389

### **Dough Clinic / Re: Bowl of flour used to open dough balls**

Sure, not a problem saving it. If you were to ask 20 people what they use for a dusting flour you would probably get a minimum of 25 answers :-D there are that many different opinions. Wheat flour, rice flour, corn flour, fine corn meal, semolina flour and wheat bran are all used both alone and in various combinations. My own personal favorites are fine corn meal as well as a blend of equal parts fine corn meal + semolina flour + regular white flour.

Tom Lehmann/The Dough Doctor  
388

**[General Pizza Making / Re: Semolina and whole wheat flour in formula](#)**

What you propose should work OK, just remember that whole-wheat flour has a higher absorption than your regular white flour (about 70% in most cases) and like semolina flour it is slower to hydrate than white flour. This means that in this case an autolyze/soaker might be of benefit as it will allow time for the whole-wheat and semolina flour to properly hydrate. Just in case you're wondering, the whole-wheat flour is slow to hydrate due to the presence of bran particles in the flour and the semolina flour is slow to hydrate due to its large particle size. Additionally, semolina flour can be made from hard wheat varieties or it can be made from durum wheat varieties, it's important to know what it was made from as if it was made from a durum variety you might want to limit its use to something under 25% of the total flour blend. It will contribute to crispiness but it will also contribute to toughness aka chewiness in the finished crust as it cools.

Tom Lehmann/The Dough Doctor  
387

**[Dough Clinic / Re: Bowl of flour used to open dough balls](#)**

Mine is a very high priced cake pan with a plastic lid that I got at a very exclusive store called Walmart. I have about 2-cups of my dusting flour in the pan and I so do all of the dough ball dusting in/over the pan (makes less of a mess), when I'm finished I just snap the lid back on the pan and put it away until the next time I need it.

Tom Lehmann/The Dough Doctor  
386

**[Newbie Topics / Re: Oil or Sugar for more Crust Browning on Top?](#)**

Not knowing what your dough formula is I cannot say if adding sugar will impart a sweet taste to the crust, but keep this in mind; you will not get a detectable sweet taste in the finished crust until the sugar (sucrose) level is 4% or more. With that said, the addition of sugar will result in the entire crust developing more color and at a faster rate on both the top and the bottom. The problem you're experiencing is most likely due to the high crown in your grill which does not provide sufficient top heat directly to the pizza as it's baking. An application of oil to the top of the dough not covered by the toppings might help a bit. You might also try brushing it with whole milk too.

Tom Lehmann/The Dough Doctor  
385

**[Newbie Topics / Re: Measuring internal temp without Degassing?](#)**

It's nothing to worry about.  
Tom Lehmann/The Dough Doctor  
384

**[Dough Clinic / Re: Cold Fermenting Overproofed Dough?](#)**

Remember, there's a learning experience in every mistake.

Tom Lehmann/The Dough Doctor  
383

**[Dough Clinic / Re: How do you get a crust like this?](#)**

Agreed, a N.Y. style dough formula:

Flour: 100% (12.2 to 12.8% protein content/strong bread type flour)

Salt: 2%

Sugar: 1%

Oil: 2%

IDY: 0.375%

Water: 65%/variable (65F)

Mix/scale & ball/cross-stack to 50F/down-stack/CF for 48-hours/remove from cooler and allow to warm to 55F internal ball temperature/open into skins by hand/dress/bake at 700F.

This should provide you with a starting point for achieving your goal.

Tom Lehmann/The Dough Doctor

382

### **Prep Equipment / Re: Best height for dough trays?**

Your question is impossible to answer without knowing more about your dough balls. As a rule, we use up to 10-ounces in the 3" depth, 11 to 14-ounces in the 4" depth and anything over 14-ounces in the 6" depth. Keep in mind though that dough balls will rise differently in the box depending upon dough temperature, how well you're managing your dough, yeast level and dough absorption.

Tom Lehmann/The Dough Doctor

381

### **Prep Equipment / Re: Best height for dough trays?**

Forgot to add one more thing, how tight or loose you're rounding the dough balls.

Tom Lehmann/The Dough Doctor

380

### **Newbie Topics / Re: Bottom of dough**

You might also try leaving the cover off of the container until the dough reaches 50F, then covering. This will allow the dough to be more tolerant to variations in finished dough temperature as well as slight differences in refrigeration temperature thus diminishing the likely hood developing an over fermented dough condition. This approach has been discussed any number of times here where it is referred to as "cross-stacking and down-stacking".

Tom Lehmann/The Dough Doctor

379

### **Dough Clinic / Re: How do you get a crust like this?**

It ain't necessarily what you've got that counts, it's what you do with it that matters most, so you have the dough formula, as well as the flour down pat, the question now is how are you managing the dough (that's where the "rubber meets the road"). You can use the same dough formula but manage it differently and get different finished product characteristics. Please be specific as TMI is seldom an issue here just so long as it's pertinent to the topic. ;D

Tom Lehmann/The Dough Doctor

378

### **Newbie Topics / Re: Newbie help with crust 'doneness' in a brick oven**

Another thing to consider is the dough weight (assuming no sugar in the dough formulation). If the skin is too thin/light weight for the diameter you will have a harder time getting to bottom to bake properly than if you have a slightly greater dough weight. The next time you make pizzas make a couple of dough balls

1-ounce heavier and a couple 2-ounces heavier (open them all to the same diameter) bake the pizzas to desired bottom color.

Tom Lehmann/The Dough Doctor

377

### [\*\*General Pizza Making / Re: Can you use a pan to bake a NY style in Blackstone?\*\*](#)

Some of the Lloyd's disks are not intended for use in any type of deck oven. Only those that are fully perforated across their entire diameter will work in a deck oven without warping. The others are intended for use in air impingement ovens.

When going to the 16" diameter pizzas you might try reducing the dough absorption in 2% increments until you find that you can easily work with the dough without it sticking, then, as you gain confidence and proficiency begin gradually increasing the dough absorption. Remember, that dough absorption is ALWAYS going to be somewhat of a variable since it is tied to the absorption properties of the flour which is variable/not consistent.

Tom Lehmann/The Dough Doctor

376

### [\*\*Prep Equipment / Re: Best height for dough trays?\*\*](#)

There can be, but any issues are essentially eliminated by lightly oiling the top of each dough ball as it is placed into the box and effectively cross-stacking (leaving uncovered) until the internal dough ball temperature reaches 50F before down-stacking/lidding the box(es).

Tom Lehmann/The Dough Doctor

375

### [\*\*Newbie Topics / Re: Not "breaking" the fermentation bubbles ?\*\*](#)

If you are re-ballng the dough just 1.5-hours prior to opening the dough into a skin I'm betting that you are also experiencing issues with opening the dough too? You should find that the dough opens easiest when you just remove it from the fermentation container and drop it into some dusting flour and immediately proceed to begin opening the dough.

By the way, after removing the dough ball from the fridge you only need to allow it to warm AT (not to) room temperature until the internal dough ball temperature reaches the 50 to 60F/9.9 to 15.5C range. Depending upon your proficiency at opening the dough you may find it easier to open the dough at the cooler side of the temperature range.

Tom Lehmann/The Dough Doctor

374

### [\*\*General Pizza Making / Re: Does the dough shape impact how fast the dough rises?\*\*](#)

A lot will depend upon the environment in which you are proofing the dough and for how long. When you open the dough into relatively flat circle you significantly reduce the cross section dimension while at the same time increasing the surface area, both of which will allow the dough to be more responsive to (influenced by) the temperature in which it is placed so if the dough is 85F as a ball and the room is 70F the ball will retain its temperature much better than the opened dough which will quickly cool to the 70F room temperature and since temperature is the number one driver of fermentation the lower temperature will result in a slower rate of fermentation. If several hours are involved there is also heat of metabolism that has to be considered too. As the dough ferments it will warm due to heat of

metabolism from the yeast feeding. This will warm the dough at the rate of approximately 1F per hour. The flattened dough piece will also experience this same heating BUT due to the reduced cross section and greater surface area it is much less able to retain this heat so its impact upon the rate of fermentation is significantly lessened.

Tom Lehmann/The Dough Doctor  
373

**[Dough Clinic / Re: Just got my caputo blue pizzeria flour, need help with fool proof recipe ooni](#)**

As a "newbie" Which I assume you are, I would encourage you to begin your pizza making endeavors using a more traditional flour for your first pizza making excursions. Something like Pillsbury Bread/Bread Maker Flour or KABF would be a good starting point, these flours are quite forgiving and will allow you to better develop your skills while building your confidence, then in a short time you can transition to your Caputo flour.

Just a suggestion.

Tom Lehmann/The Dough Doctor  
372

**[Sauce Ingredients / Re: Growing Your Own Tomatoes](#)**

Ricko;

The answer is ABSOLUTELY, POSITIVELY YES! That is unless you have a favorite beneficiary on your life insurance policy that you would like to toss a few bucks their way. Clostridium is nothing to mess with, it's DEADLY, and it doesn't take much to accomplish the evil deed.

Tom Lehmann/The Dough Doctor  
371

**[Dough Ingredients / Re: How to know if flour is malted? This one?](#)**

Enzymes are used at very low levels but the flour still functions as a malted flour.  
Tom Lehmann/The Dough Doctor

370

**[Dough Clinic / Re: Predough and timing questions](#)**

A different/unique flavor that can only be achieved through the use of a sourdough starter that has been properly managed, which is a whole 'nother story.

Tom Lehmann/The Dough Doctor  
369

**[Shop Talk / Re: Opening up a pizza shop.](#)**

Be sure to avail yourself of the services and guidance available from the Think Tank at <[www.pmq.com](http://www.pmq.com)>, the TT is visited mostly by operators.

Tom Lehmann/The Dough Doctor  
368

**[Dough Clinic / Re: Extra fancy durum flour add diastatic malt?](#)**

There should be no need to add any additional malt just for the durum semolina flour as "hopefully" you are not planning to use it at 100%. Ideally, it should not be used at more than 25% of the total flour (3-parts regular flour + 1- part durum semolina flour). That is unless you want the finished crust to go in direct competition with the likes of Good Year, Firestone, Uniroyal, Cooper and a host of other tire manufacturers....it'll be that tough and chewy soon after baking.

Tom Lehmann/The Dough Doctor  
367

### [\*\*Dough Clinic / Re: Dough recipe using Caputo Americana flour\*\*](#)

Here is my N.Y. Dough formulation.

Flour: 100%

Salt: 1.75%

Oil: 2%

IDY: 0.375%

Water: 63% (variable) / (60F)

Targeted finished dough temperature: 75 to 80F

Mix Just until the dough becomes smooth.

Scale and ball.

Lightly oil dough ball.

Place in plastic bread type bag, twist open end into a pony tail and tuck under the dough ball as you place it in the fridge.

Cold ferment 24 to 48-hours (48-is better).

Remove from fridge and allow dough ball to warm to 55F internal temperature, then turn out of the bag onto a flour dusted surface.

Open into a pizza skin by your preferred method.

Dress and bake on a stone or steel.

Tom Lehmann/The Dough Doctor

366

### [\*\*Newbie Topics / Re: Forgot to oil my dough balls - question\*\*](#)

Dry, crusted dough is insoluble in the dough. You will most likely be reminded of it again when you go to open the dough balls into skins. How bad it will be remains to be seen.

Tom Lehmann/The Dough Doctor

365

### [\*\*Neapolitan Style / Re: gluten development. small batch vs large batch\*\*](#)

In most all pizzerias the dough is just mixed until it's smooth, the dough is then scaled, balled and placed into dough boxes for cold fermentation. Cross-stacked about 2-hours (50 to 55F) internal dough ball temperature, then down-stacked and kissed good night. On the following day the dough is removed from the cooler and allowed to warm to 50F (internal dough ball temperature) before opening into skins. The dough is good to use for about a 3-hour period by this method.

No other handling of the dough is required. There is a huge difference between a K5A and a 60 or 80-quart commercial planetary mixer.

If you go to my web site <[doughdoctor.com](http://doughdoctor.com)> you will be able to watch my dough making video to see how a pizzeria makes their dough.

Tom Lehmann/The Dough Doctor

364

### [\*\*Newbie Topics / Re: Forgot to oil my dough balls - question\*\*](#)

I agree ^^^

A thin crust is one thing and usually not much of an issue but my reference was for a thick, scaly crust (bad enough that you might be able to strike a match on) and usually only occurs when the dough was not covered for an extended period of time. I suppose if one was at high altitude or in a dry desert environment you could

achieve the type of crust I was referring to in less time? But I too would question only 2-hours.

Tom Lehmann/The Dough Doctor  
363

### **Dough Clinic / Re: Gas fired brick oven dough recipe question**

As a general rule, make no other changes, just reduce or eliminate the sugar, if you still want/need more bake time after that reduce the oven temperature slightly (15 to 25F). This will allow more time for the top of the pizza to finish baking while reducing bottom bake color.

Tom Lehmann/The Dough Doctor  
362

### **Newbie Topics / Re: frozen pizza crust**

What the picture shows is a thin crust skin which was formed on a sheet and die cut production line. Typically the dough has a moderate dough absorption of about 56%, it is NOT fermented, but instead used a reducing agent such as dead yeast (RS-190) or L-cysteine (PZ-44) to achieve the necessary extensibility for efficient processing. After mixing to a smooth, cohesive dough consistency (75F) the dough is taken to the automated sheeting line where it is deposited onto the production line and then reduced to approximately 3/16-inch in thickness by means of a series of reduction rolls or more likely than not, a cross roller, a single reduction roll and then a satellite multi-roller reduction roll followed by a single gauge roll then a docking roller and a die cutter. After that it's off to a blast freezer where it is frozen to +15F in about 20-minutes, then it exits into a temperature and humidity controlled room for packaging, bulk packing, palleting pallet wrapping and into a holding freezer (-10 to -15F) for 18 to 24-hours prior to shipping to a distributor.

Wanna make it at home?

Flour: 100% (12 to 12.8% protein content)

Salt: 2%

Sugar: 2%

IDY: 0.6%

Oil: 2%

PZ-44: 2%

Water: 56% (variable)

Procedure:

Mix to a smooth, cohesive dough consistency.

Scale

Ball

Allow to rest at room temperature for 10-minutes.

Roll out to 3/16-inch in thickness.

Dock the dough.

Place the dough on a 12" diameter pizza screen and trim off excess dough.

Leave the dough on the screen and place in a freezer for 1-hour.

Transfer the frozen skin to a pizza circle and wrap for frozen storage (will keep for up to 15-days).

Tom Lehmann/The Dough Doctor  
361

### **Dough Clinic / Re: Dough recipe using Caputo Americana flour**

You would want to use 0.5% ADY to replace the 0.375% IDY. Don't forget to suspend the ADY in a small portion of the dough water adjusted to 95-100F and

allow it to activate for 10-minutes before adding it to the dough water in the mixing bowl. If using the commercial dough boxes: scale, ball, place dough balls into dough box, lightly oil the top of each dough ball, place in cooler (UNCOVERED) until the internal dough ball temperature reaches 50F, then lid the box. Note: The dough must be scaled, balled boxed and in the cooler within 20-minutes of removing the dough from the mixer. The dough should be cold fermented for a minimum of 24 hours (48-hours is better). To use the dough, remove from the cooler (leave the box lidded) and allow the dough to temper AT (NOT TO) room temperature until the internal dough ball temperature reaches 50F, the dough is then ready to begin opening into skins for immediate use. The dough balls will remain good to use for up to 2,5 to 3-hours, just remember to KEEP THE BOX LIDDED after removing a dough ball.

Tom Lehmann/The Dough Doctor  
360

**Dough Clinic / Re: Where did the crust go? Air bubble...**

It appears that the crust might have been baked at too high of a temperature for the weight of the skin but to cover more bases, please tell us about your dough management procedure (everything you do with/to the dough from the time its mixed until you open the dough into a skin and dress it for baking).

Tom Lehmann/The Dough Doctor  
359

**Dough Clinic / Re: Where did the crust go? Air bubble...**

Are you saying the dough was "cold fermented" at 61F?  
Tom Lehmann/The Dough Doctor  
358

**Dough Clinic / Re: Where did the crust go? Air bubble...**

What I'm seeing is a dense crumb structure with the top crust lifted away from the crumb portion. Do the actual slices reflect that observation?  
Tom Lehmann/The Dough Doctor  
357

**Dough Clinic / Re: Cracker style dough**

Generally, an AP flour works well in this application. (10.5 to 11.2% protein content)  
Tom Lehmann/The Dough Doctor  
356

**Dough Clinic / Re: Where did the crust go? Air bubble...**

Two things I'd do, increase the dough absorption to at least 68% (possibly more) and decrease the individual dough ball weight to achieve a dough loading of 0.079646-ounces per square inch of surface area for the skin size you are opening the dough to. If you want to continue using the same dough absorption and dough weight you will need to drop the baking temperature to 500F.  
Tom Lehmann/The Dough Doctor  
355

**Dough Clinic / Re: Cracker style dough**

Well...it all depends upon what you mean by "better". You can add non-deodorized lard for a different flavor, and I like to use bacon "drippings" for a different flavor

too. A lot of people like to use Butter Flavored Crisco or Blue Bonnet Margarine (Chicago) but that's still a butter flavor.

Tom Lehmann/The Dough Doctor

354

### **Dough Clinic / Re: Looking to make frozen dough**

If you can live with a maximum frozen shelf life of 15-days what you are proposing doing is totally feasible (assuming you are going to be freezing the dough in a static freezer). Why only 15-days? It has been well documented that yeast which has been subjected to any amount of fermentation does not fare well when frozen in any kind of freezer, much less a static freezer (-10 to 0F with little to no airflow), this results in the potential for significant yeast damage as a result of being frozen which, in turn, leads to dough failure. We do know that the dough will perform reasonably well out to about 15-days but after that it's a crap shoot as to whether it will perform to customer's expectations or not and when we are selling dough you have to remember that FAILURE IS NOT AN OPTION. I would recommend using a yeast spike in the dough (addition of 0.2% IDY when making the dough) then mix the dough as cold as possible (under 70F if at all possible) then immediately go to scaling and balling. Allow the dough balls to rest for 5-minutes then flatten into "pucks" about 1 to 1.5-inches thick, lightly oil, place on aluminum sheet pans that have been stored in the cooler, place the dough pucks on the sheet pans and immediately take to the freezer, freeze uncovered for at least 3-hours, then while in the freezer, package the dough pucks in plastic bread type bags (1.5-mil. thickness) being sure to pull the bag snug to the dough puck, twist the open end into a pony tail and apply a twist tie close to the dough puck, place the pony tail under the puck as you package the dough for sale. Note: This is all done in the freezer to prevent condensation from forming on the dough.

Tom Lehmann/The Dough Doctor

353

### **Shop Talk / Re: Pizzeria Needing Wisdom!**

An Edge oven would be a very good place to begin looking at an oven to bake your heavily laden pizzas. Air impingement ovens are, by far, the best suited ovens to bake that kind of pizza. Your dough formula looks to be pretty typical so I see no issues there. You can get any kind of bake you want from an air impingement oven BUT the oven MUST have the finger profile properly configured for YOUR specific product. Edge has always been good at working with their customers to make sure the oven they are buying is properly profiled so work with them, to get the bake you want. Additionally, there are a host of different baking platforms for use in air impingement ovens so if you don't get the bake you want on one platform be sure to try some of the others. NOTE: In case you're wondering, a "baking platform" is a screen, pan or disk used to carry the pizza through the oven. Just make sure whatever you use is either seasoned to a dark color or has a black/dark gray anodized finish.

In the event that you are not satisfied with the air impingement oven there are always conveyor deck ovens to be considered, they are significantly more expensive, but they are a viable option.

Tom Lehmann/The Dough Doctor

352

### **Dough Clinic / Re: Consistency, hydration and oven temp**

Boy! It would sure be nice to be able to see your dough formulation as well as your dough management procedure on this one, inconsistency with the dough is really

hard to nail down without knowing exactly what you are doing. Remember, T.M.I. is not an issue so be sure to include all times and temperatures when outlining your dough management procedure.

Tom Lehmann/The Dough Doctor  
351

### **Cracker Style / Re: Chicago Thin (Cracker?) Crust Pizza/ Bar Pizza**

There are thin crispy pizzas and there are cracker type pizzas. What you appear to be looking for is a thin crispy type aka Chicago style thin crust pizza. You really don't need to go very far back into the archives here to find discussion and some very good pictures of this type of pizza.

Tom Lehmann/The Dough Doctor  
350

### **Dough Clinic / Re: Marsal vs. Blodgett vs. Bakers Pride Gas Ovens**

I like all three, but my preference is for the Marsal oven, thicker decking and lots of BTU's make for great ability to continually load and unload pizzas without any difference in bake. Just don't buy into the story line about not needing to rotate the pizzas in the oven, I've never found that to be true for any deck oven with a door!

NOTE: Their gas decks come with an internal gas regulator already installed, DO NOT install another gas regulator.

Tom Lehmann/The Dough Doctor  
349

### **Off-Topic Foods / Re: Fried pizza dough**

Don't forget that the Celeste brand frozen pizza is made using a fried crust, it was the topic of a huge and long running legal law suit between Pillsbury and Jeno Palucci which finally ended in 1985 when Jeno sold out to Pillsbury. At one time it was estimated that legal expenses were about 10-million dollars a year for that suit and anyone even thinking of frying a piece of dough was targeted in the suit too.

Tom Lehmann/The Dough Doctor  
348

### **Neapolitan Style / Re: What flour should I try next? Looking for a certain taste**

The question that begs to be asked is, what does your "tasteless" crust dough formula look like?

Tom Lehmann/The Dough Doctor  
347

### **Dough Clinic / Re: Looking to make frozen dough**

No, a yeast spike is added AFTER the poolish, the idea is to have some yeast in the dough that has not been allowed to ferment (it will have a better survival than yeast that has been allowed to ferment). Even the best frozen dough manufacturers only get 21 to 23-weeks of frozen shelf life from their dough. To get that kind of shelf life you will need to blast freeze the dough at -30 to -37F with 600 to 800-linear feet of airflow over the product, or you will need to use a cryogenic freezer (liquid nitrogen or carbon dioxide) with pressure adjusted to give a temperature in the product zone of -50 to -65F, then package and immediately place into a holding freezer at -15F to finish freezing. After 2-hours in the holding freezer the internal dough ball/puck temperature is measured, if it is -15F the time in the cryogenic freezer is correct, if the temperature is higher than -15F the time in the cryogenic

freezer will need to be extended and if the temperature is lower than -15F the time in the cryogenic freezer will need to be reduced (as a matter of economics). Date loggers are placed with shipments of frozen dough to monitor dough temperature (temperature abuse is a major cause of dough failure) during distribution.

Tom Lehmann/The Dough Doctor

346

### **Dough Clinic / Re: Looking to make frozen dough**

One other thing, vacuum packaging is NOT recommended for dough or finished product due to the potential for clostridium. MAP is what everyone uses.

Tom Lehmann/The Dough Doctor

345

### **Off-Topic Foods / Re: Fried pizza dough**

I was working for him at one time, once was enough!!!

Tom Lehmann/The Dough Doctor

344

### **Detroit Style / Re: Can anyone help me figure out this issue**

Do the crusts look normal immediately when coming out of the oven? If so the issue is due to collapse resulting from insufficient bake.

Tom Lehmann/The Dough Doctor

343

### **Neapolitan Style / Re: What flour should I try next? Looking for a certain taste**

Yep, 3-hours RT fermentation is just OK for bread but it sure doesn't cut it for pizza. Reduce the IDY to 0.4% and CF for at least 48-hours. I've posted my Dough Management Procedure here a number of times if you need a procedure to start with (a quick trip through the archives will bring it up). I would do this with my regular flour first, and then begin introducing other flours in 10% replacement increments up to 30%. This will allow you to assess the many different options across their typical use level and hopefully find something that you like while having fun experimenting at the same time. Just remember to keep good records (times and temperatures are important to record in your notes).

Tom Lehmann/The Dough Doctor

342

### **Off-Topic Foods / Re: Fried pizza dough**

His two favorite words: You're fired!!! I didn't include the common adjectives he included with the phrase for obvious reasons.

Sorry Donald, he beat you to the phrase. :-D

Tom Lehmann/The Dough Doctor

341

### **Dough Ingredients / Re: Want to try a new flour**

What you are looking at is a pasta flour made from a variety of durum wheat, not the best choice for making pizza. The gluten that is formed from durum flour is vastly different (it has little extensibility) from that of wheat flour.

Tom Lehmann/The Dough Doctor

340

### **Dough Clinic / Re: Why does my skin look like this?**

Agreed. I do see at the 2 o-clock position, slightly in from the edge an area of dough collapse resulting from insufficient bake time.

Next time try par-baking the crusts with 1/2 of the sauce on them and you will get a better finished crust.

Tom Lehmann/The Dough Doctor  
339

**[Neapolitan Style / Re: Please help me troubleshoot my Neo pizzas from tonight](#)**

What was the flour weight in your dough formula, need it to determine the IDY percentage.

Tom Lehmann/The Dough Doctor  
338

**[Dough Clinic / Re: iced water for flour with ascorbic acid](#)**

Yeast is NOT an oxygen scavenger, it produces carbon dioxide during fermentation which will displace a small portion of the oxygen/air in the dough. In an anaerobic environment ascorbic acid is indeed a dough reducer but to get the reducing effect you need to mix the dough under a vacuum using a Tweedy mixer. Forget what you read as it does not apply here. Just go ahead and make your dough as you normally do.

Tom Lehmann/The Dough Doctor  
337

**[Dough Clinic / Re: low or high hydration whats the advantage of both ?](#)**

Different types of pizzas have different identifying characteristics and water/dough absorption is a tool that we use to achieve some of those characteristics. Higher absorption = a softer, more fluid dough that will exhibit more oven spring during the baking process while lower absorption will tend to inhibit oven spring. I'm not sure if all of this is covered in the function of ingredients that we have here but do take a look. We're always happy to expand on any questions which you might have.

Tom Lehmann/The Dough Doctor  
336

**[Newbie Topics / Re: A real noob question: sticky dough](#)**

Use a little flour or oil on your hands to remove the dough from the bowl, then use a plastic bowl scraper to scrape the dough up for the folding process, after a few folds it will become noticeably easier to manage, don't be afraid to use a little dusting flour too to help get things started. Remember, you're making dough, not rocket fuel or nitro glycerin ;D

Tom Lehmann/The Dough Doctor  
335

**[Dough Clinic / Re: Dough recipe using Caputo Americana flour](#)**

If using compressed yeast use 1%.

No change in water temperature is needed.

When I'm making N.Y. style pizza at home I like to use All Trumps Flour (14+% protein content).

Tom Lehmann/The Dough Doctor  
334

**[Neapolitan Style / Re: Please help me troubleshoot my Neo pizzas from tonight](#)**

Not knowing anything about the strength of your sourdough starter, I'd start at 5% and go up in 5% increments. For a "true" sourdough no yeast is used, plus typically a sourdough doesn't play well at refrigerated temperatures so you might want to think about 12 or 24-hours at room temperature for starters.

Tom Lehmann/The Dough Doctor  
333

**[Dough Clinic / Re: how much old dough in % for 1 kg flour new dough batch ?](#)**

The amount of "old" dough that can be added is highly variable depending upon the formulation and age of the old dough so the amount added will be application specific. When we studied this many years ago we found that, for the most part, we could add 15% (based on the total fresh dough weight) old dough without significantly impacting the performance of the new dough, so in your case the amount added will be something greater than 15%. I would suggest starting with 20% old dough addition and going up in 10% increments (30%, 40%, 50%, etc.) from there. Because the amount of old dough is being calculated on a "true %" basis (based on total dough weight as opposed to bakers percent) no other dough changes are generally needed. The end result is similar to that of using a biga or a "sponge" in making a dough.

Tom Lehmann/The Dough Doctor  
332

**[Dough Clinic / Re: low or high hydration whats the advantage of both ?](#)**

Since N.Y style pizzas are typically baked at a lower temperature than NP style pizzas you could bake the NP pizzas first and then bake the N.Y. style pizzas in the cooler oven.

As for the water question, Soft water is not preferred for making dough and R.O water is even less preferred. This is because of the beneficial effects of the minerals in hard water on the dough and fermentation. If you do a search through the archives you will find quite a bit of discussion on hard v/s soft water in making dough.

You also mention multi-grain and whole-grain doughs, again, we had some excellent discussion on that topic not too long ago where I gave the procedure for finding the correct dough absorption and dough making process for there sometimes difficult to make doughs. Done correctly they will make great pizzas but done incorrectly whole-grain and multi-grain pizzas are many time described with words like cardboard, leaves and twigs, etc.

If you are planning to use your wine room as opposed to a refrigerator for cold fermentation you will need to reduce the yeast amount and you may not get the same flavor profile in the finished crusts as you would at the lower temperatures.

Tom Lehmann/The Dough Doctor  
331

**[Dough Clinic / Re: Neapolitan dough in a spiral mixer](#)**

92F is much too hot for your dough. What was the temperature of the water that you were using to make the dough with? Also, please tell us about the formulation, age and amount of poolish you used.

Tom Lehmann/The Dough Doctor  
330

**[Stones/tiles/steel, Pans & Accessories / Deep-Dish Pizza Pans](#)**

We just returned from vacation in Park Rapids, Minnesota and while we were there

we visited Linda's Recycled Goods, 807 West 1st. Street, Park Rapids MN. 56470/Tel: 218-252-3949/ Cell: 218-252-5005/ Linda and Richard Anderson (owners). In their back room they have a lot of different size deep-dish pizza pans. I bought a dozen individual size deep dish pans for just \$2.00 each. The pans range in condition from very good to like new. If any of our members in Minnesota are located close to Park Rapids and you are interested in getting some (what appear to be Pizza Hut) individual size deep-dish pans, this is a good opportunity pick some up and look at other pans which they also have.

Tom Lehmann/The Dough Doctor  
329

### **Newbie Topics / Re: Transferring From peel to the stone has been my biggest problem**

I don't know how much you are referring to when you say that your dough "shrinks back" when peeling the dough into the oven but there are two things than can be done, one is to ensure the dough has been properly fermented (insufficiently fermented dough has a greater tendency to exhibit memory characteristics) and to open the dough up to a slightly larger diameter that what you are targeting with the knowledge that the dough will shrink back to the target diameter as you peel it into the oven. Additionally, during the baking process you can expect the pizza to contract by something between 1/4 and 1/2-inch in diameter.

Other things which can/will impact the way the dough handles on the peel:  
Dough temperature (warm dough tends to be more problematic)  
How thin the skin is (very thin skins are more problematic)  
Amount and viscosity of the sauce used. (heavy sauce application and thin sauce viscosity tend to be more problematic)  
Length of time needed to assemble/dress the pizza/skin. The longer it takes the greater the propensity for the dough to stick)  
Type of peel being used. (In my experience wood peels are easier to use and more forgiving)  
Failure to shake the skin on the peel during and after building the pizza can result in the dough sticking to the peel.  
Just some ideas for consideration.

Tom Lehmann/The Dough Doctor  
328

### **Dough Clinic / Re: Neapolitan dough in a spiral mixer**

Using your spiral mixer I really think you can just add all of the ingredients to the mixer at the same time (including the poolish) and begin mixing, this will result in better mixing action which will result in a shorter mixing time. Use cold water (at least 60F) and shoot for a finished dough temperature of 75 to 80F. Regarding the 15-minute cross-stack time, this is not nearly enough time to accomplish anything, instead allow the dough balls to remain cross stacked until the internal dough ball temperature reaches 50 or 55F (pick one), then down-stack and kiss the dough good night. Note: Be sure to lightly oil the top of the dough balls to prevent excessive drying of the dough during the cross-stack period.

Tom Lehmann/The Dough Doctor  
327

### **Dough Clinic / Re: Canotto style**

High dough absorption, well fermented dough baked at 850F+ and hand formed.  
Tom Lehmann/The Dough Doctor  
326

**[Newbie Topics](#) / [Re: Transferring From peel to the stone has been my biggest problem](#)**

Just for the record, I'm not a big fan of composite peels, they tend to be overly heavy for their size and the dough tends to stick to them. I'll take a good wood peel every time.

Tom Lehmann/The Dough Doctor  
325

**[Dough Clinic](#) / [Re: Dough balls drying out on wooden boxes](#)**

It appears that the dough box might be too big for the size and count of the dough balls that you are using.

Tom Lehmann/The Dough Doctor  
324

**[Dough Clinic](#) / [Re: Dough not rising and too white](#)**

If your flour weight is 12.5Kg/12500 here is what your ingredient weight should be for the percentages you cited.

Flour: 100%  
Sugar:500-grams  
Salt: 187.5-grams  
Oil: 125-grams  
Yeast cake/compressed yeast: 62.5-grams  
Water: 7000-grams

Please note that all of these do not align with your numbers based on 12500-grams of flour weight.

Tom Lehmann/The Dough Doctor  
323

**[Focaccia Style](#) / [Re: Focaccia rising in pan](#)**

I always let it rise in the pan before baking. What do you mean by "others will TIP the focaccia"? Did you mean "top"? I always allow the dough to rise in the pan before topping as this prevents any possibility of moisture migration into the dough during the proofing period.

Tom Lehmann/The Dough Doctor  
322

**[Dough Clinic](#) / [Re: Dough balls drying out on wooden boxes](#)**

Gene has a good idea there, try covering the box with a damp towel and then cover with the plastic wrap, I don't like the idea of spraying water in the box. Water + flour = GLUE (wallpaper paste).

Tom Lehmann/The Dough Doctor  
321

**[Prep Equipment](#) / [Re: Perforated peel for large NY style pies?](#)**

It seems to be a love/hate relationship, some people love them, others hate them. My own personal preference is for a good wood peel.

Tom Lehmann/The Dough Doctor  
320

**[Prep Equipment](#) / [Re: Perforated peel for large NY style pies?](#)**

When you say "larger" I don't know how large you mean but I've made pizzas up to

20" in diameter on my wood peels, that was also the largest diameter wood peel we had at the time, if we had a larger one I'd have used it too.

Tom Lehmann/The Dough Doctor

319

### **Dough Clinic / Re: Dough not rising and too white**

Raj;

Your dough formula shows "yeast cake" at 0.5%, not 1 to 1.5%.

Also, the flour bag does not indicate any malting or use of enzymes, hence it is an unmalted flour. The only thing it has is some added enrichment.

Tom Lehmann/The Dough Doctor

318

### **Dough Clinic / Re: Pizza comes out soggy in the middle...**

Your oven temperature is very low for baking pizza, 350 to 375 is better suited for baking cakes. Added to that, if the oven is not FULLY up to temperature it would really be difficult to get a decent bake on a pizza as the act of putting a pizza in the oven as well as baking will further drop the temperature creating a double "whammy" for you. My advice is to adjust the oven temperature up to 500F, allow at least 90-minutes for the oven to fully heat and stabilize in temperature and then bake, I think this will give you a much better bake if you are using a dark colored pan as an added plus, you won't need to wait so long for your pizza to come out of the oven so you'll be eating pizza sooner. ;D

Tom Lehmann/The Dough Doctor

317

### **Prep Equipment / Re: Measuring scale**

My preference is for the AND /A&D Weighing scales, <[www.andweighing.com](http://www.andweighing.com)>

Their scales are about bullet proof, accurate and best of all they operate on common flashlight batteries.

Tom Lehmann/The Dough Doctor

316

### **Pizza Toppings / Re: Vegetarian pizza**

If you saute the vegetables you will not have any of the problems you mentioned. Also, be sure to LIGHTLY brush the skin with a little oil before dressing it, this will help to retard the migration of moisture into the crust as it is being baked. This is an application where air impingement ovens really shine as they are very effective at removing moisture from the top of the pizza if the top fingers are properly configured. If you have a deck oven you can also bake at a lower temperature (450F/232C) to help dry off the top of the pizza.

Tom Lehmann/The Dough Doctor

315

### **Pizza Cheese / Re: Margarita pizza**

If you are using the cheese from refrigerated storage (required by law as it is a food safety issue) the season of the year will not make a difference. Another trick to help control color development on the cheese is to mist the top of the pizza with water. Having an air impingement oven and with the issues you are having with the vegetable pizzas and your cheese getting excessive color I'm also guessing that the top fingers are not correctly profiled for YOUR pizzas. What is the baking time and baking temperature you are using and what is your baking platform (pan, screen, disk and what color is it)?

Tom Lehmann/The Dough Doctor  
314

**Dough Clinic / Re: Dough not rising and too white**

Get the specifications for the diastatic malt that is available to you and let us see it, we can then direct you on its use. Typically, you will be looking for a 20 degree Lintner Value dry malt powder, if you can get it it will be used at 0.25% of the flour weight. The only change to the dough formula will be to adjust the sugar content to 2%. The dry malt is just added right on top of the flour with no special handling.

Tom Lehmann/The Dough Doctor  
313

**Dough Clinic / Re: Pizza comes out soggy in the middle...**

When you open the door of a home oven and place a pizza in the oven, don't kid yourself, the oven takes a BIG hit and the burner is not designed for rapid recovery, instead, it's designed to be economical and have a 20 Energy Star rating.

Commercial ovens can have a burner with a greater BTU capacity than most home furnaces and they are designed so as not to lose very much air/temperature when opening the door, plus they have a lot more thermal mass than a few bricks.

I'm betting that your pizza will take close to twice as long to bake in your home oven.

Tom Lehmann/The Dough Doctor  
312

**Dough Clinic / Re: Neapolitan dough in a spiral mixer**

IR thermometers are fine for all but the internal dough ball temperature measurements, for that I recommend a low cost dial/stem type thermometer. Make sure it has a hex nut under the head/dial, this is the adjustment nut that is used to calibrate the thermometer.

To calibrate, use an oral thermometer available from any pharmacy at low cost, adjust the water temperature to get a temperature reading on the oral thermometer, note the temperature, place the stem of the dial thermometer in the glass of water holding the oral thermometer, note the temperature shown on the dial, if necessary adjust the temperature so it reads the same as the oral thermometer, now you're good to go.

Tom Lehmann/The Dough Doctor  
311

**Focaccia Style / Re: Focaccia rising in pan**

I like to think of focaccia like a bread, where you have to allow the dough to proof/rise in the pan before baking.

Tom Lehmann/The Dough Doctor  
310

**Dough Clinic / Re: Dough not rising and too white**

The diastatic malt (450-grams for \$6.75) is the one to use. They don't appear to provide any information on the L-value so I would suggest starting out at 0.25% and going up from there if necessary.

Tom Lehmann/The Dough Doctor  
309

**New Forum Members / Re: Freezing pizza dough**

Assuming you would be static freezing the dough (0 to -15F) with little to no

airflow, you can freeze the dough with a projected frozen shelf life (use it or lose it) of about 10-days. For anything longer than that you will need to go with blast freezing (-25 to -38F with airflow of 600 to 800 linear feet per minute or cryogenic freezing (liquid carbon dioxide or nitrogen) with pressure adjusted to give -45 to -55F in the product zone plus a holding freezer at -15F to allow the frozen product to equilibrate to a core temperature of 0 to +15F within 90-minutes of exiting the cryogenic freezer.

Vacuum packaging is NOT recommended due to the potential for clostridium growth.

Tom Lehmann/The Dough Doctor  
308

### [\*\*Newbie Topics / Re: Pizza steel experience and what'r wrong.\*\*](#)

I'm betting that you didn't bake it at a temperature north of 800F. That's what it takes to bake a pizza made with Caputo 00 without any added sugar or diastatic malt in the dough formula.

Tom Lehmann/The Dough Doctor  
307

### [\*\*Pizza Cheese / Re: Margarita pizza\*\*](#)

Raj1;

Your temperature is OK but the baking time is much too long. I'm betting the problem is with your pans being too light in color, can you send a picture of your pans so we can see what the bottom and outside look like? A more typical baking time would be 6.5 to 7-minutes max. This will probably correct the cheese issue too. If it doesn't the top finger profile will most likely need to be changed to something flowing less air.

Tom Lehmann/The Dough Doctor  
306

### [\*\*Sauce Ingredients / Re: Eggplant as sauce?\*\*](#)

I make egg plant lasagna frequently so why not pizza? I've not done it, but it sounds interesting with lots of opportunity to experiment.

Tom Lehmann/The Dough Doctor  
305

### [\*\*Dough Clinic / Re: Neapolitan dough in a spiral mixer\*\*](#)

With those conditions water stored in the walk-in over night would be a good place to start.

Tom Lehmann/The Dough Doctor  
304

### [\*\*Dough Ingredients / Re: Dough Conditioners/Enhancers\*\*](#)

Wow! Dough conditioners, there are sooooo many different kinds of them. Some make the dough softer and more extensible, some make it tighter and less extensible, some make it feel drier, some make it stronger and then there are the enzyme based dough conditioners and the non-enzyme based conditioners.

Whatever else is also in that bag of flour that you've got aside from "wheat flour" by law, has to be shown on the bag label. In the past we used to see potassium bromate added to the flour as a flour improver, not a dough conditioner but due to health concerns we don't see it used nearly as often as we used to. We still see a lot of ascorbic acid being used as a flour improver so it's pretty common to see it on the label. Then too we used to see Maturox on the bag label too

(azodicarbonamide) but even that has fallen from favor in the past few years. Many flours are malted so malted barley flour will often be seen on the bag label however that is now being replaced by the addition of amylose enzymes to the flour, so now we often just see "enzymes" listed on the label. Then there is the standard flour enrichment declaration that most flours will have as many states require that all flour sold in their state be enriched to Federal standards. Whole-wheat/whole-grain flours are exempt from this requirement since non whole-wheat flours are enriched to the same vitamin and mineral content as whole-wheat flour. Today, for the most part, the only difference between white flour and whole-wheat flour is the bran/fiber content contained in the whole-wheat flour.

One other thing, because there are so many different kinds of dough conditioners with different functions a dough conditioner is never randomly added to any flour, it is added only to address a very specific issue associated with the dough. I used to tell my students to think of dough conditioners as medicine for the dough. You have to know what's ailing the dough before you can prescribe a medicine (dough conditioner) to address the problem. When working in Mexico back in the 70's I used to bring an assortment of different functioning dough conditioners with me. To facilitate handling the ones I brought with me were all in tablet or gelatin capsule form and once I knew what the issues were with the dough it was easy for me to select the correct dough conditioner and add it to the dough, these became known as "aspirina para la masa" (aspirin for the dough) and since I was the one giving them out I became known as the "El medico para la masa" Literally translated: The Dough Doctor, the title stuck.

Tom Lehmann/The Dough Doctor  
303

### **Dough Ingredients / Re: Flour**

I would begin my search by looking right here, over the years we have had a lot of discussion on different types of flour that can be used to make pizza. While typical bread flours are appropriate for making pizza the reverse cannot be said for making all types of breads. Pastry flours are a totally different animal as they are generally made from soft wheat varieties which form a much softer/weaker gluten structure necessary for the tender eating characteristics associated with pastries. Then there are cake flours. There are two basic types of cake flours, high ratio cake flour for use in cake formulations where the sugar is greater than the flour. These flours are chlorinated AKA chlorinated cake flour. The other cake flour is for cake formulas where the sugar is equal to or less than the flour AKA low ratio cakes. Low ratio cake flours are typically the same as a pastry flour but are usually milled to a finer particle size, however for home use an all-purpose flour will work just fine for making low ration cakes. Then there is whole-wheat flour, when it's made from hard red winter wheat or spring wheat varieties it is known as whole-wheat flour and it is commonly used in breads, rolls, buns, pizzas either in total or in part. When the whole-wheat flour is made from varieties of soft wheat flour it is known as "graham" flour. Yes, graham crackers are made from whole-wheat flour and it is used in pastries, cookies, and just about any other type of baked product not requiring a lot of strength/gluten. On top of this, there are hard red wheat varieties where the wheat berry is a dark mahogany to brown in color, the color is due to tannin which gives the wheat a somewhat bitter taste, then there are hard white wheat varieties (only type of wheat grown in Australia) which is growing in popularity here in the U.S. due to its greater acceptance as a whole-wheat flour owing to its reduced tannin content making the flour less bitter tasting, lastly, you have spring and winter wheat varieties. Due to the different climatic conditions/geographic regions that the wheat is grown in some areas grow

winter wheat which is planted in the fall and harvested in the following summer. In colder regions the wheat is planted in the early spring and harvested in the early fall to late summer, this is known as spring wheat. Typically, spring wheat varieties will have a higher protein content than winter wheat varieties but they will perform equally on an equal protein basis. That's it in a nutshell, now you can read up on the finer details to learn more about each.

Tom Lehmann/The Dough Doctor

302

### **Dough Clinic / Re: soft neapolitan cornicione**

What you have is pretty standard for a NP pizza.

A couple of things you might try are as follows:

- 1) Brush the edge with oil immediately prior to baking.
- 2) If you can "dome" the pizza in your oven this might also help.
- 3) As soon as the bottom of the pizza is baked place a screen under the pizza to allow for a longer baking time.
- 4) Change direction and make a New Haven style pizza.

Tom Lehmann/The Dough Doctor

301

### **Dough Clinic / Re: Pizza comes out soggy in the middle...**

Due to their high sugar content cookies will burn, especially when placed directly on the stone just about every time they see temperatures above the 350 to 400F mark. If you look at the bottom of most cookies you will see that the bottom is a bit darker than the rest of the cookie except for the rim which is sometimes also dark due to lateral heat penetration. To bake cookies with balanced color it is common to remove the cookies from the oven before they are fully baked they are then allowed to cool on the baking sheets during which time the cookies finish baking from the latent heat stored in the baking sheet. Point is, cookies are a poor test media for a pizza oven, the one thing you did learn from the test though is that while the bricks remained hot the air in the oven did not as the top and bottom color were different. Remember too that the crown height and shape in an oven has a huge impact upon how that oven will bake different products.

Tom Lehmann/The Dough Doctor

300

### **Pizza Toppings / Re: Vegetarian pizza**

Raj1;

No, if it did you would have dehydrated mushrooms. You are just reducing the moisture content. In commercial applications we use moisture controlled vegetable toppings with excellent results. The DiGiorno brand of frozen pizzas utilize the moisture controlled IQF (individual quick frozen) toppings. They retain color and texture much better than fresh toppings making them especially well suited to use in frozen pizzas.

Tom Lehmann/The Dough Doctor

299

### **Dough Ingredients / Re: Dough Conditioners/Enhancers**

One thing to be aware of is that while ascorbic acid is indeed the same as vitamin-C the forms used in a dough to act as a "dough improver" are NOT the same. The form of AA used in dough conditioners or as a dough conditioner is either fat encapsulated or micro-crystalline encapsulated to slow/delay its reaction in the dough. Ascorbic acid reacts very fast unless treated in this manner thus

significantly reducing its benefit as a dough strengthener. When added at the flour mill (this is the AA that you see shown on the flour bag) it is added to rapidly oxidize the flour so it is not treated/encapsulated. This is important as it improves the baking properties of the flour. When flour is not properly oxidized after milling it is referred to as "green" flour. Before the advent of ADA and AA the bakers used to store their flour for 30-days or more to allow for normal oxidation to take place....not very practical anymore to say the least! This natural oxidation also explains why flour that is milled towards the end of a crop year tends to show stronger characteristics than new crop year flour (wheat berries, not just flour will naturally oxidize), and it also explains why if we, at home, store flour at room temperature can find that for some strange, unexplained reason the flour seems to becomes stronger, now you know why, natural oxidation is the answer.

Tom Lehmann/The Dough Doctor

298

### [\*\*Resources / Re: High Gluten Flour\*\*](#)

As a point of interest, those pics above look just like what we were demonstrating to our students, additionally, you see in the pics what appears to be darker/less translucent areas within the dough sheet, those areas are referred to as the "gluten web structure" or just "web structure". This is important to know as it is an indication of gluten development, the finer the web structure, the better/greater the gluten development. Both pics show EXCELLENT and very complete gluten development.

Tom Lehmann/The Dough Doctor

297

### [\*\*General Pizza Making / Re: Semolina and whole wheat flour in formula\*\*](#)

While both whole-wheat and semolina flour are indeed included in the dough absorption equation they must be calculated separately from the regular white flour. This has been discussed along with a procedure on how to do it previously here, a quick search through the archive will take you to it.

Tom Lehmann/The Dough Doctor

296

### [\*\*Dough Clinic / Re: Pizza comes out soggy in the middle...\*\*](#)

While the bricks will be a bit hotter than the air above the bricks the main reason for what you saw was due to the type of heat transfer taking place. Conduction due to direct contact with the hot object allows for very rapid heat transfer, convection due to contact with the air is a pretty poor heat transfer mechanism. This is why even though a commercial deck oven might be baking pizzas at 525F we can safely reach into the over without getting burned, just DON'T touch anything in the oven! When you bake those cookies on a raised rack above the bricks you change the type of baking from conduction to convection.

Tom Lehmann/The Dough Doctor

295

### [\*\*Resources / Re: High Gluten Flour\*\*](#)

I couldn't agree with you more ^^^

My "go to" flour for making pizza is 12.2% protein content on average.

Tom Lehmann/The Dough Doctor

294

### [\*\*Dough Ingredients / Re: Dough Conditioners/Enhancers\*\*](#)

Absolutely! The amount of actual ascorbic acid used is only 30 to 120 ppm (parts per million) based on total flour weight. When we use it in tablet form each tablet (about the diameter of a dime and 1/4-inch thick) provides 30-ppm, the rest of it is filler too.

Tom Lehmann/The Dough Doctor  
293

**[Dough Clinic / Re: soft neapolitan cornicciione](#)**

I might be a bit concerned about using sugar or malt at the high baking temperature employed here, but it's always worth a try.

Tom Lehmann/The Dough Doctor  
292

**[Pizza Cheese / Re: Margarita pizza](#)**

It looks like pictures of two different types of pans, deep-dish pans and what appear to be similar to what we call a "cutter" pan (40 degree sloped sides). The cutter pans from what you sent are bright on the outside bottom, they should be dark colored like the inside of the pan. The deep-dish are well seasoned on the inside but there doesn't appear to be a picture of the outside bottom so I can't tell.

Tom Lehmann/The Dough Doctor  
291

**[Stones/tiles/steel, Pans & Accessories / Re: Dishwasher safe serving pans](#)**

The aluminum pans get discolored due to a reaction between the alkali in the soap and the aluminum. This is especially bad with raw/bare aluminum pans. Anodized aluminum has the protective anodizing so the problem isn't as bad until the anodizing is worn off and considering the pan will be used for table service that might happen sooner than later. Steel pans are galvanized to protect from rusting so they don't suffer the same fate but over time rusting could be a potential issue.

Tom Lehmann/The Dough Doctor  
290

**[Dough Ingredients / Re: Yeast increase](#)**

You should not need to adjust the dough absorption seasonally, ditto for the yeast level but only if you are managing the dough correctly, by this I mean targeting a specific finished dough temperature (70F/21.1C is a good starting point) and maintaining that temperature for all of your doughs.

Tom Lehmann/The Dough Doctor  
289

**[Stones/tiles/steel, Pans & Accessories / Re: Dishwasher safe serving pans](#)**

I personally don't know of any manufacturers still using galvanizing, instead they are all using TIN PLATE which is very different from galvanizing, with none of the safety issues either.

Tom Lehmann/The Dough Doctor  
288

**[Pizza Cheese / Re: Margarita pizza](#)**

The deep-dish pans have plenty of color on the outside bottom, but the other pans don't and that could be a contributing factor to your long baking time.

Tom Lehmann/The Dough Doctor  
287

## [\*\*Dough Clinic / Re: Sour dough starter question\*\*](#)

Has your starter been stored under refrigeration since you started it? Most starters do not perform well at refrigerated temperatures but if you have kept the starter at refrigerated temperature the micro-flora present in the starter has adapted and will continue to flourish under those conditions whereas if you have stored it at ambient temperature (whatever that might be) it will not fare as well when held under refrigerated temperature (40F +/-).

Tom Lehmann/The Dough Doctor

286

## [\*\*Pizza Toppings / Re: Vegetarian pizza\*\*](#)

The one caveat is that you want to leave enough water/moisture in the mushrooms to prevent them from burning during baking of the pizza. Remember, mushrooms are approximately 90% water by weight. I've seen pizzas made where the mushrooms were too low in moisture content going onto the pizza and after baking the mushrooms were all but black.

Tom Lehmann/The Dough Doctor

285

## [\*\*Dough Ingredients / Re: Yeast increase\*\*](#)

It's perfectly safe to eat yeast just as it is (in moderation). I know individuals who actually eat raw yeast believing that it's good for them. I don't know about that, but they're healthy. For me, I'll take a pass on the raw yeast and consume it after it has been allowed to do its work in fermenting the dough and getting killed during the baking process (much more tasty that way). In any case, there is nothing to fear in eating raw yeast in moderation or any amount of spent yeast in baked dough.

Tom Lehmann/The Dough Doctor

284

## [\*\*Dough Clinic / Re: Dough balls too flat\*\*](#)

Start out at 62% absorption again and adjust if necessary, don't ever be afraid to adjust the dough absorption, flour is rather variable when it comes to absorption, especially the Caputo flours.

Tom Lehmann/The Dough Doctor

283

## [\*\*Pizza Cheese / Re: Margarita pizza\*\*](#)

The photo (12 of 16) showing four different black colored steel pan options shows what appear to be very similar to your existing pans, the second one from the right and the last one (#4) from the right. Get a few in the sizes that you need and give them a try.

Tom Lehmann/The Dough Doctor

282

## [\*\*Newbie Topics / Re: Pizza steel experience and what went wrong.\*\*](#)

It appears that the top of the pizza still needs a lot of work which is beyond the dough, or is that a par-baked crust which has been dressed and ready to go into the oven?

Tom Lehmann/The Dough Doctor

281

## [\*\*Dough Clinic / Re: Freezing dough ball question\*\*](#)

The sooner you can freeze the dough balls after mixing the better the finished

results will be. The procedure that I developed for commercial frozen dough balls is as follows:

- 1) Slack-out (defrost) dough balls in the fridge for 12-hours.
- 2) Remove from fridge and allow to set at room temperature until the INTERNAL dough ball temperature reaches 50 to 55F (pick a temperature).
- 3) Place back into the fridge to CF for 24-hours.
- 4) Remove from fridge and allow to set at room temperature until the INTERNAL dough ball temperature reaches 60F.
- 5) Begin opening the dough balls into skins for immediate use.

Tom Lehmann/The Dough Doctor  
280

### **General Pizza Making / Re: Superstitions?**

That's how you tell the "good guys" from the "bad guys" in the old western movies too, the good guys are always wearing white hats. :-D

Tom Lehmann/The Dough Doctor  
279

### **Dough Clinic / Re: Popping dough**

Not at all, it sounds like you might be making a fairly low absorption (50's %) range dough.

Rom Lehmann/The Dough Doctor  
278

### **Dough Clinic / Re: Popping dough**

Amolapizza;

That's an EXCELLENT video! Shows correct dough development with the spiral mixer and also shows effects of biochemical gluten development.

Thank you for making it and sharing it.

Tom Lehmann/The Dough Doctor  
277

### **General Pizza Making / Re: Dough is not light and fluffy**

And to add a few logs to the fire;

What was the finished (mixed dough temperature)?

You said the dough was wet, did you leave the containers open until the internal dough ball temperature reached 50F?

After removing the dough balls from the fridge you only need to wait for the INTERNAL dough ball temperature to reach 55 to 60F before opening them into skins....4-hours was wwaayy too long.

You will also want to get a scale so you can begin weighing your ingredients, this will also allow you to put your dough "recipe" based on volumetric portions, into a dough formula, based on ingredient weights which can then be expressed in bakers percent to make evaluation of the dough formula much easier. By weighing your ingredients you will have significantly better consistency in dough performance too.

Tom Lehmann/The Dough Doctor  
276

### **Newbie Topics / Re: Trying to understand some things I've been doing for years, but never asked**

For all practical purposes, fermentation begins as soon as the dough begins to mix and ends with the cessation of oven spring when the dough temperature reaches

the thermal death point of the yeast (approximately 137F). Keep in mind that when discussing dough management total fermentation time includes both the dough fermentation and dough proofing times. Dough proofing is the time allowed for the dough to rise after shaping, for example a deep-dish pizza dough might be fermented for 24-hours, and then shaped and placed into the pan and allowed to proof for an additional 60-minutes before dressing and baking. If a dough is fermented in bulk or as a dough ball it doesn't matter, it's still referred to as the "fermentation" period. When cold fermenting, the time that we allow for the dough balls to warm up after removal from the fridge is not counted as fermentation or proofing time since the dough is too cold to ferment very much during this relatively short period of time, this is ASSUMING that the dough is being allowed to temper to the 50 to 60F range before opening, dressing and baking.

Tom Lehmann/The Dough Doctor

275

### [\*\*Dough Clinic / Re: Emergency dough\*\*](#)

Raj1;

Yes, there is an "emergency" dough procedure but I don't recommend its use as you have outlined as it is too different from your regular production dough. Instead, it is intended to be used in situations where all of your regular dough has been lost, forcing you to close the store, in this case the emergency dough will allow you to remain open. We always tell our clients to manage their dough in such a manner so as to have carry-over dough at the end of the day which can be used on the following day. Let's say your best day of the week is 100 pizzas, you always have an inventory of 15% greater than this on each night of the week and when you make dough make just enough to rebuild your dough inventory back to the 100 + 15% (115). This is where an Effective Dough Management program is worth its weight in gold in a commercial operation as it allows you to use your dough over a 2 to 3-day period and never toss out any dough unless it hits the floor. Sales/dough projections and dough management are critical aspects of operating a pizzeria.

Tom Lehmann/The Dough Doctor

274

### [\*\*Newbie Topics / Re: "Good pizzas are 90% oven" "conveyor ovens are not great" Oven primer for newb\*\*](#)

The one thing that I find absolutely AMAZING about air impingement ovens is just how few operators know anything about them! They really don't have a clue as to how they bake, how the fingers work or the importance of the finger profile, or even what kind of different fingers are available for their specific oven. This observation doesn't necessarily stop at the owner/operator either, it also flows back to the oven manufacturers too. I personally, have been very critical of this for a good number of years now and I can say that there are some of the manufacturers who are very good at working with their customers to find the best finger profile for their client's pizzas but there are still some out there who insist upon selling you an oven with a generic, one size fits all, finger profile which may or may not work the best.

When you toss in used ovens you are opening a Pandora's Box if you don't know EXACTLY what the top and bottom finger profiles are. Air impingement ovens are just that, they are "OVENS", nothing more, nothing less, they can be profiled to bake many different food items from seafood, cookies, bagels, and even pet foods, it all depends upon how the oven fingers are profiled. When these ovens turn up on the used equipment market they are sold as, you guessed it, PIZZA OVENS! It sure

looks like a pizza oven, so it must be one...right!!

Deck ovens are not as prone to these issues, they are pretty straightforward to operate with only the baking temperature being a variable BUT don't forget that this can also pose problems too, these ovens can last a long time and over time the temperature management systems will fail and need replacement, I see this frequently. Then too, going back to the used equipment market place, all deck ovens are NOT pizza ovens! There are some deck ovens, especially those with steel decks, that were built for use in a small bakery or restaurant for baking bread and pastry items, not pizza. These ovens have smaller burners than those ovens built as a pizza oven so they will bake a few pizzas but lack the ability to retain baking properties under a continuous load. For good measure let's also look at electric deck ovens, especially those getting "long in the tooth", I've seen my share of these ovens from different manufacturers that just wouldn't bake a decent pizza because the heating elements were failing, so based on this alone, one might assume that electric deck ovens are not the best for baking pizzas either.

It's easy to draw the wrong conclusions when we don't have all the facts. A number of years ago I wrote an in-depth article on the different types of ovens for either Pizza Today or PMQ, I don't remember anymore which one it was, but maybe Peter can work his magic and find a link to the article if anyone is interested.

Tom Lehmann/The Dough Doctor  
273

[\*\*New Forum Members / Re: Allow myself to introduce....myself. - Lincoln, NE - Koda 16\*\*](#)

I was just there last Sunday delivering a motorcycle!  
Welcome aboard!

Tom Lehmann/The Dough Doctor  
272

[\*\*Sicilian Style / Re: Bake pizza so the mozzarella ends up with a chewy texture\*\*](#)

Two things that you can do;

- 1) Some brands of non-frozen mozzarella cheese will turn tough and chewy when frozen, so you might try freezing your cheese for a week or two prior to use to see if your cheese is one of those brands.
- 2) Open your cheese and re-wrap it in Saran Wrap/stretch wrap and store it in the fridge for about 6-weeks before using it. This allows the cheese to dessicate, resulting in a much chewier cheese after baking on the pizza.

Many of the older cheeses were never frozen, just refrigerated and when the pizzeria operators stored the cheese in the freezer or held it too long in the cooler it gave the chewy characteristic. Today most shops do not want the chewy characteristic as it poses too much of a potential choking hazard.

Now, if by "chewy" you actually mean "stretchy", take a look at provolone cheese as it tends to be more stringy than mozzarella.

Tom Lehmann/The Dough Doctor  
271

[\*\*Dough Clinic / Re: soft neapolitan corniccione\*\*](#)

AntonioT;

That's a classical example of what I always tell perspective new pizzeria operators; "You don't have a vote in the type of pizza you will make, your customer will dictate that, your job will be to make that pizza and put the money in the bank".

Tom Lehmann/The Dough Doctor

270

### **Dough Clinic / Re: Very airy dough**

When you put the salt into the dough water the dough comes together a bit faster in the bowl during the mixing process as a result of the salt tightening the gluten as it is being formed. When salt is added as a dry ingredient it can take a minute or so longer for the dough to come together forming a cohesive dough. In home pizza making this is not an important issue but in a commercial setting, be it a pizzeria or a commissary, this can be very important in determining how the dough is mixed.

Because the dough becomes tighter in the presence of salt it receives more mixing action sooner during the dough mixing process thus developing gluten at a somewhat faster rate. The premise to this is that firm/tight/stiff doughs tend to develop gluten at a faster rate than very slack doughs.

Tom Lehmann/The Dough Doctor

269

### **Dough Clinic / Re: The reasons for different types of dough**

Pizza dough is made from a pretty basic dough formula such as:

Flour: 100%

Salt: 2%

Yeast (CY): 1%

Water: 62% (variable)

In this case sugar and oil are optional ingredients used for specific purposes such as making a more tender eating crust or providing for more crust color or nutrient for the yeast.

To the above formula add 4% oil and you have a great deep-dish/thick crust formula.

Use the formula as shown to make a basic thin crust dough.

Increase the water to 68% for a New York style pizza.

You can also make a somewhat Neo. style pizza by increasing the absorption to 75%

If you want to make a basic pizza that will emulate those made by the big box stores just make the dough with 2% oil and 2% sugar and you can get pretty close by manipulating the dough management procedure.

It's when we begin making specialized types of pizzas that we really need to have more specific dough formulas for the pizza being made. If you want to make a more traditional Neo. type of pizza you will need to reduce the yeast level substantially and manage the dough in a very different manner for the desired outcome. Most American style pizzas are not very complex at all and most seem to fall within pretty close formulation parameters, even the dough management procedures for American style pizzas do not vary all that much which explains why they tend to be so similar regardless of the name on the store front.

Tom Lehmann/The Dough Doctor

268

## **General Pizza Making / Re: put the pizza pan directly on the heating coil?**

I think the first thing I would do is to shelve the volumetric portions and get a scale so I could weigh my ingredients and then pick up a dial/stem type thermometer. This will allow you to accurately weigh each of your ingredients and measure dough temperature at the various stages of your processing allowing you to zero in on achieving the results you're looking for without the need of using the old pasta on the wall methodology.

If you can provide us with your "recipe" and dough management procedure we might see something that would help us in providing you with a good starting point to get the open crumb structure you're looking for.

Tom Lehmann/The Dough Doctor

267

## **Stones/tiles/steel, Pans & Accessories / Re: Pizza Screens shedding?**

My recommendation is to wash the screens but DO NOT ALLOW THEM TO SOAK IN SOAPY WATER, rinse well, towel dry and then force dry in the oven. After that, coat with salad oil and place back in the oven at 425F. and allow to bake for 20 to 30-minutes. You might need to repeat this a couple of times. At first you will see an amber colored finish beginning to form, this is the seasoning, after the initial seasoning you will not need to do it again. With continued use the screens will continue to darken in color and eventually become almost black in color (this is what you are looking for) DO NOT bake on an unseasoned screen, if you do the screen and dough will stick together. Once seasoned, NEVER EVER, EVER soak anything that has been seasoned in water!! This will cause the seasoning to come off like a bad sunburn. We have discussed how to season and clean seasoned pans a number of times here.

Tom Lehmann/The Dough Doctor

266

## **Dough Clinic / Re: Struggling and unsure what ...**

I have a couple of questions:

- 1) What is "DCL Active"?
- 2) Diastatic malt: What degree L is it? Is this a dry malt powder or a syrup?
- 3) Have you tried making a dough with less dough absorption? I'd suggest dropping back 5% on the absorption.
- 4) I did not see where you are activating the ADY in 95 to 100F water prior to addition to the dough.

Tom Lehmann/The Dough Doctor

265

## **Dough Clinic / Re: Maximize flavor**

Fermentation is indeed the key to achieving a great flavored finished crust. How much fermentation is a question that only you can answer as it will be dependent upon the fermentation tolerance of your flour, the dough absorption, the amount of yeast being used and the temperature of the dough during the time it's being managed and then we also have to add baking. Lots of variables there! Without knowing anything about what you are doing here is what it's going to take;

- 1) Weigh all ingredients.
- 2) Measure the temperature of the water, flour, room and finished dough temperature.
- 3) Know how long the dough is being mixed so you can replicate it.
- 4) When you are using a multi-stage dough management procedure as you are be

sure to record the time between each step and if applicable, the dough temperature.

5) Record everything and keep good notes.

By doing this, when you get something that you really like you will know exactly what you did and you will be able to retrace your steps to get to that place again. It will also allow you to look for short cuts to that sweet spot without losing track of knowing exactly where you are at in your dough making process.

Tom Lehmann/The Dough Doctor

264

### **Dough Clinic / Re: Swithching from shortening to oil.**

Oil and shortening both weigh the same so if you are asking how much oil to use when replacing the shortening the answer is: Use the same weight of oil as you do shortening. If you want flavor use POMACE GRADE OLIVE OIL as opposed to EVOO, you could also just use lard, trans free and if you use NON-DEODORIZED LARD it'll add a great flavor. Keep in mind that if you use oil it is recommended that you use the delayed oil addition method of dough mixing.

Tom Lehmann/The Dough Doctor

263

### **Dough Clinic / Re: Struggling and unsure what ...**

75 to 80F is much too cold for hydrating and activating the ADY in, I suggest using 95 to 100F water.

Degree L is the Lintner Value use for measuring the diastatic activity of the malt. Too much of the wrong malt will result in wet, sticky doughs.

I really wouldn't call 55F as CF as most people think of CF being done at a refrigerated temperature in the 35 to 40F range. I mention this because if the process calls for CF and you are doing it at 55F your dough will receive significantly more fermentation than anticipated.

Tom Lehmann/The Dough Doctor

262

### **Dough Clinic / Re: Neapolitan dough problem**

Strange that the one thing you did not mention at all was dough temperature. As you've already discovered, fermentation has a huge impact upon the dough and temperature is the driver of fermentation, it's a variable that we seldom ever control or even monitor. If you have any data on your dough temperature as well as the temperature during the various stages of your dough management you should be able to plug those numbers back into the dough to see if that improves things, lacking that, you may need to begin experimenting with your dough (while keeping records of the dough and room temperature) to how temperature is impacting your dough. From your comment on the excessive elasticity I'm guessing that your bread machine might be getting the dough too warm, easy to check this out the next time you make dough. I'm guessing that you should be looking for a finished dough temperature (off of the bread machine) around 70 to 75F. That's a neat trick for most bread machines which is why I got rid of ours years ago.

Tom Lehmann/The Dough Doctor

261

### **General Pizza Making / Re: pre-bake red sauce on cornicione?**

Sounds more like a "thing" to me. Trying to achieve a certain appearance.

Tom Lehmann/The Dough Doctor

260

## [\*\*Off-Topic Foods / Re: Dunkin' Donuts Yeasted Donuts copycat\*\*](#)

Frying donuts at such a low temperature will result in a dry and oily finished donut. Yeast raised donuts typically have a shelf life of 4 to 6-hours (without additives), frying at a low temperature will further reduce this.

The corn starch is indeed a part of the powdered sugar, there is 3 to 5% corn starch in powdered sugar. The sugar used to make powdered sugar is dextrose, not sucrose.

There is no way to tell if putting a pot of water in with the dough would help at all as there would be very little evaporation from a "pot".

Maybe wet towels?

You want to have a hygrometer to measure the humidity in the air. This is easy to make, use two stem/dial type thermometers, two Styrofoam cups and a piece of paper hand towel. Put one thermometer through both sides of a cup (this will be the dry bulb). Push the other thermometer through the other cup about 2-inches up from the bottom of the cup. Add a few ounces of water to the cup (water should be at or close to the air temperature in the box), now, wet a strip of the paper towel, wrap it around the stem of the thermometer allowing the two ends to drape down into the water, place both thermometers in the product zine in the box. After an hour, or so, read the temperature from both thermometers (the one with the wet towel is the "wet bulb" reading, the other one is the dry bulb reading. If you've done it correctly, the wet bulb reading will ALWAYS be the cooler of the two readings (due to evaporative cooling of the stem from the wet towel). Now get a RELATIVE HUMIDITY CHART (you can download one from the Internet), find your temperatures on the two axis lines and where they meet the number will be the relative humidity in the box. For donuts you want about 70% for most other things you want to have something around 85%.

Tom Lehmann/The Dough Doctor

259

## [\*\*Dough Clinic / Re: Struggling and unsure what ...\*\*](#)

120 to 180 is a very high Lintner Value. I would suggest reducing the amount added to 0.05% of the flour weight and carefully working up from there if you can. We have had some discussion on Malt and Lintner value fairly recently, a quick search will allow you to learn more about this important aspect of the malt products that we use in pizza making.

Tom Lehmann/The Dough Doctor

258

## [\*\*Dough Clinic / Re: Dough not rising and too white\*\*](#)

Raj1;

Based on cost alone, I would suggest increasing the sugar content rather than the malt, but if you want to increase the malt you can do so as long as the dough doesn't become overly sticky.

Let's talk ovens; Your oven specifically. It's an air impingement oven, who is the manufacturer of the oven? Gas or electric? Did you buy it new or used? What are the top and bottom finger profiles? It concerns me that you are baking your pizzas so long and not achieving decent color even with malt and 4% sugar in the dough formula. In my air impingement ovens I used to get plenty of color even at 3-days CF with just 2% sugar. It's an uphill battle if you try to fix an oven problem with dough formulation.

Can you show a picture of the crust that you said is now all white?

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Dough not rising and too white**

Raj1;

One other thing, I see in your photos that the conveyor chain is carboned up quite a bit, when was the last time you pulled the conveyor for a thorough cleaning and cleaned out the finger sleeves? Do you have a top and bottom finger map attached to your oven?

Tom Lehmann/The Dough Doctor

256

**Dough Clinic / Re: AP flour.**

Since there is no "true" definition for AP (all purpose) flour there are significantly different versions of it from different manufacturers. Some mill it from soft wheat varieties while others mill it from hard wheat varieties. Within the group that mill it from hard wheat varieties it can range from a low of 9+% protein content to as high as almost 12% protein content. If you can, go to the web site of the manufacturer to see if you can find the protein content or try Googling (what is the protein content of XXXX all purpose flour). Let us know what you find out.

A good flour to look for that is readily available is Pillsbury Bread Flour also called Pillsbury Bread Machine Flour. This is really just the Pillsbury Superlative Flour repackaged in a consumer size package. It has approximately 12.6% protein content and it constitutes an excellent all around/general purpose pizza flour.

Tom Lehmann/The Dough Doctor

255

**Dough Ingredients / Re: Fritos corn chips in dough???**

I've seen crushed corn chips used in the dough a number of times. In each case though the reason was to provide a unique flavor to the finished crust. You can achieve exactly the same flavor using masa flour/Maseca. This is because corn chips are made from a dough containing only masa flour, water and salt. The dough is then rolled thin, cut and fried. In some cases a flavoring or powdered cheese is applied immediately after exiting the fryer. We have used it extensively in developing Tex-Mex style pizzas.

Tom Lehmann/The Dough Doctor

254

**Chicago Style / Re: Silly question, dough sliding back down on the sides**

Absolutely! Use Crisco or some other form of plastic shortening. If you want to use oil use the Crisco only on the side walls of the pan and use oil in the center section. To demonstrate this during our pizza seminar we used to prepare one pan with shortening and one pan with oil, then pick up both pans and invert them, plop! The dough in the oiled pan would just fall out while the dough in the pan with the shortening would stay in place. It also makes fitting the dough to the pan a lot easier too, try it, you'll see what I mean.

Tom Lehmann/The Dough Doctor

253

**General Pizza Making / Re: Dough issues during stand mixing**

Your mixing speed is too slow for the dough size.

Tom Lehmann/The Dough Doctor

252

## [\*\*Dough Ingredients / Re: Fritos corn chips in dough???\*\*](#)

We got the best results between 15 and 30% masa flour to REPLACE an equal portion of the white flour. It will impact the dough absorption so be sure to do an absorption test on the masa flour first (use the same absorption test that has bee outlined for whole-wheat flour and multi-grain blends).

Tom Lehmann/The Dough Doctor

251

## [\*\*Dough Clinic / Re: Ideal rise at RT and CT? When to move?\*\*](#)

Placing a fermented dough ball in the fridge isn't going to do much to control the rate of fermentation. The fermentation has reduced the density of the dough making it an excellent insulator which will prevent much, if any, temperature change in the critical core of the dough ball. You might see that the dough ball isn't expanding as much in the cooler but this is only due to the now colder outer portion of the dough ball exhibiting resistance to expansion, the internal core is still warm (may actually be getting warmer due to heat of metabolism) and fermenting. This is why, in commercial practice, we open over fermented dough balls into skins that are then placed on screens and stored in the cooler, by doing this we significantly reduce the cross section of the dough/dough ball thus allowing it to be more effectively cooled all the way through as opposed to just on the surface.

Tom Lehmann/The Dough Doctor

250

## [\*\*General Pizza Making / Re: Dough issues during stand mixing\*\*](#)

You should be mixing at a speed sufficiently high to allow centrifugal force to pull the dough off of the agitator during the mixing process. You might go to my web site <[www.doughdoctor.com](http://www.doughdoctor.com)> and watch my video on making dough to get an idea of how this is done.

Tom Lehmann/The Dough Doctor

249

## [\*\*Chicago Style / Re: Silly question, dough sliding back down on the sides\*\*](#)

We used to refer to shortening as "glue" to hold the dough in place while its in the pan.

Before anyone asks, NO, it doesn't cause the baked crust/pizza to stick in the pan.

Tom Lehmann/The Dough Doctor

248

## [\*\*Dough Clinic / Re: Struggling and unsure what ...\*\*](#)

T-P-D;

You've got the right approach, I'm betting you'll be enjoying some good pizzas along the way. Just remember to take notes and record temperatures along the way and take some pics to share. :chef:

Tom Lehmann/The Dough Doctor

247

## [\*\*Dough Clinic / Re: Ideal rise at RT and CT? When to move?\*\*](#)

If you are going to CF (cold ferment) it's best to take the dough directly from the mixer to the bench for scaling and balling, then directly into the fridge and leave it there for the duration of the CF time, then, if you want to do some RF (room fermentation) you can do it at that time and use the dough when that's finished. Going back and forth between CF and RF serves no useful purpose except when

working with previously frozen dough, but that's a whole different story. Keep in mind that all pizza doughs do not have to double in size, some doughs show little movement over the entire fermentation period but still make a great crust. Putting a sufficiently large "bulk" dough in the fridge only leads to variability in the dough as only the outer portion of the dough gets sufficiently cooled to control the rate of fermentation while the core remains warm and continues to heat up and merrily ferment away, giving you two different doughs at the end. By breaking the bulk dough down into individual dough pieces and forming into balls you get smaller dough pieces with a smaller cross section which are more effectively cooler to a temperature where the fermentation rate can be effectively controlled which in turn, results in greater uniformity/consistency in dough performance.

It might be well to note that a "bulk" dough weighing less than about 2-pounds performs more like a dough ball in the fridge than a true bulk dough that weighs more than two pounds and has sufficient mass to perform like a bulk dough.

Tom Lehmann/The Dough Doctor  
246

### **Dough Clinic / Re: Neapolitan dough problem**

Just how long have you had the flour which you are now using?

Tom Lehmann/The Dough Doctor  
245

### **Dough Clinic / Re: Cold Ferment Plastic Bag Method Advice**

Using 500-gram dough balls you can probably pattern the dough balls 3 X 5 (15 total count) on a sheet pan. Space four plastic spicr bottles on the aheet pan between dough balls to act as a spacer to allow for stacking another sheet pan above it. By the way, your total dough absorption is 64% (not 65%) with 1% oil.

Tom Lehmann/The Dough Doctor  
244

### **Dough Clinic / Re: Is my kneading speed good ? (stand mixer)**

I'm unable to access your video but if you are mixing at speed #3 on a 5-speed mixer it should be OK. specifically, what kind of mixer do you have? can you send a picture of it along with the dough agitator?

Tom Lehmann/The Dough Doctor  
243

### **Dough Clinic / Re: Is my kneading speed good ? (stand mixer)**

For that small of a dough you certainly don't want to mix the dough at a slower speed. You would get better mixing action with a larger size dough.

Tom Lehmann/The Dough Doctor  
242

### **Dough Clinic / Re: Is it possible to get a crispy bottom crust in a home oven (without par-baking)?**

Since "00" flours are not typically compatible with home oven baking temperatures I would suggest putting the "00" flour aside for now and using only a malted flour with about 12% protein content, then when you gat a crispier crust you can begin experimentally replacing a portion of the regular flour with your "00" flour. Allow the dough balls to CF for 48-hours. You should be OK at 500F, tell us about the stone that you are baking on, there are many iterations of baking stones and it helps to know what you are using. Also, how long do you allow the oven and stone to preheat? Where is the stone positioned in the oven? Tell us something about

your oven too. What is your baking time? Lastly, when you say the crust isn't crispy, how long after removing the pizza from the oven are you making this determination?

Tom Lehmann/The Dough Doctor  
241

**[General Pizza Making / Re: Steaming your Pizza during parbaking? \(Home Oven\)](#)**

The reason for using steam in the oven for baking certain types of breads and rolls is not for heat transfer, but instead to cool the outer portion of the dough (crust portion). Since the dough is much cooler than the steam (212F/100C) you get condensation forming on the surface of the dough which both cools the dough (actually keeps it cooler for a longer time during the baking process) which prevents the crust from forming and allows for greater expansion (oven spring) during baking. The condensation on the dough also serves to keep it flexible and extensible which allows for expansion without the dough tearing or developing a break and shred.

In commercial production of par-baked crusts and buns (think of those WONDERFUL dinner rolls we'll be serving at Thanksgiving dinner) it is a common practice to use some steam injection in the oven during baking to allow the crusts and buns/rolls to be fully baked without crust color development, or at least minimal crust color development. This is because the evaporating moisture from the dough prevents the surface from reaching the 350F/176.6C necessary for color development while still allowing for a thorough bake with an internal temperature of 180 to 190F/82.2 to 87.8C. When some color development is desired the steam is used only for the first part of the baking cycle which allows the dough to dry off and reach a temperature where crust color can begin to develop.

Tom Lehmann/The Dough Doctor  
240

**[General Pizza Making / Re: Help getting bottom crispier please](#)**

Doing the easy thing first, the first thing I would do is to reduce the oven temperature to something in the 475 to 500F range and try baking the pizza a little longer (7-minutes is a good target time).

Tom Lehmann/The Dough Doctor  
239

**[Shop Talk / Re: Oven problem or dough problem](#)**

Be sure to provide your dough formula as well as your dough management procedure and give information on the oven that you have as well as the finger profile it is equipped with, the baking time and temperature and what you are using for a baking platform (pan, screen, disk, etc.).

Tom Lehmann/The Dough Doctor  
238

**[Dough Clinic / Re: iced water for flour with ascorbic acid](#)**

One of the manufacturer recommended methods for adding IDY is to add it to the dough after the dough has formed in the bowl. We normally don't recommend that method only because we have found that all too many times one will forget to add the yeast..Oops! :o

Amylase has no impact upon the dough temperature at the mixer. You should always be targeting a specific finished dough temperature that is correct for your shop conditions, equipment and dough management procedure, this might mean

that you will need to use ice water, refrigerated water or possibly even ice as part of the total water weight.

Tom Lehmann/The Dough Doctor  
237

**[General Pizza Making / Re: Steaming your Pizza during parbaking? \(Home Oven\)](#)**

Something to keep in mind, most ovens are not specifically designed to be used with steam. Steam creates a number of issues in an oven, the greatest is that it will mix with the byproducts of yeast fermentation (acids, alcohol and carbon dioxide) which are then carried to all internal parts of the oven where they are concentrated as the moisture evaporates, these acids can/will do irreparable damage to an oven in a very short time. I realize that this is in a home setting but the damage can still occur, just making you aware of this.

Tom Lehmann/The Dough Doctor  
236

**[Sicilian Style / Re: Airy Sicilian style?](#)**

Please explain to me how freezing a par-baked crust removes moisture from it as opposed to allowing it to set out on a rack at room temperature?

Tom Lehmann/The Dough Doctor  
235

**[Newbie Topics / Re: Keep Crust from Forming While Dough Balls Wait for Stretch?](#)**

The flour actually encourages the development of a dry skin or crust as it dramatically increases the surface area. I really don't like the damp towel either as it can cause the dough balls to pick up more dusting flour and make it harder to get it off, instead, try using one of those very thin, light weight plastic bags that you get from the dry cleaners, these bags are about as light as those that you get at the supermarket for your vegetables. You can split these bags open and use them too. Just drape over the dough balls to prevent drying, you can then remove just one dough ball without uncovering all of the rest.

Tom Lehmann/The Dough Doctor  
234

**[Dough Clinic / Re: Is it possible to get a crispy bottom crust in a home oven \(without par-baking\)?](#)**

You bet it makes the slice more crispy to put it back in the oven to re-freshen it! Putting the fresh baked pizza on/in a pan doesn't do anything to encourage a crispy crust either. It's better to place it onto a screen where it can freely steam off as opposed to a solid pan which will force the steam back into the crust. Ripple sheets also work well for this application too.

Tom Lehmann/The Dough Doctor  
233

**[Newbie Topics / Re: Keep Crust from Forming While Dough Balls Wait for Stretch?](#)**

You open the box and release the humidity trapped in the box, then repeat, repeat, repeat = dry dough balls. The very thin plastic film easily drapes over the individual dough balls and because it is a smaller space the moisture loss is less when the plastic is moved. It's almost like having each dough ball in its own individual plastic bag or dome as opposed to the large dough box. Dough boxes are

really designed for use in pizzerias not home use.

Tom Lehmann/The Dough Doctor

232

### [\*\*Dough Clinic / Re: Neapolitan dough problem\*\*](#)

I can't tell for sure without getting my hands into the dough but from the pictures provided, it looks like the flour might be over oxidized.

This is a very common problem with flour that is not stored in the freezer. Five gallon buckets are fine for storing flour in but it does not address the oxidation issue. Flour oxidizes naturally as it is stored and is pretty significant already at 30-days for a flour that is not treated at the mill with AA (ascorbic acid). We had some discussion on this very topic some time ago if you want to go back and research it in the archives.

Tom Lehmann/The Dough Doctor

231

### [\*\*Dough Clinic / Re: iced water for flour with ascorbic acid\*\*](#)

Ditch the "dough in the freezer" approach, instead either store water in the cooler or do as Amolapizza suggested. The easiest way to make your own crushed ice is to put ice cubes in a plastic bag and pound on it with a hammer or mallet, instant crushed ice! ;D

Tom Lehmann/The Dough Doctor

230

### [\*\*Newbie Topics / Re: Keep Crust from Forming While Dough Balls Wait for Stretch?\*\*](#)

Now you know why I always say to lightly oil the top of each dough ball after placing it in the dough box. It keeps it from drying out during the cross-stack period and also when you're using the dough balls to make skins.

Tom Lehmann/The Dough Doctor

229

### [\*\*Shop Talk / Re: Pizza slice reheat\*\*](#)

Most shops just reheat the slice right on the deck. It's common for some debris to collect on the deck surface but this is easily removed using an oven rake and brush (metal blade scraper on one side and a brush on the other side).

Tom Lehmann/The Dough Doctor

228

### [\*\*Dough Clinic / Re: Question about yeast-less doughs?\*\*](#)

They certainly will spoil and possibly in a worse way than a yeast leavened dough. Flour has a relatively high possibility of being contaminated with Ecoli or Salmonella (just look at the number of recent flour recalls), without the acid and alcohol production of the yeast it is entirely possible for these, or other, organisms to eventually grow in the dough, true, baking will destroy them but not before creating havoc through cross contamination. For a refrigerated dough it's probably not a good idea to hold it more than a week due to the possibility of microbial growth and a higher than normal probability of mold growth which only takes about 4-days to colonize.

Tom Lehmann/The Dough Doctor

227

### [\*\*Dough Clinic / Re: Freezing dough\*\*](#)

Before diving head first into heat n' eat pizza I would HIGHLY encourage you to thoroughly test your concept. There is a reason why essentially all of the ready made pizzas available in the frozen foods case are made on par-baked crusts, the reason being that it is extremely difficult to heat the entire pizza (crust and toppings) properly without over doing one or the other. Added to the challenge is the vast array of different types of consumer ovens in use and you can see a problem brewing. Additionally, be sure to check on all of the state and Government regulations that you will need to abide by. For example, if you will be putting meat on your pizzas you will be USDA inspected, and have a USDA inspector on premise at all times during production (this will be at YOUR cost too). Just giving you a "heads-up".

Tom Lehmann/The Dough Doctor  
226

### **Dough Clinic / Re: iced water for flour with ascorbic acid**

It "can" be a solution BUT the "fly in the ointment" is that by doing so it is possible to reduce the yeast level sufficiently so as to reduce the oven spring characteristics of the dough which can lead to the development of the "dreaded gum line".

Tom Lehmann/The Dough Doctor  
225

### **Shop Talk / Re: Opening up a pizza shop.**

With everything that has been already said, spend some time visiting with your local codes department to make sure whatever you end up doing meets with their approval, it will in the end, no matter what, so make it easy on yourself and do it the way they want it right from the start. Visiting another local store to see what they have may not always be the best idea, codes/regulations change and some cities will grandfather in stores with, let's just say a hood, which no longer meets current code, if you do what they have done it will NOT pass new code, you will not collect \$200.00 and you will not be issued a permit/license. Even the type, location and size of your signage will come under the codes department and it will cost you \$\$\$\$\$. It will seem like everybody you meet will have their hand out and it won't be to shake your hand! :-D

Tom Lehmann/The Dough Doctor  
224

### **Off-Topic Foods / Re: Flavored and Infused Oils**

No problem as long as you dispose of it at the end of each day.  
Tom Lehmann/The Dough Doctor  
223

### **Neapolitan Style / Re: Puffy Crust but has raw dough**

A picture would help immensely, but lacking that it might be insufficient IDY. Are you weighing the IDY?  
Tom Lehmann/The Dough Doctor  
222

### **Dough Clinic / Re: Does ascorbic acid make tougher dough?**

The amount of ascorbic acid added to IDY is VERY small (measured in ppm (parts per million). Its purpose is to compensate for the small amount of glutathione released from the yeast during the drying process thus giving the IDY a performance profile more like that of CY. To get the effects that were mentioned you would need to add something between 75 and 100 times as much ascorbic acid

AND it would need to be a coated/encapsulated form of ascorbic acid.

No truth to what you heard.

Tom Lehmann/The Dough Doctor

221

### **Dough Clinic / Re: Sour dough starter experience**

Once you have an active starter it is typically maintained at about the consistency of heavy cream. It's a starter, not a sponge or biga. Depending upon the characteristics of the starter, you will probably use it at something between 5 and 15% in making your pizza dough (be sure to take the water content of the starter into account when calculating the total dough absorption).

Tom Lehmann/The Dough Doctor

220

### **Shop Talk / Re: Trays for rack**

They look like bagel boards, used to be made out of wood but now made from a plastic like material. Look for "bagel boards".

Tom Lehmann/The Dough Doctor

219

### **Shop Talk / Re: Trays for rack**

I looked them up for you, they are called wooden bagel proofing boards/Bakedco.com/\$8.75 each./size 18 X 26

Tom Lehmann/The Dough Doctor

218

### **General Pizza Making / Re: Writing this intro while my dough gets up to room temperature**

Send us some pics of that aluminum "surface" (not quite sure what you mean by that), so we can see what you have and possibly make some recommendations to help you achieve your pizza making goals.

Welcome!

Tom Lehmann/The Dough Doctor

217

### **Newbie Topics / Re: Pizza Hut pan pizza dough rising too much**

That's a lot of (ADY?) even more if it's IDY. The amount shown calculates out at 1.2% while a more typical level is 0.5 to 0.75% if it's ADY or 0.4 to 0.6% for IDY for pan style pizza. I should also add that if it's ADY it should really be hydrated and activated separately in a small container with about five times its weight of warm (100F) water. If the yeast is IDY you can just add it dry right to the flour. What is the finished dough temperature? Ideally you should be looking for something in the 80 to 85F range.

Tom Lehmann/The Dough Doctor

216

### **Dough Clinic / Re: Dough not rising and too white**

Raj1;

I agree with Yael that 24-hours at room temperature with your dough formula is going to be too much fermentation and result in a low pH condition of the dough which will impede crust color development. Can you follow my Dough Management Procedure and target a finished dough temperature of 75 to 80F, go directly from the mixer to the bench for scaling and balling, then box the dough balls and oil the

top of each ball and then into the cooler for cross-stacking (all within 20-minutes of removing the dough from the mixer), allow the dough balls to remain cross-stacked until the INTERNAL dough ball temperature reaches 50F/10C and then down-stack or cover the boxes. Allow to CF for 24 to 48-hours, remove from cooler (keep boxes covered) until INTERNAL dough ball temperature reaches 50F/10C, then begin fitting the dough to the pan(s) and allow to final proof for about an hour or whatever time is needed to give the desired finished crust height/thickness. Baking deep dish pizzas at too high of a temperature usually results in not getting the internal crumb structure properly baked while in many cases scorching the toppings at the same time.

Tom Lehmann/The Dough Doctor  
215

**[General Pizza Making / Re: Writing this intro while my dough gets up to room temperature](#)**

Correct me if I'm wrong, but that looks like a cookie sheet? What does the bottom look like? If you are trying to achieve a hearth bake that's not the best option, a baking steel or stone will serve you much better.

I second the nomination to upgrade to a better "baking surface" ^^^

Tom Lehmann/The Dough Doctor  
214

**[Dough Clinic / Re: Dough not rising and too white](#)**

Raj1;  
With compressed yeast you should be OK using 1%, I don't think 0.5% will be sufficient.

Tom Lehmann/The Dough Doctor  
213

**[Dough Clinic / Re: Dough a little sticky, maybe not rising enough?](#)**

The dough looks fine to me, but you're going to need to do some work on the dough formula, for example (1/3 hot and 2/3 cold) how hot? How cold? Remember, it's not the hot and cold that matters, it's the actual temperature of the water that counts. Also, there was no mention of finished dough temperature, I always say that you cannot have effective dough management without effective temperature control. Assuming room temperature fermentation after balling so a total of 24-hours room temperature fermentation.

Tom Lehmann/The Dough Doctor  
212

**[Dough Clinic / Re: NY Style in my Wood Fired Oven](#)**

Here is a good basic dough formula that should work well for you.

Flour: (strong bread type flour with at least 12% protein content, higher protein is even better) 100%

Salt: 2%

Sugar: (variable/optional) 2%

Yeast: (CY: 1%) or (ADY: 0.5%) or (IDY: 0.375%)

Water: (variable) 62%

Oil: 2%

Use delayed oil addition mixing method.

Target finished dough temperature: 75 to 80F

Procedure:

Mix.

Scale and ball within 20-minutes.

Place in plastic dough boxes and oil top of each dough ball.

Cross-stack in the cooler until INTERNAL dough ball temperature reaches 50F.

Down-stack.

Cold ferment minimum of 24-hours, 48-hours is better.

Remove from cooler and allow the set AT room temperature until the INTERNAL dough ball temperature reaches 50F.

Begin opening dough balls into skins.

Tom Lehmann/The Dough Doctor

211

### **Dough Clinic / Re: Dough not rising and too white**

After the cold fermentation of the dough balls and you press the dough into the pans, you will need to experiment with how long you allow the dough to proof/rise in the pan before placing them back into the walk-in cooler. My advice is to take a few at 15-minute intervals: 15, 30, 45 and 60-minutes. Cover them or better yet, place in a wire tree rack which is covered with a large plastic bag. After about 3-hours begin testing by removing pans of proofed dough beginning with 15-minutes and going all the way to the 60-minute proofer dough. As you remove the proofed dough immediately dress and bake, then evaluate and decide which proofing time provided you with the best finished crust characteristics. Send us some pictures of the whole pizzas and also of each pizza cut in half so we can see the thickness as well as the crumb structure.

Tom Lehmann/The Dough Doctor

210

### **Dough Clinic / Re: Dough a little sticky, maybe not rising enough?**

Don't worry too much about the flour temperature at this time, instead just concentrate on the finished dough temperature which is typically in the 75 to 80F range. If you are mixing by machine you can use this formula for calculating the dough water temperature: 145 minus flour temperature = desired water temperature for a finished dough temperature of about 80F. If you are mixing your dough by hand you will need to experiment with the water temperature.

Tom Lehmann/The Dough Doctor

209

### **Dough Clinic / Re: Dough a little sticky, maybe not rising enough?**

Just get yourself a dial/stem type thermometer with a hex nut under the dial. This nut is used to calibrate the thermometer. To calibrate a thermometer: Use a low cost oral thermometer and adjust the water temperature in a glass so the temperature reads on the oral thermometer, then place the stem/dial type thermometer in the glass of water and adjust the temperature by holding the head and turning the nut until the temperature reads the same as the oral thermometer, your thermometer is now calibrated.

Tom Lehmann/The Dough Doctor

208

### **Dough Clinic / Re: Dough a little sticky, maybe not rising enough?**

That one will certainly work for you. I always recommend the dial/stem type since they are so much lower in cost and are easily re-calibrated.

Tom Lehmann/The Dough Doctor

207

## [\*\*Dough Clinic / Re: Dough not rising and too white\*\*](#)

I cannot answer that question as it is dependent upon a number of factors relating to the strength of your dough, about which I know nothing. You'll have to try them to determine if they will hold up or not. If they don't hold up you can make something else from the dough like garlic knots or bread sticks or you can add them back into fresh/new dough at up to 15% of the total new dough weight.

Tom Lehmann/The Dough Doctor

206

## [\*\*General Pizza Making / Re: Want to add more salt\*\*](#)

At your present 0.25% IDY level you will be just fine even if you increase the salt to 2.2%. If you want to go more than that increase the IDY to 0.3 to 0.375% and you can go as high as 3% salt.

Tom Lehmann/The Dough Doctor

205

## [\*\*Dough Clinic / Re: Dough not rising and too white\*\*](#)

Raj1;

Is that a picture (2nd from last) of your deep-dish pizza still in the pan in which it was baked? That pan looks to be bright silver in color? Please confirm and show pictures of the OUTSIDE of the pan.

Thanks,

Tom Lehmann/The Dough Doctor

204

## [\*\*General Pizza Making / Re: Dough sticks to proofing container, deflates while removing?\*\*](#)

Your dough might also be a bit over absorbed, if additional oil and a shorter fermentation time don't work reduce the dough absorption by 5% to see how that works, remember dough absorption is ALWAYS variable.

Tom Lehmann/The Dough Doctor

203

## [\*\*Dough Clinic / Re: Dough not rising and too white\*\*](#)

The picture I was referring to appears to be a pan pizza but the outside of the pan appears to be bright and shiny, which would raise concern with bake color especially in an air impingement oven.

What do you have for a top and bottom finger profile?

Tom Lehmann/The Dough Doctor

202

## [\*\*Prep Equipment / Re: Dough tray\*\*](#)

With a large dough box and just a couple dough balls it's like putting those two dough balls into a gymnasium and expecting them not to dry out. We just recently had some discussion on this very topic and how to address it.

Tom Lehmann/The Dough Doctor

201

## [\*\*Neapolitan Style / Re: Pizza Slap Practice Dough\*\*](#)

While I've not done it, your question is interesting. You might try making a dough as follows:

Flour: All Trumps or the highest protein baking flour available (14% to 14+% protein content) 100%

Salt: 3%

PZ-44: 2% (variable)

Oil: 4%

Water: 58% (variable) 70F.

Mix the dough until it has the desired extensibility, scale and ball.

Begin practicing with one dough ball right away, lightly oil and wrap the others in plastic and store in the refrigerator. At some point the first dough ball will become too extensible to play with, at that point re-ball it and place it in the refrigerator and remove one of the other dough balls, keep repeating until fun time is over.

Let us know if this works for you.

Tom Lehmann/The Dough Doctor

200

### **Dough Clinic / Re: Issues with Elasticity**

Issues relating to excessive elasticity are almost always related to insufficient fermentation in one way or another.

Tom Lehmann/The Dough Doctor

199

### **Pizza News / Re: Another reason to make your own dough...**

This may come under the Federal Food Protection Act, if it does, the person committing the crime will be Federally prosecuted and if found guilty will be sentenced to a mandatory 20-years in a Federal prison. This is the reason why we see so little of this anymore. It used to be a lot more prevalent.

Tom Lehmann/The Dough Doctor

198

### **Dough Clinic / Re: Issues with Elasticity**

I would take the sourdough starter out for now, just use IDY (0.25%) for the leavening. Once you get something that you like you can then change over to your starter at different levels (5%; and 10%) to start with and adjust accordingly from there.

Tom Lehmann/The Dough Doctor

197

### **Dough Clinic / Re: Flat dough from sour dough starter in lieu of IDY**

Agreed, most sourdough starters do not play well in cold temps, plus if you used your starter at the same level as IDY you were VERY low on leavening. You should have been using it at something in the 5 to 15% range depending upon the strength and acidity of your starter.

Tom Lehmann/The Dough Doctor

196

### **Dough Clinic / Re: How to achieve a better spring/sponge in the pizza**

Yael is correct, only the flour, remember....we change only one thing at a time. The list that I provided is a list of options that might help by strengthening the dough, thus allowing it to better support the weight of the toppings without collapse.

Tom Lehmann/The Dough Doctor

195

## [\*\*Dough Clinic / Re: Flat dough from sour dough starter in lieu of IDY\*\*](#)

Just a tip: One cannot accurately state the amount of starter needed without first knowing the strength of the starter in question. Commercial yeast (IDY, ADY and CY) are standardized in strength and very uniform/consistent when fresh which is why we can, with good accuracy, predict the amount of yeast needed for a specific fermentation scenario. The same is not true for sourdough starters since they are "natural" and vary accordingly. To recommend an amount of IDY to use we will need to know the specifics (including all times and temperatures) pertinent to your dough/dough management procedure.

Tom Lehmann/The Dough Doctor

194

## [\*\*Dough Clinic / Re: Cold Fermentation advice\*\*](#)

If you will email me at <thedoughdoctor@hotmail.com> I'll be glad to send you a copy of my Dough Management Procedure which contains all of the elements necessary for effective management of your dough through the cold fermentation process.

Tom Lehmann/The Dough Doctor

193

## [\*\*Dough Clinic / Re: Cold Fermentation advice\*\*](#)

No correction needed, Peter "nailed it" ^^^

Tom Lehmann/The Dough Doctor

192

## [\*\*Dough Clinic / Re: ADY to prove or not\*\*](#)

We did some work along those lines back in the 1970's but the problem that we had was that we couldn't get consistent results so the amount of mix time reduction and dough extensibility were all over the board. To the best of my knowledge this work was done prior to the advent of "dead yeast" for use as a reducing agent.

What has to be done is to heat a yeast suspension to the the thermal death point (140F) to inactivate the yeast without denaturing the glutathione which will now be the active ingredient. Remember, the amount of glutathione used in a dough to achieve desired results is measured in PPM (parts per million), so it doesn't take much to cross the line between something that works well in a dough and something that's disastrous for a dough.

Tom Lehmann/The Dough Doctor

191

## [\*\*Shop Talk / Re: Franchise vs. Independent, raising the money to open\*\*](#)

A number of years ago I spoke with a major pizza box store franchise owner about a similar question, his response at the time was was that one doesn't really begin to make money (as an investment) until he/she owns at least three to five stores. If I remember correctly, at the time he owned about 12 stores and was doing quite well. The old adage of "It takes money to make money", has a familiar ring in this case.

Owning an independently owned/operated store can have its advantages too, but it takes a lot of leg work (blood, swear and tears) to get it off the ground, and if you're successful at that you will then be faced with getting good help, let me repeat that in another way, getting good help today is the number one biggest challenge an independent store has today. It is also the number one stifle to independent store growth/expansion. But this is the price we pay to be an independent store owner/operator. I might also add, if you are a micro-manager or

feel that you just cannot get away from the shop for any reason, abandon any idea of being an independent, you're doomed to failure, instead invest your money in the stock market, you'll be a lot happier and more successful.

Tom Lehmann/The Dough Doctor  
190

**[Dough Clinic / Re: Flat dough from sour dough starter in lieu of IDY](#)**

Just don't freeze the dough for more than about two weeks, three on the outside, and anticipate a long time for the dough to become active again after the freezing process. This is one reason why frozen dough typically has a higher yeast level.

Tom Lehmann/The Dough Doctor  
189

**[Neapolitan Style / Re: Pizza Slap Practice Dough](#)**

It might. Try 1% powdered garlic (not garlic salt).

Tom Lehmann/The Dough Doctor  
188

**[Dough Clinic / Re: I haven't been able to duplicate my bubble crust after succeeding once.](#)**

Additionally, yeast doesn't replicate in a dough, it just feeds and generates by-products of fermentation.

Tom Lehmann/The Dough Doctor  
187

**[Dough Clinic / Re: NY Style in my Wood Fired Oven](#)**

At the levels we're talking about using here it won't make a difference which one you use, BUT if you use butter, use it at room temperature and you don't need to use the delayed oil addition mixing method, you can just add it right on top of the flour.

Tom Lehmann/The Dough Doctor  
186

**[Dough Clinic / Re: I haven't been able to duplicate my bubble crust after succeeding once.](#)**

In addition to what Yael has said, with reference to the yeast, within the yeast that you add, some of the cells are budded, and some are not, those that are budded, with sufficient fermentation time, the buds will grow and develop into "daughter" cells however they themselves will not bud (reproduce) which partially explains why fermentation will tend to speed up to a point in the fermentation process and then level off with fermentation continuing at a steady rate until the process is interrupted by alcohol content, nutrient depletion, or temperature.

Tom Lehmann/The Dough Doctor  
185

**[Dough Clinic / Re: help diagnose dough issues using SD starter](#)**

Without more details it's hard to say what the issue might be but just for grins, try using only 10% of your starter the next time. All starters are different and because of that the amount used will very too.

Tom Lehmann/The Dough Doctor  
184

**[Dough Clinic / Re: Getting crust to brown without being to overcooked and](#)**

**hard.**

A malted bread type flour will certainly work a lot better for you right now. Read the ingredient label on the flour bag for contains: malted barley flour, or it may just say "enzymes" (which would be amylase enzymes which act as the malted barley flour does). You can also see if you can find some diastatic malt powder. You will want to have a diastatic malt powder with a 20 degree Lintner Value. This will need to be added to the dough as an ingredient at 0.25%. If you get a diastatic malt with a higher Lintner Value divide the value by 20 and then divide 0.25% by the same number to find the amount to add. For example, if you get a 60 degree Lintner Value malt; 60 divided by 20 = 3 so you will now divide 0.25% by 3 = 0.0833% (this is the amount of the 60-L malt that you will need to add).

Tom Lehmann/The Dough Doctor

183

**Dough Clinic / Re: Dough science - minutes after cold ferment but before baking?**

My fear is that you are jumping back and forth between sourdough and conventional pizza and bread type doughs, is this a correct observation?

Tom Lehmann/The Dough Doctor

182

**Dough Clinic / Re: I haven't been able to duplicate my bubble crust after succeeding once.**

You say you allowed the dough to rise for 6-hours prior to baking, when did you open the dough ball into a skin, before or after that 6-hours at room temperature (whatever temperature that might be).

Tom Lehmann/The Dough Doctor

181

**Dough Clinic / Re: Getting crust to brown without being to overcooked and hard.**

Not more than 0.5%. The numbers I gave are representative of what it takes to replicate the malting of the flour that takes place at the flour mill.

Tom Lehmann/The Dough Doctor

180

**Dough Clinic / Re: I haven't been able to duplicate my bubble crust after succeeding once.**

I'm in agreement with Yael in his assessment that your dough might be over fermented at 72-hours room temperature fermentation, especially in view of the fact that we don't know the dough temperature or the room temperature. Your IDY amount (1/6th of a Tsp.) works out to 0.5-gram, and assuming 152-grams of flour in your 1-cup portion this works out to 0.328% IDY. This is very close to the accepted amount to use for the same length of fermentation time in the cooler/fridge, not at room temperature, unless room temperature is defined as <40F. If you don't want to cold ferment I'd suggest dialing the room temperature back to 24-hours and if that works for you then begin increasing the fermentation time in 12-hour increments to find what works best for you. While doing this though I would highly advise that you keep track of the finished dough temperature as well as the room temperature as both are highly prone to changing over time.

Tom Lehmann/The Dough Doctor

179

## [Dough Clinic / Re: Dough science - minutes after cold ferment but before baking?](#)

The 50 to 55F dough ball temperature after cold fermentation is the internal dough ball temperature. Depending upon your ability level at opening the dough into skins you may find it easier to open the dough at 50 to 55F or at a higher temperature as the dough becomes softer and more extensible at the higher temperatures which can be problematic for someone without the skill set to open the softer dough.

Tom Lehmann/The Dough Doctor

178

## [Dough Clinic / Re: Which are the factors that affect digestibility?](#)

The two factors most responsible for "digestibility" of the crust are fermentation and quality of bake. The longer the dough is fermented (within reason) and the more solid (complete) the bake is the more digestible the finished crust will be. From your pictures I'm guessing that your targeting too thick of a crust for high temperature baking which can easily result in not getting the finished crust as well baked as it could be.

Tom Lehmann/The Dough Doctor

177

## [Dough Clinic / Re: Reshaping Dough After Delayed Fermentation](#)

I'm suspecting some major problem/problems with your dough formula/recipe. Please provide details of your flour, dough, dough temperature, and how you are baking the pizzas and I'll be glad to offer my suggestions.

Tom Lehmann/The Dough Doctor

176

## [New York Style / Re: All Trumps vs Kryol for homemade NY Style](#)

In reading your post I have some questions, what was the actual finished dough temperature for the Kyrol and All Trumps doughs? Did you optimize the dough absorption for the All Trumps flour or did you just plug in the same absorption you used with the Kyrol flour? I ask these questions because some of what you mentioned could be due to a difference in fermentation between the two doughs resulting from a difference in finished dough temperature which could have a significant impact upon the dough depending upon how you are managing your doughs. The dough absorption can also be highly variable especially in view of the fact that you are dealing with different brands as well as different suppliers, not to mention the fact that the absorption of any flour can/will vary from bag to bag or lot to lot, and even the age of the flour will have a significant impact upon its performance in both the dough as well as the finished crust. As you can see, there are a lot of variables at play here.

Tom Lehmann/The Dough Doctor

175

## [New York Style / Re: All Trumps vs Kryol for homemade NY Style](#)

Steve;

One thing that you might want to do is to begin transitioning from a dough "recipe" in volumetric portions to a dough "formula" based on actual weight for each ingredient. These are any number of good scales available on the Internet that many of us here use (I personally love my KD-8000). This change will give you the accuracy and repeatability needed to develop your dough formula(s). A good dial/stem type thermometer for \$7 to \$12.00 will take care of your temperature

needs (be sure to look for one with a hex nut under the head as this will allow you to calibrate the thermometer as needed). Once you have your dough based on weight measures it can be put into bakers percent for ease of evaluation and it will greatly help you manipulate the size of the dough too if you should want to increase or decrease the actual dough size.

Tom Lehmann/The Dough Doctor

174

### [\*\*Dough Clinic / Re: Reshaping Dough After Delayed Fermentation\*\*](#)

Do you know what the Lintner Value (degree-L) of your diastatic malt is? for a 20-L the amount needed is only 0.25% of the total flour weight (316-grams in your case) but if it's 60-L the amount would only be a third of that 0.083-gram. Maximum would be about 0.5%. The amount you are presently using is 2.2%. These numbers are based on using unmalted flour but I'm guessing your flours are all malted already so that further strengthens my case that your dough might be over malted which would be responsible for the dough balls flattening out during the CF (cold fermentation) period. You might try leaving the malt out to see if it helps.

The amount of IDY is quite high too at 3-grams for 316-grams total flour weight = 0.949% (almost three times what might be considered a "normal" level of 0.375%, this would explain why the dough balls get gassy soon after removing from the fridge. Lastly, I'd suggest measuring the actual finished dough temperature after mixing. This is important as it regulates the rate at which your dough will ferment. Ideally, you will most likely be best served with a finished dough temperature in the 75 to 80F range, whatever temperature you use remember that consistency is actually more important than the actual temperature itself.

Tom Lehmann/The Dough Doctor

173

### [\*\*Dough Clinic / Re: Reshaping Dough After Delayed Fermentation\*\*](#)

That's a very good and valid point that Yael brings up regarding a home fridge. We encounter a similar issue in commercial practice between a reach-in cooler and a walk-in cooler with the reach-in unit not holding temperature as well as a walk-in.

Tom Lehmann/The Dough Doctor

172

### [\*\*New York Style / Re: All Trumps vs Kryol for homemade NY Style\*\*](#)

Steve;

I apologize for the assumption. :-[

As you well know, even the yeast has to be weighed, it's the one ingredient that we typically use which can give variable results with only a small change in the amount used.

When it comes to temperature monitoring, these are the temperatures which we are usually targeting, but like so many other things pizza, they are not cast in stone, they will be somewhat variable with the type of dough management process employed as well as conditions specific to our different kitchens and equipment at hand.

Finished Dough Temperature: 70 to 75F.

Down-stack Temperature: 50 to 55F.

Cooler/fridge Temperature: <40F.

Temperature to Begin Using the Dough after Cold Fermentation: 50 to 60F.

Ideal Fermentation Temperature: 90F. & 85 to 88% R.H.

Ideal Final Proofing Temperature: 95 to 105F & 85 to 88% R.H. Note: In common practice many use 95 to 100F as the optimum "practical" final proofing

temperature as R.H. (relative humidity) becomes difficult to control above 100F. I have not included baking temperatures as they are so widely variable and vary with oven type/design, pizza being made, as well as altitude above sea level.

Tom Lehmann/The Dough Doctor

171

### **Dough Clinic / Re: Reshaping Dough After Delayed Fermentation**

Actually, there is nothing at all wrong with taking something from different formulas and/or procedures and bringing them together to make something that is unique specifically to what you are doing, that's one of the fun aspects of making pizza (the other is eating it). The work generally centers around trying to figure out how to make those different parts all fit together and play well together to give you the pizza that you want and can make great on a consistent basis.

Tom Lehmann/The Dough Doctor

170

### **Dough Clinic / Re: Higher hydration doughs**

When I make the higher absorption Neo. doughs I always start out at 75% absorption and adjust accordingly for the absorption properties of the flour from there, so I would not implement any changes, but if you want a softer, more tender eating pizza I would just add some oil to the dough formula. Start at 2% and go up from there to give you what you want, remember, as with any high absorption dough, to reduce the dough absorption by the same % as you add oil.

Tom Lehmann/The Dough Doctor

169

### **New York Style / Re: All Trumps vs Kryol for homemade NY Style**

Steve;

The mechanics of the finished dough temperature are as follows:

Temperature is the #1 driver of fermentation, a higher temperature will boost or speed up the rate of fermentation and a lower temperature will slow it down. Even a few degrees F. will make a difference. A warmer dough temperature than desired can result in more fermentation taking place before the dough is sufficiently cooled to control the fermentation rate, this results in two things happening, !) The dough becomes less dense and a better insulator making it even more difficult to cool, 2) As the dough is fermenting it is also gaining temperature due to heat of metabolism and this heat must be extracted in order to control the rate of fermentation during the CF period. The inverse is also true when the finished dough temperature is colder/cool than targeted. The closer your targeted finished dough temperature is to 90F the more critical the finished dough temperature is and the more important it is to keep the temperature as constant as possible. At colder finished dough temperatures, say at 70F, the yeast is not as sensitive to slight variations in temperature so we have a little more latitude in the actual temperature. This is all due to the fact that yeast, as a microbe becomes exponentially more active as the temperature of the substrate which it's in approaches 90F. This issue exists in commercial operations with both walk-in and reach-in coolers (tends to be worse in reach-in units due to their reduced efficiency over the walk-in units) but it can REALLY be a problem in home refrigerators which have a 200+ "Energy Star rating" plus they are seldom operating at peak efficiency because we are constantly opening and closing the door over the CF period of time. This is also the reason why residential refrigerators and freezers are not permitted in commercial applications, they typically don't have the reserve capacity to EFFICIENTLY handle things (dough) that are a bit warmer than

desired, which results in more fermentation than anticipated at any projected point in time.

Tom Lehmann/The Dough Doctor  
168

**Dough Clinic / Re: Higher hydration doughs**

Why not just "bulk" (how much dough weight are we talking about?) and then ball and allow to rest until the dough balls can be easily opened into skins? By going to a higher dough absorption, depending upon your baking temperature) you may have a higher finished moisture content in the crust which will certainly contribute to a softer crust BUT it is a double edge sword in that it will also contribute to a tougher/chewier crust at the same time. If you want to have a softer, more tender eating finished Neo. type crust you might be better served using a lower protein content flour than what you are presently using. Keep in mind though that by doing so you may not be able to ferment the dough as long as low protein flours typically exhibit a lower fermentation tolerance as compared to higher protein content flours.

Tom Lehmann/The Dough Doctor  
167

**Dough Clinic / Re: Which are the factors that affect digestibility?**

That's really not a lot of fermentation time if "digestibility" is what you are looking for. Remember, fermentation is also a part of the digestion process. The enzymes convert a portion of the starch to sugar for use as a yeast nutrient and the acids produced by the yeast as a byproduct help to break-down the proteins plus there will be some proteolytic enzymes present which will also work to break-down proteins but all of this requires some time which is why a longer fermentation time might serve you better than the short fermentation time you are presently using.

Tom Lehmann/The Dough Doctor  
166

**Dough Clinic / Re: Which are the factors that affect digestibility?**

All cards are off the table if the pizza is not completely baked, then and only then can you begin looking at various fermentation times (keep in mind that since acid is produced as a byproduct of yeast fermentation/acids inhibit crust color development)you may need to reassess the baking of the pizzas to get it correct for the fermentation time being employed at the moment.

Tom Lehmann/The Dough Doctor  
165

**Dough Clinic / Re: 4 day cold ferment neapolitan**

You're going to want to scale and ball the dough and then leave it out at room temperature to relax sufficiently for opening into a skin. The only issue is that 2 to 3-hours might be a bit excessive, if it is, go ahead and open the dough when its ready and place the opened skins on a lightly floured plate or something and hold in the fridge until about 30-minutes prior to use, then remove, allow to temper AT (NOT TO) room temperature for 20 to 20-minutes, clean up the skins a bit, dress and bake as needed.

If your total dough weight will be less than about 1.5-Kg. there is little to no difference between fermenting in a ball or bulk fermenting as you don't achieve the bulk fermentation characteristics with such a small dough size (it responds more like a large dough ball).

Tom Lehmann/The Dough Doctor

**Dough Clinic / Re: Has anyone else had trouble since the pandemic?**

I've seen nothing unusual with the exception of some spot shortages of yeast and flour early on but nothing lately.

Tom Lehmann/The Dough Doctor

163

**Dough Clinic / Re: Which are the factors that affect digestibility?**

6C (42F) is not considered to be a safe food storage temperature. In a commercial application it is not even considered as a legal refrigerated temperature, and this doesn't take into account what happens when we are in and out of the fridge many time during the day, which Yael has alluded to. This has to be taken into account when calculating how much yeast to use as well as the total CF time. This is important if you are getting your information from a commercial (pizzeria) source where they have a commercial walk-in or reach-in cooler. Everything revolves around temperature. :-D

Tom Lehmann/The Dough Doctor

162

**Dough Clinic / Re: Higher hydration doughs**

Just as an FYI, there is essentially no difference when bulk fermenting 1.5 Kg. of dough as opposed to fermenting in dough balls. The reason for this is because up to about 1.5-Kg. dough weight a bulk dough is really nothing more than a larger size dough ball. True bulk doughs will ferment much differently than a dough ball which is the reason why so many pizzerias have transitioned away from bulk fermentation to dough ball fermentation over the past 50-years.

Tom Lehmann/The Dough Doctor

161

**Dough Clinic / Re: Which are the factors that affect digestibility?**

YT is good but it does have its limits....don't believe "everything" you see and hear on YT. :o

Tom Lehmann/The Dough Doctor

160

**Dough Clinic / Re: Repacked Caputo flour**

You just want to know WHICH Caputo "00" flour you're getting as it can make a big difference in how you manage the dough.

Tom Lehmann/The Dough Doctor

159

**Dough Clinic / Re: Higher hydration doughs**

When we did the work we saw very little difference between bulk and balled dough when the total dough weight was 1.5-Kg. The benefits of bulk fermentation come when the dough is sufficiently large so as to continue to heat up due to heat of metabolism which allows the dough to actually increase in the rate of fermentation due to its increasing temperature over the fermentation time. Smaller size doughs/dough balls simply do not have the mass to allow for this to happen and because of this the rate of fermentation is not as predictable or consistent as the dough will be more impacted by the temperature of the room. As an example, when I first started in the baking industry we used to have special rooms with highly controller temperature and humidity (fermentation rooms) just for fermenting our

bulk doughs. This was all based on small scale testing that showed this was needed in order for the bulk dough to maintain a predictable/consistent rate of fermentation, then it was discovered that the mass of the bulk dough retained so much latent heat and developed such good insulating properties that it was all but impossible to impact the rate of fermentation of the dough through environmental influence. Based on this, almost overnight the fermentation rooms disappeared and doughs/sponges were bulk fermented at room temperature (regardless of whatever it might be). This practice is still in place today. This is what got us to looking at bulk v/s balled fermentation as it pertains to pizza production back in the early 80's.

Tom Lehmann/The Dough Doctor  
158

### **Dough Clinic / Re: Higher hydration doughs**

That work shows what we found as a difference between "true" bulk fermentation and balled dough CF, even to the point of needing more than 24-hours CF to achieve decent finished crust characteristics (this is why I have always said that a dough that is scaled and balled right after mixing and cold fermented can be used after 24-hours but is at its best with at least 48-hours cold fermentation. We saw pizzerias go through something of a hybrid dough stage at one point where they were still bulk fermenting but placing the bulk dough in the cooler, what they accomplished was a finished dough that had bulk fermented characteristics on the inside (core) of the dough mass and CF characteristics where the dough was up against the fermentation container as this allowed heat to transfer away from the dough so the fermentation was totally different in that area, the issue now was that when the dough was used there was no way to distinguish between the two different fermented areas and they were roughly mixed together, the end result was finished pizzas with a blotchy/mottled crust color (less crust color development from the center of the dough mass due to more fermentation and less color from the outer portion of the dough mass where the dough was fermented more like we see in a CF dough). When using strong, tenacious U.S. flours fermentation is a vital key in achieving a tender eating and crispy finished crust characteristic, this is because fermentation conditions the gluten and sets the stage for the oven spring and resulting open crumb structure needed to achieve these characteristics.

Weaker flours, milled from soft wheat varieties, typically yield dough that is much more extensible due to the nature of the gluten so they do not usually require a long fermentation time to achieve these characteristics but without the fermentation time there is not the same flavor development either, which is a good case for the use of a biga or sourdough starter with soft wheat flours.

Tom Lehmann/The Dough Doctor  
157

### **Dough Ingredients / Re: Question About Using Nutritional Yeast**

It sounds just like the product RS-190 aka "dead yeast" from Lesaffre/Red Star Yeast. The active ingredient in the dead yeast is glutathione, an amino acid contained within the yeast cell. The cell membrane has been denatured allowing for the release of glutathione into the dough where it acts as a reducing agent much like L-cysteine which is the active ingredient in PZ-44, an ingredient commonly used to impart added extensibility to a dough. Too much will certainly result in a "droopy" dough condition which we used to affectionately refer to as "elephant snot". These materials are potent with actual use levels measured in ppm (parts per million) based on flour weight. Because of this the L-cysteine in PZ-44 is cut with whey to make scaling easier, the RS-190 has a lot of "fluff" remaining from

the yeast cells so the material is not pure glutathione. In both cases (PZ-44 and RS-190) the recommended use level is generally considered between 1 and 2% of the flour weight. Like Brylcream, use more only if you dare. ;D

Tom Lehmann/The Dough Doctor

156

### [\*\*General Pizza Making / Re: How much Cheese on a pizza?\*\*](#)

Not knowing anything about your oven, but can you "dome" your pizzas to achieve the cheese melt (assuming you meant "now as opposed to not), this is done a lot of times where we need to dry off the top of the pizza to achieve the top color and cheese melt we're looking for. The moisture being released from the toppings is blanketing the top of the pizza during baking thus effectively keeping the top cool, by doming the pizza you move the pizza into the intense heat at the top of the oven at the end of the baking cycle just long enough to achieve the top characteristics you're looking for.

Tom Lehmann/The Dough Doctor

155

### [\*\*Dough Clinic / Re: my dough balls are not baby butt smooth\*\*](#)

The dough appears to be a little under mixed but it won't hurt in the least. It'll be just fine.

Tom Lehmann/The Dough Doctor

154

### [\*\*Dough Clinic / Re: Has anyone else had trouble since the pandemic?\*\*](#)

Great answer!!! ^^-^

Makes perfect sense.

Tom Lehmann/The Dough Doctor

153

### [\*\*Dough Clinic / Re: Higher hydration doughs\*\*](#)

Oil is a lubricant and the lubricity it provides to the dough helps it to expand. Oil also helps to seal the gas cells within the dough which helps them to better retain the leavening gas produced by the yeast, together these two benefits of oil will result in improved oven spring. However, like all good things too much can be bad too. The addition of up to about 5% oil can be beneficial to oven spring but more than that could have a detrimental affect upon oven spring (it would depend upon the dough formulation). The addition of oil will also have a significant impact upon the mastication properties of the finished crust (oil it a tenderizer) but I did not address this because the question was on oven spring. Oil can also interfere with gluten development which we address through the delayed oil addition mixing method, maybe that's what happened to cause your crusts to go flat during baking?

Tom Lehmann/The Dough Doctor

152

### [\*\*General Pizza Making / Re: How much Cheese on a pizza?\*\*](#)

It would be a step in the right direction. You're at 1.25% sugar right now, I'd go to 0.5% and benchmark from there. If your flour is already malted you might be able to delete the sugar entirely if necessary.

Tom Lehmann/The Dough Doctor

151

### [\*\*Neapolitan Style / Re: Pizza Slap Practice Dough\*\*](#)

There is also a commercial product called "Through Dough" that works quite well. Its main use is to practice acrobatic dough tossing.

Tom Lehmann/The Dough Doctor

150

### **Dough Clinic / Re: Tom Lehmann's guide to burger buns**

I'm not sure about hamburger buns being more "healthy" than pizza but here goes.

0) No "rules" or "standards" but they are expected to be soft and pliable.

1) A strong bread type flour with 12 to 12.8% protein content works best.

2) Typical salt level is 2%, this is to provide a controlled rate of fermentation, dough strength, and flavor to the finished bun.

3) Typical sugar level is 13%.

4) Dough absorption is variable between 58 and 62% depending upon the absorption properties of the flour.

5) No need to use milk in a hamburger bun dough formula.

6) If you want to achieve a flavor from the milk use at least 5% butter milk solids.  
NOT LIQUID MILK.

7) I can think of no logical reason for wanting to use milk of any kind in a hamburger bun aside from flavor see #6 above.

8) Absolutely correct.

9) This process is essentially a small portion of the flour made into a roux and added as an ingredient. If the flour is not malted, does not contain any amylase enzymes and has been milled from wheat with absolutely NO sprout damage it can be beneficial in making a softer bread/bun BUT if the flour has been malted or contains amylase enzymes or has been milled from wheat having ANY sprout damage the enzymes will hydrolize the damaged starch(cooked starch) in the roux converting it to sugar and releasing the water to create a wet, sticky dough.

10) 4 to 6% fat is typically used.

11) Today oil is mostly used as it promotes a softer crumb structure but indeed butter could be used.

12) If a plastic fat is used it can be added up front but if an oil is used it should be added 1 to 2-minutes into the mixing process (delayed oil mixing procedure).

13) When potato flour is used it is common to add it at 2% of the flour weight. Be sure the dehydrated potato DOES NOT contain any sulfites.

14) Yes, that's how it was done prior to the advent of dehydrated potatoes.

15) 80/20 Sponge & dough process with 3.5-hours sponge fermentation time.

16) It provides the necessary control over fermentation to produce finished buns with the desired flavor and even more importantly, finished shape characteristics along with the resilience needed to hold up to having a hot meat patty placed in it along with high moisture content condiments without either cracking into pieces or turning soft and gummy in the consumer's hands.

The sponge is made using 80% of the flour, 55% absorption based on sponge flour weight and 3% compressed yeast, set temperature is 75F/23.8C, sponge mix time is generally 4 to 5-minutes, sponge is then allowed to ferment for 3.5 to 4-hours, it is then brought to the mixer where it is incorporated into the remainder of the dough ingredients and mixed to FULL gluten development and in many cases a little more. It is then given a 5 to 10-minute rest period and divided, given a final proof time of 5 to 8-minutes and rolled to a diameter slightly larger than the pan cup, it is then panned, given a final proof (100 to 105F/37.7 to 40.5C) with 86 to 88% R.H. and baked at 440F/226.6C for about 12-minutes.

17) I've not had good success making hamburger buns as described above using the cold fermentation process. The internal crumb structure is always too open and porous.

18) You are looking for a very small and fine crumb structure.  
19) Each is formulated differently as there are different expectations for the finished bun.

20) Brioche Buns:

AP Flour: 100%

Salt: 2%

Butter milk (scalded): 5%

IDY: 1%

Sugar: 6.75%

Whole egg: 22%

Unsalted butter (slightly softened): 8%

Water: (100F) 50%

Place water in mixing bowl, add salt, sugar, buttermilk and beaten whole egg, add flour, IDY and butter. Mix using a flat beater until a dough is formed, allow to ferment 3 to 4-hours, scale to desired weight and form into balls, flatten balls to about 3/8-inch/9.5 mm., place on greased baking sheet and allow to proof until at least double in height, apply egg wash or milk wash, bake with steam in the oven at 400F. (if oven doesn't have steam place a sheet pan filled with hot water in the oven 30-minutes prior to baking, do not remove until after the buns have been baked).

Potato Buns:

Strong bread type flour: 100%

Salt: 2.5%

Sugar: 4%

Butter: 5%

IDY: 1.25%

Re-hydrated Potato Flakes: 8%

Water: 55%

Target finished dough temperature: 80F

Remixed straight dough procedure:

Place water in mixing bowl, add salt, sugar, flour, potato, IDY and butter.

Mix to form a well incorporated dough (about 7-minutes).

Allow to ferment for 2-hours.

Remix to a smooth, extensible consistency.

Allow dough to rest for 15-minutes.

Divide into desired weight pieces and form into balls.

Allow dough balls to rest for 10-minutes (variable).

Roll out to desired diameter.

Place formed dough pieces on a greased baking sheet.

Allow to final proof (95 to 100F/35 to 37.7C) with 85 to 87% R.H. (proofing time will be variable).

Bake at 420F/215.5C for approximately 15-minutes.

Regular burger buns:

Sponge:

Flour: 80% (strong bread flour)

Water: 55% of the sponge flour weight.

Compressed Yeast: 3%

Mix together for 5-minutes (target temperature is 75F).

Allow to ferment for 3.5 to 4-hours.

Dough:

Flour: 20% (strong bread flour)

Salt: 2%

Compressed yeast: 1%

Sugar: 13%

Oil: 5%

Water: 58% based on TOTAL FLOUR WEIGHT. To find the dough water weight calculate total dough absorption and subtract the weight of water in the sponge, the remainder will be the ACTUAL amount of water to add at the DOUGH side.

Procedure:

Add the dough water to the mixing bowl, followed by the salt and sugar, then add the flour and the compressed yeast.

Mix at low speed for 2-minutes, add the oil or shortening and the fermented sponge, mix at low speed for 2-more minutes, then mix at medium speed until the dough is fully developed and extensible. Target finished dough temperature is 80F/26.6C.

Allow the dough to rest for 10-minutes, then scale into desired weight pieces and form into balls.

Allow dough balls to intermediate proof for about 8-minutes (or until they can be rolled/pinned out to desired size)

Place on greased baking sheet and allow to proof at 100 to 105F/37.7 to 40.5C for about an hour or until the buns are fully proofed.

Bake at 440F/226.6C for about 12-minutes or until the buns have a solid brown color.

21) A good replacement for egg wash is whole milk. Do you really sacrifice an egg every time you make egg wash? I just fry up what I have left over as a treat for the baker "ME" :chef:

22) Tips:

Always remove baked buns from the baking pan immediately after baking. Cool on a wire rack/screen.

Add variety to the buns by spraying them with whole milk before baking and sprinkling with sesame seeds, poppy seeds, grated Parmesan cheese, fine chopped onion, garlic, or a blend of herbs.

If the buns do not flow out sufficiently during proofing and baking (look like baseballs) the dough may need more fermentation, mixing or increased dough absorption.

I worked with Weber's Bakery in Germany helping them produce hamburger buns for their McDonald's contract back in the 80's during which time I was on the McDonalds International Bakery Products Task Force working with different baking companies world wide helping them produce hamburger buns aka "McDonalds Buns" for their McDonald's restaurants.

Tom Lehmann/The Dough Doctor

149

### **Shop Talk / Re: Rounder and divders**

What are the dough weights and production numbers we're looking at? Will this be for a conventional (yeast leavened) dough or a sourdough?

Tom Lehmann/The Dough Doctor

148

### **Sauce Ingredients / Re: Ground Tomatoes**

Why not just make your own? A food mill will allow you to make your own from fresh or canned tomatoes.

Tom Lehmann/The Dough Doctor

147

## [\*\*New Forum Members / Re: Dots on pizza dough\*\*](#)

The spots, actually "speckles" as they are referred to as are most commonly associated with oxidized particles of wheat bran, they are harmless and don't show up in the baked product. Once in a while we come across something that's similar which is caused by yeast agglomerates resulting from using ADY as one would IDY (adding it directly to the flour or dough rather than suspending it in water to hydrate and activate prior to addition). The same can result from the addition of IDY directly to the dough and not mixing the dough long enough after the IDY addition (5-minutes is recommended). This is why my preferred method is to add the IDY directly into the flour as it's hard to go wrong that way.

Tom Lehmann/The Dough Doctor

146

## [\*\*Chitchat / Re: Pizza boxes?\*\*](#)

There are generic pizza boxes and there are pizza boxes with custom printing on them. Many pizzerias will sell advertising space on their pizza boxes to help off-set the cost of the boxes.

Tom Lehmann/The Dough Doctor

145

## [\*\*Dough Clinic / Re: Tom Lehmann's guide to burger buns\*\*](#)

I'm, still trying to find the pizza in it? :-D

Tom Lehmann/The Dough Doctor

144

## [\*\*Shop Talk / Re: Metal Proofing Pans vs Plastic Proofing Trays\*\*](#)

The one place where the individual tins really shine is when you're dealing with a high absorption dough.

Tom Lehmann/The Dough Doctor

143

## [\*\*General Pizza Making / Re: Flour , water , salt, yeast. What is the right order to add them?\*\*](#)

When mixing dough by hand I like to add the water then the salt and sugar and the yeast (both ADY and IDY are added in a water suspension) then the flour, I then begin hand mixing to incorporate everything, then I allow the dough to rest (autolyse) for 45 to 60-minutes before continuing with my hand mixing process. When machine mixing I add the water first, then the salt and sugar followed by the flour. IDY or CY are added right on top of the flour, but ADY is added in a water suspension. Mixing is then started. If oil is used I follow the delayed oil addition dough mixing method.

Tom Lehmann/The Dough Doctor

142

## [\*\*Dough Clinic / Re: Can you explain my observations?\*\*](#)

So you question is; Why is there a variation in the amount of flour in bags from the same delivery.

Your observations are spot on, we've seen this all the time over many years, but we don't see much variation in the actual weight of the bag when you include the tape and thread. This is why I've always advocated weighing each and every bag of flour. The variations you are encountering are from the fact that the bags are automatically filled on high speed handling equipment. While any one bag might be

"off weight" if you weigh a group of ten bags the average of the ten will be correct. By the time the equipment adjusts for an off-weight the bag has already moved on and the next bag is being filled. This is why the weight seems to float between slightly heavy and slightly light with a few spot-on for good measure. It's only the bags that are out of set tolerance that are automatically pulled from the line. We've also documented that the closer you are in dough absorption to either of the extremes of high or low, the more apparent these variations become.

Also, keep in mind, as I've said so many time before, flour is not a constant, it's really quite variable. The age of the flour or wheat from which it is milled will affect it, the conditions under which it's stored will affect it, and the grist (collection of wheat varieties) from which it is milled will affect it. The millers do a great job in providing us with flour as good and consistent as it is. I have two heroes in my life, the flour miller and Betty Crocker!

Tom Lehmann/The Dough Doctor

141

### **Shop Talk / Re: Metal Proofing Pans vs Plastic Proofing Trays**

Have you looked at the pans from Crown Cookware <[www.crowncookware.ca](http://www.crowncookware.ca)>, they carry a lot of the same type of pans that Allied carried. We had a few of their pans when I was at AIB and they held up as well as those from Allied Metal.

Tom Lehmann/The Dough Doctor

140

### **Dough Clinic / Re: Can you explain my observations?**

Check the bags to make sure they all have the same milling lot number. Also, remember that storage can/will affect the flour too. If the flour has been stored for a period of time (slow turn over by your distributor) it will dry out. Flour will typically have about 14% moisture content at the time of milling and bagging but it can dry out to as low as about 10% due to long storage times (+/- 3-months) from the date of milling.

Tom Lehmann/The Dough Doctor

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### **Shop Talk / Re: Metal Proofing Pans vs Plastic Proofing Trays**

Also, when checking around, don't forget to look for steel cake pans, they come in both steel and aluminum and are available in a host of different sizes. I've got a few in 8 and 12-inch (square) X 1" deep with a dark green finish (called Bake-Prep) that work reasonably well.

They went for next to nothing when AIB liquidated its baking facility.

Tom Lehmann/The Dough Doctor

138

### **Dough Clinic / Re: Dough recipe for commercial conveyor pizza oven at 550 degrees**

Here is a good starting dough formula:

Flour: Bread type flour with 12 to 12.8% protein content 100%

Salt: 1.75%

Sugar: 2%

IDY: 0.375% or CY: 1%

Water: 62% (variable)

Oil: 2%

Put water in mixing bowl, add salt and sugar, add flour and yeast on top of the

flour. Mix until no dry flour can be seen in the bottom of the bowl, then add the oil and mix an additional minute at low speed, then finish by mixing 8 to 10-minutes at medium speed. Target finished dough temperature is 75 to 80F.

Take directly to the bench for scaling and balling.

Scale and ball entire dough in not more than 20-minutes.

Place dough balls in dough boxes and lightly oil the top of each dough ball.

Cross-stack dough boxes in the cooler until INTERNAL dough ball temperature reaches 50F.

Down-stack and kiss the dough good night.

Allow to CF for a minimum of 24-hours (48-is better).

Remove about a 3-hour supply of dough balls from the cooler and allow to set AT room temperature until the internal dough ball temperature reaches 50F.

Begin opening the dough balls into skins as needed. They will remain good to use for about 3-hours.

Any unused dough balls can be opened and placed on screens and stored in the cooler in a wire tree rack (cover with a plastic bag to prevent drying)

To use these pre-opened skins, remove from cooler 20 to 30-minutes prior to anticipated use time, then REMOVE FROM THE STORAGE SCREEN and place onto your baking platform (screen, disk, pan, etc.), dress and bake as normal.

Note: Pomace grade olive oil is better for use in the dough than EVOO, it's cheaper too!

Tom Lehmann/The Dough Doctor

137

### **Dough Clinic / Re: dried out crust after parbaking**

What you have described is a classical case of dough collapse due to insufficient par-baking. The minimum par-bake time in an air impingement oven will be about 2-minutes at not more than 400F and even then it won't be the best par-bake either. This is because if the oven is profiled to bake pizzas on a raw dough skin, as most are, it has full open fingers across the bottom and a combination of open and partial or even closed fingers across the top which results in the top of the skin receiving less bake than the bottom (that's a similar heat pattern to that which is used to bake pita). Now you know why the skin wants to "pita" during baking.

Since I didn't see anything about docking, I'll assume you're not docking the skin.

You best chance to accomplish what you are trying to do is to dock the skin, place it on a pizza screen and bake it at 400F for 2-minutes. You may need to adjust the baking time and temperature slightly but this will get you very close. A difference of 10-seconds in bake time can mean the difference between success and failure....it's that sensitive. Also, immediately upon removing the par-baked crust from the oven turn it upside down for cooling.

Tom Lehmann/The Dough Doctor

136

### **Dough Clinic / Re: dried out crust after parbaking**

You have the wrong type of dough docker (metal pins?) The most effective dough docker is the DDCH7755 from American Metalcraft <[www.amnow.com](http://www.amnow.com)>. I'm sure there are others like it but this will give you an idea of what it looks like. Since you have an IR oven set the emitter temperature at 650F for both the top and bottom, if the oven doesn't show emitter temperature set the actual baking temperature at 400F. If the oven has an open chain conveyor, bake on a screen but if it has a woven wire band you can bake directly on the band. Baking time will be a bit longer at about 3-minutes.

135

## **Dough Clinic / Re: Quest for a tender neapolitanish pizza**

Your case is not so uncommon where you are looking for a characteristic that you might or might not get so in that aspect it's always elusive. When this happens the issue is almost always attributable to some kind of inconsistency in what is being done. In reading through your formula and procedure it appears to me that your are not being specific on times and temperatures (remember the acronym "GIGO" garbage in garbage out. In this case it's "IIIO" inconsistency in inconsistency out. You're on the right track by buying a thermometer so you can document things like flour temperature, room temperature, water temperature and finished dough temperature. By tracking these you will be able to develop a chart for determining the correct water temperature to use to achieve your desired finished dough temperature. This is vitally important as you are bulk fermenting and just a few degrees difference in finished dough temperature can make a big difference in the total amount of fermentation the dough received over the following 18 to 20-hours.

Which brings me to times, pick a time that works for you and then just be CONSISTENT, use that time fermentation time consistently. You will also want to be measuring the dough temperature when you scale and ball it and again when you go to open it into a skin. While the 2-hour difference between when you begin opening the dough balls until you finish opening them may not seem like much, it can make a HUGE difference in the finished crust depending upon the temperature of the dough balls at the time when you begin opening them. I think after you begin addressing these inconsistencies your results will be much more consistent and you will either have your 10 or possibly 11 or at the very least you will be able to make adjustments to the dough/process which will allow you to move closer to the desired finished crust characteristics.

Tom Lehmann/The Dough Doctor

134

## **Dough Clinic / Re: dried out crust after parbaking**

No, your problem is due to collapse of the crumb structure resulting from insufficient baking of the crust. It is NOT a drying out issue. In order for the problem to be resolved you have to achieve an internal temperature of 185 to 190F to fully set the structure, anything less than that and the structure will collapse upon cooling. The idea behind par-baking is to achieve a full internal bake (185 to 190F internally) while developing a finished crust color that might be best described as being "sandy" in color. If you get too much color during the par-bake the crust will either get done too soon or it will get too much color when the pizza is fully baked. If you want to see an excellent example of something that is par-baked just take a look at those par-baked dinner rolls that you'll be buying in a few weeks to go with your Thanksgiving turkey.

The reason for using a screen under the skin during baking is because it helps to reduce some of the bottom heat (remember, pizzas ovens are designed to provide more heat to the bottom of the pizza than to the top during baking).

Tom Lehmann/The Dough Doctor

133

## **Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.**

Shrink wrapping and putting the pizza in a plastic bag are essentially one and the same. Airflow in a package? Go back and read the article referenced above by PIZZA\_NOT\_WAR and I think you will have both questions answered. A number of years ago I had a person contact me regarding a problem he was having, some of

his packages were blowing up (bulging), his concern was how to find a gas permeable packaging material to allow the gas to escape!!! He didn't even recognize the potential of what he was for causing illness or worse! This is why I always recommend that anyone getting into anything more than just plain freezing ALWAYS have a microbiologist on staff. The question of the day referencing the issue cited above: Would you consume anything taken from a bulging can? How about a canned product taken from a jar with a domed lid?

Tom Lehmann/The Dough Doctor

132

### **Shop Talk / Re: Rounder and divders**

The somerset is a good unit and it works very well, too bad they staged the video using previously rounded dough balls...dumb mistake! The other rounder that I like a lot is the AM Manufacturing rounder, you wouldn't go wrong with either one.

Tom Lehmann/The Dough Doctor

131

### **Dough Clinic / Re: dried out crust after parbaking**

As long as you are at or above the 50 to 55F range you'll be fine.

Tom Lehmann/The Dough Doctor

130

### **Shop Talk / Re: Rounder and divders**

There are, but you will need to change gears and look at bakery dividers (ram and knife). These are designed to degas fermented doughs for consistent scaling weights. The bad news is that they are large (even single and double pocket dividers are pretty large for a pizzeria) they're potentially expensive and they may not work well with weights much under about 10-ounces. Even the big wholesale manufacturers divide the dough prior to fermentation, they then round (ball) it and give it an intermediate proofing period just prior to final shaping (usually hot pressing). In other cases they will process the fermented dough on a stress free sheet and die cut processing line (think of processing 4,000-pounds or more of dough per hour before ordering one) which minimally degasses the dough while forming it into a continuous sheet from which individual pizzas are die cut and then usually go to an oven for par-baking, then to cooling and a trip through the finishing room where the par-baked crusts are dressed, then blast frozen, individually packaged, boxed, palleted, and placed into a holding freezer to await transportation to a distributor.

Tom Lehmann/The Dough Doctor

129

### **Dough Clinic / Re: Quest for a tender neapolitanish pizza**

Durum semolina does you no favors if your main concern is tenderness.

Tom Lehmann/The Dough Doctor

128

### **Dough Clinic / Re: Quest for a tender neapolitanish pizza**

Yael;

The problem with durum semolina flour has to do with the type of gluten it produces, a very tough and elastic gluten, to be sure. This is why it is mostly used for the production of pasta. It can help produce a crispy crust but at the expense of added toughness as the pizza cools off, like in a DELCO scenario. It's for this reason that we've always suggested to limit its use to not more than 25% of the

total flour weight.

Tom Lehmann/The Dough Doctor

127

### **Shop Talk / Re: Rounder and divders**

Scott;

I've seldom ever really found it necessary to go with a dough divider as it's really pretty easy and accurate to scale the dough by hand like Walter said, it's the rounding that catches up with you, so hand scaling isn't all that bad but you can really "grease the wheels" with a dough rounder. By far, the most efficient method for hand scaling the dough is to cut it into strips (called ropes) and then use your cupped hand to work it out to about the same diameter along its entire length, then cut a piece off and weigh it, the idea being to find the length that gives the targeted weight, once you develop a feel for it this method can be VERY fast.

During our seminars two of us could scale and ball (using an AM Dough Rounder) 85# of dough into 10-ounce dough balls in less than 20-minutes. We used to make a challenge out of it to see how many pieces we could cut that were the exact targeted weight, my personal best was, I believe, seven dough pieces in a row. I might add that we only did this once a year so it wasn't like we were doing it every day either! We could also round (ball) the dough manually in under 20-minutes too by using the two handed balling procedure (shown in my dough making video at <[www.doughdoctor.com](http://www.doughdoctor.com)>) but I'll be the first to admit that it'll catch up to you sooner than later....give me a mechanical dough rounder!!!

Tom Lehmann/The Dough Doctor

126

### **Dough Clinic / Re: Getting crust to brown without being to overcooked and hard.**

None, it will just show up as another ingredient at .5%, the sum of the percentages will also increase by 0.5% to 167.75%. That's one of the nicer things about working in bakers percent, since all ingredient weights are based on the total flour weight if you change the weight of any ingredient (except for the flour) everything else remains the same. If you were working in "true" percent if you change the weight of ANY ingredient the percent of ALL the others has to be recalculated.

Tom Lehmann/The Dough Doctor

125

### **Dough Ingredients / Re: New King Arthur '00' Pizza Flour**

Just about any unmalted flour can be successfully used for high temperature pizzas.

Tom Lehmann/The Dough Doctor

124

### **Shop Talk / Re: frozen/vacuum sealer pizza for delivery and pickup.**

There are at least two documented cases of clostridium in vacuum packaged tortillas coming from Canada, that's two too many! Work that was done at AIB (American Institute of Baking) back in the 50's confirmed that clostridium can grow in bread stored in an anaerobic environment, this is reason enough for ME to take vacuum packaging VERY seriously. When I refer to just plain freezing I'm referring to non-vacuum packaging of the product and then placing it into the freezer for storage.

Tom Lehmann/The Dough Doctor

123

## [\*\*Dough Clinic / Re: Tender Flakey Pie Pastry Crust\*\*](#)

Sounds like it was what is referred to as a "long flake" crust.

This is where the fat is refrigerated until firm but not hard, it is cut into the flour until the fat pieces are about the size of cherries. The pie dough is then formed into pucks, placed on a sheet pan and covered to prevent drying, place in the cooler over night then brought out on the following day. They are allowed to warm AT (NOT TO) room temperature until the dough can be rolled to about 3/16-inch thick, fitted into the pie plate (pan), filled, top crust applied, sugared or egg washed and baked.

Tom Lehmann/The Dough Doctor  
122

## [\*\*Dough Clinic / Re: Tom Lehmann's guide to burger buns\*\*](#)

The higher protein flours are used in hamburger and hot dog bun production for the resilience it imparts to the crumb structure. When made using low protein flour the crumb structure lacks resiliency and becomes somewhat crumbly.

In hamburger bun production, if you want to add seeds as a topping all you need to do is to lightly spray the surface with water and the seeds will stick just fine PROVIDING THAT YOU HAVE NOT ALLOWED THE CRUST TO BECOME DRY PRIOR TO APPLICATION OF THE WATER SPRAY. If the crust has dried a cooked starch application will be your best chance to make the toppings stick after baking. To make the cooked starch just add 1-ounce of corn starch to 1-quart of water and heat just until it begins to simmer, allow to cool until warm (not hot) and carefully brush onto the top of the buns just before adding seeds, etc. The starch wash also imparts somewhat of a shine to the crust too.

Tom Lehmann/The Dough Doctor  
121

## [\*\*Dough Clinic / Re: Getting crust to brown without being to overcooked and hard.\*\*](#)

The amount of diastatic malt, like all of the other ingredients, is based on the TOTAL flour weight which includes both the flour in the dough and the preferment.

Tom Lehmann/The Dough Doctor  
120

## [\*\*Neapolitan Style / Re: Yeast - Fresh or IDY\*\*](#)

When using IDY how are you adding it? The conversion from CY to IDY is to use roughly 60% less, not more. If you are machine mixing you can add the IDY directly into the flour providing the total mixing time is 5-minutes or more. The other way to add it is to suspend it in a small amount of 95F water (USE A THERMOMETER) and stir to suspend, there is no need to activate it as done with ADY.

The only real difference between CY and IDY is moisture content (approximately 80% for CY and 6% for IDY). Because IDY is instant hydrating (that's where its name comes from) it is very easily damaged if hydrated in water that is too hot or especially too cold.

Tom Lehmann/The Dough Doctor  
119

## [\*\*Sicilian Style / Re: Need help proofing my Sicilians\*\*](#)

Your issue is with fermentation, not proofing of the dough. Proofing is done after you fit the dough into the pan and it ends when you bake the pizza. Most Sicilian pizzas are proofed for about an hour before baking.

By all means reduce the yeast! Remember, we're making pizza dough, not nitroglycerin. Even in commercial application we have to make yeast and/or temperature adjustments for walk-in coolers which are very efficient and reach-in coolers which are not as efficient.

After you take the dough out of the fridge and open it up to fit the pan it will warm up quit fast but it's normal to pull the dough out of the fridge a couple hours before that to allow the dough to warm up (50 to 60F), so now the dough is actually at fermentation temperature already. I usually cover my Sicilian style pizzas with a sheet of plastic for the proofing stage. You will need to experiment with the proofing time depending upon your dough formula and dough management procedure to determine what time actually works best for you.

Tom Lehmann/The Dough Doctor

118

### **Neapolitan Style / Re: Yeast - Fresh or IDY**

When we did studies on IDY we found that 95F was the ideal water temperature for suspending the IDY in. A variation of as little as 5F higher or lower resulted in a reduction in gassing/fermentation performance with a greater loss in performance with a lower water temperature than 95F. This is not due to a difference in the yeast itself but instead in the way the yeast agglomerates are designed. They are designed to be fast/instant hydrating, as a result when hydrated in cold water glutathione is leached out of the cells which impairs the ability of the yeast to ferment and the now free glutathione will act as a reducing agent (just as "dead yeast"/RS-190) does making for a softer, more extensible dough condition at the expense of an inconsistent rate of fermentation.

Tom Lehmann/The Dough Doctor

117

### **Sicilian Style / Re: Need help proofing my Sicilians**

You can certainly speed up the proofing process by placing the panned dough into an environment where you have not more than 105F with 85 to 87% relative humidity. A warm place with a damp towel draped over the pan seems to work pretty well for me (just be careful so the towel does not contact the dough or it will stick to it). I use a piece of plastic when proofing at room temperature but when proofing at an elevated temperature I get too much condensation formation on the plastic which drips onto the dough, the damp towel provides the humidity while preventing condensation from forming.

You will have to experiment with proofing times under YOUR conditions to arrive at a proofing time. Using four pans of panned dough, allow to proof for 15, 30, 45 and 60-minutes prior to baking, dress each pizza the same and bake all at the same temperature, then pick the one that you like best. If you have kept track of the times and temperatures and you can replicate the proofing conditions you will have your parameters for making your Sicilian style pizzas.

Tom Lehmann/The Dough Doctor

116

### **General Pizza Making / Re: Left the lid off in the fridge - dry dough - what should I do?**

The crust that forms is actually insoluble so spraying with water really doesn't help much. Mixing it into the dough as you've done is OK and you'll probably not even notice it with a thin crust pizza but in some cases it will form hard little bits (like what's this?) in the finished crust. The best way I've found to address this is to just leave the dough alone after covering it, then orient it so the crust is on the bottom

when you open the dough into a skin. The way crackers are made is to sheet the dough into a continuous ribbon and apply heat along with airflow to the top of the dough to form a dry skin/crust. The dough is then laminated (referred to as dry laminating) and the process repeated again to achieve the desired flakiness in the finished cracker.

Tom Lehmann/The Dough Doctor

115

### **Dough Clinic / Re: Which are the factors that affect digestibility?**

In one of the later tests that we did on pizza we looked at what was the major cause of heart burn with individuals who ate pizza but had stopped eating it due to the heart burn issue. While it is true that highly acid foods can cause heart burn, in pizza we found that it was the dried basil and dried oregano that were more often than not the culprit. When we deleted these ingredients from the pizza and replaced them with fresh basil or oregano leaves our test group said that they did not experience the heart burn they had previously experienced and indicated that if given the opportunity to purchase the pizzas made using the fresh basil and/or oregano they would consume pizza more frequently. As an off-shoot from this study we also found that our sensory panel could taste the cheese better than when the dried counterparts were used. We confirmed these observations by making pizzas using only fresh basil and/or oregano and putting them out at the Ohio Pizza Show as well as the PMQ Pizza Show and asking samplers for their comments. The #1 comment was: "What kind of cheese was used to make this pizza? It has a great flavor!" We were using 4-ounces of Grande whole milk mozzarella on our 12-inch pizzas.

Tom Lehmann/The Dough Doctor

114

### **Sicilian Style / Re: Need help proofing my Sicilians**

Condensation = water which will be absorbed into the dough over time, then when you go to bake the pizza there is a wet spot in the dough which produces copious amounts of steam or vapor pressure resulting in a beautiful bubble on your pizza.

Tom Lehmann/The Dough Doctor

113

### **Neapolitan Style / Re: Yeast - Fresh or IDY**

You just put the IDY into about 5 times its weight of water at 95F. and remove an equal amount of dough water. No other changes are needed. Many of us already do something similar to this when we need to use just a very small amount of IDY, For example, let's say you need to use 1/10-gram IDY but your scale won't handle anything that small, what to do?? Just weigh 1-gram into a container with 10-ounces of 95F water, stir well to SUSPEND the IDY and portion out 1-ounce of the suspension, there will be approximately 1/10 of a gram of IDY in that 1-ounce of yeast suspension, just make sure you also reduce the dough water by 1-ounce too. If the IDY is unopened you will lose about 25% of the gassing power from the IDY after 2-years of frozen storage. If the package is opened all bets are off of the table. We found the best way to store IDY is to leave it in the original container, use what you need, fold the packaging down tightly to the IDY in the package and secure with tape or a rubber band. To use the next time: DO NOT use directly from the fridge or freezer!! Instead, remove from the fridge or freezer and allow to set at room temperature overnight, then use what you need and repeat the above procedure. This will reduce the probability of forming condensation in the package which is death to the IDY. We never recommended holding IDY after opening for

more than 3-months (refrigerated or frozen) for home use. If you're into vacuum packaging you could break a 454-gram brick down into smaller portions and vacuum package for refrigerated or frozen storage of a year or more. Opening a package and putting it into a glass jar with a tight fitting lid serves no useful purpose as the idea is to exclude as much oxygen from the package as possible, that's why the 454-gram bricks are vacuum packaged. By folding the packaging down around the IDY and securing tightly you effectively reduce the head space in the package and reduce the contact with the air in the package which is necessary for effectively storing the IDY.

Tom Lehmann/The Dough Doctor  
Tom Lehmann/The Dough Doctor  
112

### **Dough Clinic / Re: Which are the factors that affect digestibility?**

Now I'm beginning to wonder where the green color on a Margarita came from????  
Hummm :o  
Tom Lehmann/The Dough Doctor  
111

### **Sicilian Style / Re: Need help proofing my Sicilians**

When you see this beginning to happen in the oven break out your handy "bubble popper" aka BBQ fork to deflate it and press it down a bit. It will also help if you cool it upside down too as this will help to flatten the top.

Tom Lehmann/The Dough Doctor  
110

### **Dough Clinic / Re: Which are the factors that affect digestibility?**

I didn't either, I always thought that the Margarita had the colors of the Italian flag in honor of Queen Margarita/Margherita. ???  
Tom Lehmann/The Dough Doctor  
109

### **Sicilian Style / Re: Need help proofing my Sicilians**

Definitely cool it on a rack, I typically use a spare pizza screen for a cooling rack. If you don't you will just force moisture back into the baked crust and run the risk of getting a gummy crust or collapse of the crumb structure during the cooling of the crust.

Tom Lehmann/The Dough Doctor  
108

### **Dough Clinic / Re: Cheese boiling/oiling/bubbling**

It appears as if there is too much top heat being applied to the pizza during baking. Sometimes spraying the top of the pizza (cheese) with water can help.

Tom Lehmann/The Dough Doctor  
107

### **Dough Clinic / Re: ny pizza help!!!**

The Marsal ovens are great ovens but they do not get as hot as a wood fired oven can. With that said, they will certainly serve you well for making New York style pizzas. Also, in New York City it is common to use All Trumps flour (14% protein content) so any good, strong Canadian flour should work well for you.

Tom Lehmann/The Dough Doctor  
106

## **Dough Clinic / Re: Which are the factors that affect digestibility?**

I can't argue with you on that! For me though, no matter how you cut it, it's still a cheese pizza! :chef:

So much for history and lore. :'(

Maybe someone can shed more light on this? ^^^

Tom Lehmann/The Dough Doctor

105

## **Shop Talk / Re: Rounder and divders**

Walter;

The best thing about the free standing models as opposed to the bench top models is that they can be easily rolled aside, out of the way, when not in use.

Tom Lehmann/The Dough Doctor

104

## **Shop Talk / Re: Rounder and divders**

Scott;

Yes, track/screw/cone type rounders are not well suited to handling the soft and usually sticky/tacky dough consistency associated with sourdoughs. A good alternative is a horizontal or belt type rounder sometimes called a bar type rounder. This is a horizontal belt with a specially designed bar placed diagonally across the belt. As the dough ball moves along the belt it contacts the rounding bar causing the dough ball to spin forming it into a ball, however, some oil is required with the use of these rounders. If you're interested in knowing more about this type of rounder I think AM-Manufacturing uses them in some of their high volume hot press equipment packages.

Tom Lehmann/The Dough Doctor

103

## **Shop Talk / Re: Rounder and divders**

Remember that you can manually round the dough to just about any level of "tightness" you want, it sounds like you have been rounding your dough loosely which is common for those who wish to use the dough balls relatively soon after rounding. Most rounders are designed to round the dough tightly, some even use two rounders in tandem, or pass the dough balls through the rounder twice as this provides for a better dough ball shape especially after several days of cold fermentation. You're not doing anything wrong, the rounder is just doing what it was specifically designed to do.

Tom Lehmann/The Dough Doctor

102

## **Dough Clinic / Re: 4 day cold ferment neapolitan**

Glad to hear that all went well, we wouldn't want to disappoint those guests! :-D

Tom Lehmann/The Dough Doctor

101

## **Dough Clinic / Re: Autolyze experiments**

An autolyze is necessary when using whole-wheat flour or any type of multi-grain blend (lots of discussion on this), and it is also useful when working with high absorption doughs (over 70%), as well as when mixing the dough entirely by hand. When machine mixing I've never found any great advantage to using an autolyze. In my world an autolyze is what the old time bakers used to refer to as a "soaker"

consisting of just flour and water. As soon as you put yeast into the picture you no longer have an autolyze, but instead you now have what's called a biga, a sponge or a brew. It has a very different effect on the flour than an autolyze.

Tom Lehmann/The Dough Doctor  
100

### [\*\*Dough Clinic / Re: Autolyze experiments\*\*](#)

The preferred way to add IDY is to add it to the dough after a few minutes of mixing providing that the dough will be machine mixed for a minimum of 5-minutes after the IDY has been added. The second preferred method, and possibly the most used, is to add it directly into the flour. By design, IDY hydrates very quickly (that's where the "I" comes from), so it is easily damaged if not properly hydrated (95 to 100F water). Yeast will exhibit about a 20-minute lag phase after addition before it begins to actively ferment in a dough environment at a temperature between 70 and 85F.

Tom Lehmann/The Dough Doctor  
99

### [\*\*Dough Clinic / Re: Advice on the moment of balling and delayed oil\*\*](#)

Sandruz;

Just confirming that you are pre-hydrating/activating the ADY prior to addition and not just adding it dry as you would IDY. You can save yourself some work by doing the following:

- 1) Add the ADY suspension to the dough water and mix into all of the flour.
- 2) Add the salt directly into the flour in step #1 above.
- 3) Mix the dough at this point until it just until all of the flour has been whetted, then add the oil and mix for 1 additional minute at low speed, then mix at medium speed just until a smooth dough appearance is achieved.
- 4) You're not going to see much, if any difference between "bulk" and ball fermenting with such a small dough size so you could ball and CF after 50-minutes room temperature fermentation if you wish.

Note: This all all based on the assumption that you are machine mixing.

Tom Lehmann/The Dough Doctor  
98

### [\*\*New Forum Members / Re: New member from Arkansas\*\*](#)

Welcome!

Where abouts in Arkansas?

Tom Lehmann/The Dough Doctor  
97

### [\*\*Dough Clinic / Re: Yeast donuts recipe?\*\*](#)

You're going to have to experiment to find out. The key is in having sufficient R.H. to prevent a skin/crust formation on the dough. A good way to do this at home is to place a wet towel in the area where the donuts will be proofed (an insulated ice chest works well) and prevent exposure to drafts.

Tom Lehmann/The Dough Doctor  
96

### [\*\*General Pizza Making / Re: Effect of hydration; is there a simple answer?\*\*](#)

Even when alcohol is added to the dough, such as in the case of making a beer crust, there is no additional residual alcohol in the finished crust....it's that volatile.

Tom Lehmann/The Dough Doctor

95

**[Dough Clinic / Re: Dough is out of control!!](#)**

While you're at it get yourself a dial/stem type thermometer too as you will want to have one so you can measure the water and dough temperatures. Additionally, do you have an oven that gets hot enough to bake a pizza made with "00" flour? The oven needs to be able to reach temperatures north of 750F, if not, you would be better served using a domestic bread type flour.

Tom Lehmann/The Dough Doctor

94

**[Dough Clinic / Re: Higher hydration doughs](#)**

No, not always. Flour characteristics, dough formulation, fermentation and bake will be the major contributors to chewier eating characteristics.

Tom Lehmann/The Dough Doctor

93

**[General Pizza Making / Re: Effect of hydration; is there a simple answer?](#)**

With those conditions the dough will not be properly baked out, so in that case I would expect to find that it has an alcohol aroma, the same would be said for raw dough which the dough that you've described is just half a bubble off of.

Tom Lehmann/The Dough Doctor

92

**[Shop Talk / Re: Rounder and divders](#)**

The Dutchess divider/rounder machines aka "shaker machines" are great machines and have been around for a very long time. ^^^ I see you have the steel plattens (as they are called), these are (in my opinion) better than the plastic ones. When set-up to do a 36-piece divide& round they are the industry standard for making small scale hamburger and hot dog bun production runs. :chef:

Tom Lehmann/The Dough Doctor

91

**[Dough Clinic / Re: Which are the factors that affect digestibility?](#)**

If the pizza has a crispy crust it has to be somewhat dry resulting in some thirst....hence its popularity as a bar food. Eat pizza = drink more beer! ;D

If you use a tomato based sauce it's always going to be a bit acidic as tomato is an acidic fruit. You can tone this down a little by adding a powdered cheese (Parmesan & Romano) to the sauce. The calcium content of the cheese helps to balance the acidity of the tomato.

Tom Lehmann/The Dough Doctor

90

**[Dough Clinic / Re: Dough is out of control!!](#)**

My guess is that the dough was over fermented to the point where it was becoming "bucky", when it's like that the dough will exhibit very elastic properties with any work put into it, like trying to open the dough into a skin. Best thing to do in a case like that is to re-ball and play the waiting game until the dough relaxes again which will allow it to be opened into a skin relatively easy.

Tom Lehmann/The Dough Doctor

89

**[New Forum Members / Re: New member from Arkansas](#)**

Does Combs, St. Paul or Pettigrew ring a bell with you? Just wondering (they're in N.W. Arkansas).

Tom Lehmann/The Dough Doctor  
88

### **Dough Clinic / Re: Which are the factors that affect digestibility?**

I got the idea to pursue this about 25-years ago when I was reading an article on what to do if someone ingests different poisonous/harmful materials. One of the things mentioned in the article for acids or caustics was to drink milk as the calcium content works to buffer the acid or alkali, this got me to thinking about the acidity of the tomatoes, and sure enough it appears that the calcium content of the cheese works in a similar manner to that of whole milk as it also seems to buffer the acidity of the tomato in the sauce and the flavor is right at home on a pizza too. Just goes to show ya, answers to problems can often be found in the darnedest places.

Tom Lehmann/The Dough Doctor  
87

### **Newbie Topics / Re: Newbie with a sauce question**

My all time favorite is just Stanislaus 7/11 Ground Tomatoes (with peel). Use it straight from the can with nothing added, then add a little fresh basil (sliced into strips) and maybe a little crushed garlic over the top of the sauce, add the cheese and dress to the order. DO NOT add any garlic or onion product to the sauce! This will act as a catalyst resulting in gelling of the tomato pectin within 24-hours. If you JUST GOTTA have garlic or onion in the sauce put it in a small amount of oil and nuke it to over 190F to deactivate the enzymes responsible for the gelling of the tomato pectin, then add it. I don't like doing this as it potentially reduces the flavor impact of the onion/garlic.

Tom Lehmann/The Dough Doctor  
86

### **Dough Clinic / Re: Which are the factors that affect digestibility?**

That's correct, there is indeed calcium in the mozzarella cheese too but it doesn't interact with the sauce in the same manner as a fine powdered cheese does, just like swallowing a piece of chalk doesn't work as well as drinking the milk. Which is probably why they don't say to eat a piece of cheese to counter the effects of ingesting an acid or alkali as much as we might like to it just doesn't work as well :-D.

I use Parmesan and/or Romano as I'm always trying to up the flavor profile of the mozzarella cheese. If I'm not worrying about the acidity of the sauce my preference is to use shredded Parm and/or Romano in addition to the mozzarella.

Tom Lehmann/The Dough Doctor  
85

### **Shop Talk / Re: Rounder and divders**

Scott;

Not that I'm aware of, by design they all round a pretty tight ball. The rounding bar is the only truly adjustable rounder but when getting a lose ball you also get a poorly rounded ball.

Tom Lehmann/The Dough Doctor  
84

### **Dough Clinic / Re: Low amylose flour?**

The only work that I've been involved in with amylose, not high amylose (starch) flour was in research on low calorie bread back in the days of low calorie breads in the early 1970's. Since amylose is a resistant (non-digestible) starch we were looking at it as a possible substitute for micro-crystalline alpha cellulose in making bread similar to the then popular New Horizons low calorie bread. We don't fully understand the bread staling phenomenon even today. It has been shown to be at least partially due to retro-gradation (crystallizing) of the starch while other studies have implicated the protein fraction of the flour more than the starch fraction. Some of the more effective enzyme anti-staling agents used in white pan bread production are based on the starch model. These use a heat resistant amylase enzyme to hydrolyze a portion of the starch in the baked bread, thus releasing its bound water making for a softer, more moist crumb structure which the consumer perceives as being less stale. Since a resistant starch would resist being hydrolyzed it would remain intact, acting more like a fiber than a starch, hence, there is less starch present to participate in the staling process. I would guess if it's a softer pizza that you're after this might be something to look at in greater depth. I've never looked at staling as an obstacle to be overcome with pizza since many of the characteristics of staling are the same characteristics that we are trying to achieve in pizza. Take par-baked crusts for example, most would agree that they make pretty decent pizza (both thick and thin crust), a crust can't get much more stale than a par-baked one and yet we still think it's pretty good in many cases.

Tom Lehmann/The Dough Doctor  
83

### **General Pizza Making / Re: Bottom not cooked?**

It sounds like you are not allowing sufficient time between bakes to allow the stone to fully recover its latent heat (in short, the stone is cooling off). If your oven has bottom heating elements you will need to move the stone closer to the heating element to speed up the recovery time or get a thicker stone, maybe a baking steel. It looks like you are using a "00" flour so you may find that you will need to increase the sugar level to achieve top crust color after moving the pizza stone closer to the bottom heating element. Assuming that you are allowing at least an hour for the stone to fully heat up?

Tom Lehmann/The Dough Doctor  
82

### **Stones/tiles/steel, Pans & Accessories / Re: Question about cutting the pizza**

If you REALLY want to see what the crumb structure looks like do as we did when we did our research on pizza, turn it over and cut it from the bottom up using a razor knife or a VERY SHARP serrated knife. This way you do not drag the sauce and cheese down over the crumb as you do when you cut the pizza from the top.

Tom Lehmann/The Dough Doctor  
81

### **Dough Clinic / Re: dried out crust after parbaking**

Par-baked crust, or anything else for that matter, is actually fully baked, it has to be in order to avoid collapse during cooling. If you are getting too much color during the par-baking phase you will need to REDUCE the baking temperature and possibly extend the baking time. The idea in par-baking is to achieve an internal dough temperature of 190F. Once you reach that IT the dough is fully baked and should have minimal crust color development.

Tom Lehmann/The Dough Doctor  
80

**[Dough Clinic / Re: dried out crust after parbaking](#)**

Par-baked crusts are always going to give you a finished pizza with a lower moisture content in the crust. If you want to avoid that you will need to par-bake the crusts with some steam in the oven or add a gum to help retain moisture in the baked crust. We recently had some discussion on this very topic which you might want to check out.

Tom Lehmann/The Dough Doctor  
79

**[Stones/tiles/steel, Pans & Accessories / Re: Question about cutting the pizza](#)**

Yael;

I've never been so fussy that I didn't sneak a piece of the overturned pizza after evaluating it, like we used to say in the lab, it's all in the name of research! :-D :-D

Tom Lehmann/The Dough Doctor  
78

**[Dough Clinic / Re: longer RT sourdough fermentation](#)**

Without knowing the strength of your sourdough starter it's impossible to answer your question. The best advice I can offer you is to make three doughs at 4%, 8% and 12% starter and see which one performs the best for you under YOUR specific conditions.

Tom Lehmann/The Dough Doctor  
77

**[Dough Clinic / Re: How does dough ball size affect kneading?](#)**

Before we go off on a tangent, you're talking about total dough size/weight....right?  
Tom Lehmann/The Dough Doctor

76

**[Dough Clinic / Re: Neapolitan crust isn't puffing up](#)**

We really need to know more about your dough formula and how you're managing the dough.

Tom Lehmann/The Dough Doctor  
75

**[Dough Clinic / Re: longer RT sourdough fermentation](#)**

Yael;

I used to say that knowledge is like a fine wine, if it's not shared it's just wasted.

Tom Lehmann/The Dough Doctor  
74

**[Dough Clinic / Re: How does dough ball size affect kneading?](#)**

In the Philadelphia area there was a pizzeria where the owner mixed all of his dough by hand. His doughs were based on a 50# bag of flour, however he did not knead the dough in the truest sense of the word, instead he just combined the ingredients by hand and let biochemical gluten development do all the work for him. If when you say "knead" you mean it in the literal sense a dough sized on 20-pounds of flour weight will probably all you will want to wrestle with and even then

you will be on the fast track to achieving your secondary goal of developing arms like the village blacksmith. Anything smaller just gets easier.

Tom Lehmann/The Dough Doctor

73

### **Dough Clinic / Re: Pizza Dough Storage & Handling Questions**

With American style pizzas using approximately 0.375% IDY (instant dry yeast), with effective dough management and a room temperature in the 70 to 75F range we will typically allow the dough balls to set AT room temperature until they reach 50F/10C before we begin opening them into skins, once we begin opening the dough balls into skins they will be good for the next 2.5 to 3-hours. Any unused dough balls are not put back into the fridge as this creates an inconsistency for those dough balls on the following day (consistency is the name of the game), instead, we convert those dough balls into things like bread sticks and garlic knots which can be par-baked and used on the following day without any issues.

Additionally, you can also use left over dough balls in your new dough but the amount that you add should not exceed 15% of the new dough weight.

Tom Lehmann/The Dough Doctor

72

### **Dough Clinic / Re: How does dough ball size affect kneading?**

I think I found our why your pizza slice was wet and soggy!!! :-D :-D :-D :-D

Tom Lehmann/The Dough Doctor

71

### **Shop Talk / Re: Rounder and divders**

Walter;

What would we ever do without duct tape? :-D :-D

Tom Lehmann/The Dough Doctor

70

### **Newbie Topics / Re: Most Important Things for Beginner's to Focus On**

Peter is absolutely correct. Learn the basic and easy to make pizzas first using common, off the shelf ingredients. You will be able to hone your pizza making skills while building your confidence, then, using your new gained skills you will be able to venture out into other types of pizzas or upping the game by experimenting with different ingredients above all else, remember to change only one thing at a time when it's time to begin experimenting, go slow and easy and smell the pizzas along the way, the rewards are delicious! :drool:

Tom Lehmann/The Dough Doctor

69

### **Dough Clinic / Re: Too stretchy dough**

Use a stem aka dial type thermometer to measure the INTERNAL dough ball temperature after the CF period. When the internal dough ball temperature is in the 50 to 60F/10 to 15.5C range it is ready to open into a skin for immediate use. From what you have said I'm guessing that you are allowing the dough to get too warm before opening it into a skin.

Tom Lehmann/The Dough Doctor

68

### **Dough Clinic / Re: Caputo 00 thin crust dough recipe**

Flour: 100%

Salt: 2.5%

IDY: 0.375% (variable depending upon dough management procedure)

Water: 60%

Add water to mixing bowl, then add the salt, flour and IDY.

Mix at low speed for 2-minutes, then mix at medium speed just to form a smooth dough.

Target finished dough temperature 75 to 80F.

Immediately scale and ball.

Lightly oil dough balls and place into individual fermentation containers.

Place in fridge UNCOVERED until INTERNAL dough ball temperature reaches 50F. then loosely cover/lid the containers.

NOTE: THIS PART MAY CHANGE DEPENDING UPON WHICH "00" FLOUR YOU HAVE.

Allow dough balls to CF for 24 to 48-hours.

Remove from cooler and allow dough balls to warm to 50 to 60F INTERNAL dough ball temperature.

Open into skins for immediate use.

Note: There are MANY different ways to work with "00" flours, this is just one of them.

Tom Lehmann/The Dough Doctor

67

### [\*\*Dough Clinic / Re: Dough is ripping while stretching, help!\*\*](#)

Your starter might be too strong or your flour might not be strong enough to handle the starter strength under those conditions.

Hard to tell with limited data.

Tom Lehmann/The Dough Doctor

66

### [\*\*Dough Clinic / Re: turkey pizza with leftovers?\*\*](#)

I use left over turkey all the time, even tried it a time or two with stuffing. Use both just like any other added topping ingredient. For a cheese topping I am partial to using a blend of mozzarella and ricotta applied in dollops. I've even added the mashed potatoes too, just place them on the pizza in dollops like the ricotta. For this type of pizza my preference leans towards using a white sauce rather than a red sauce since it ties the pizza together better than a red sauce which just seems out of place.

Tom Lehmann/The Dough Doctor

65

### [\*\*Sicilian Style / Re: Need help proofing my Sicilians\*\*](#)

I'd go with upping the yeast a little to maybe 0.125%

Tom Lehmann/The Dough Doctor

64

### [\*\*Neapolitan Style / Re: yeast - fresh, IDY, ADY revisited\*\*](#)

beeuu;

The question that begs to be asked is how did you add the ADY and IDY. you told us how you added the CY but not the ADY and IDY.

Tom Lehmann/The Dough Doctor

63

### [\*\*Dough Clinic / Re: very sticky dough\*\*](#)

Calzonemaker;

Different products exhibit differences in fermentation, when making pizzas there are a vast number of different flours of varying strength used to make the pizzas. If the pizza will be lightly loaded you can get away with a lot of over fermentation but if the pizza is to be loaded with a lot of toppings it may well collapse under the weight of those toppings if the dough is over fermented or fermented too much for the strength of the flour. Bread is all but intolerant of over fermentation because the dough is proofed to such a low density prior to baking and then it has to be handled when placing the bread into the oven, these conditions make the dough a prime candidate for collapse unless the flour is sufficiently strong or exhibits good tolerance to fermentation (a common characteristic of U.S. and Canadian wheats/flours but not always true for imported flours made from soft wheat varieties.

Tom Lehmann/The Dough Doctor

62

### **Off-Topic Foods / Re: How many times do you reuse your frying oil?**

A lot of the answer to that question lies in what is being fried. Take donuts for example, new frying fat makes for crappy donuts so we ALWAYS seed the new frying fat with a portion of the old fat. If you're frying things that put a lot of sugar, flour and seasonings into the fat you will need to filter the fast on a daily basis, but if you're frying things like French fries you can go several days between filtering the fat and because potatoes by themselves remove flavors from the fat you might be able to get away changing out the fat only once a week depending upon how much material you're putting through the fryer. In my opinion the worst thing to fry is tempura coated anything. Pieces of the coating are blown off in the fryer, and the coating is high in water content which can lead to hydrolytic rancidity, both of these combined means that you'll probably be cleaning out the fryer and filtering the fat daily while changing the fat on a much more regular basis than you would for any other product. It should go without saying that if you are frying fish and then want to fry donuts a change of the frying oil is in your near future.

As mentioned by others, oxidative rancidity is always an issue with frying fats, this is why commercial frying fats contain anti oxidants and anti foaming agents.

Tom Lehmann/The Dough Doctor

61

### **Off-Topic Foods / Re: How many times do you reuse your frying oil?**

Rancidity will even occur in the refrigerator or even the freezer. If it's going to be that infrequently it's a moot issue, fry, drain and discard.

If this is for a commercial application write it off as a bad idea.

Tom Lehmann/The Dough Doctor

60

### **Shop Talk / Re: Rounder and divders**

Walter;

Remember the the battle cry of us AARPers! Work smarter! Not harder! :-D

Tom Lehmann/The Dough Doctor

59

### **Dough Clinic / Re: very sticky dough**

Amen! With practice comes proficiency, with proficiency comes new and even more exciting things to explore along the pizza making journey.

Tom Lehmann/The Dough Doctor

**Neapolitan Style / Re: yeast - fresh, IDY, ADY revisited**

I should also add that if you are mixing the dough by hand the preferred method for adding IDY is to put it into about 5 times its weight of 95F water (the temperature is critical with IDY) and all you need to do is to stir it to form a suspension, you can then add it directly into the remainder of the dough water in the mixing bowl. If you have the salt in the water in the bowl it's important that the flour be ready to be added immediately following the addition of the IDY suspension. Also, unless you're doing it for the exercise, there is no benefit to stirring the salt into the water, just dump the salt and proceed to the next step. When it comes to making yeast leavened doughs temperature reigns supreme. Since temperature is the #1 driver of fermentation you will want to control it very closely and record it as part of your dough record keeping. For most of us, a finished dough temperature in the 75 to 80F range works well and if you're cold fermenting the dough we have some good practices for effective dough management posted here that might help you.

Tom Lehmann/The Dough Doctor

57

**Dough Clinic / Re: turkey pizza with leftovers?**

QJ:

If you don't mind the garlic a bechamel sauce works well or if you want something a bit more subtle a basic Alfredo sauce can be used equally as well.

Tom Lehmann/The Dough Doctor

56

**Dough Clinic / Re: very sticky dough**

Probably not as you want a pizza dough to be more relaxed than it would be for making bread. If the dough is not relaxed (through fermentation) you will only be fighting it as you're trying to open the dough into a skin, and then if you are successful, it will most likely just shrink back in size during baking.

Tom Lehmann/The Dough Doctor

55

**Off-Topic Foods / Re: How many times do you reuse your frying oil?**

It's important to note that in addition to daily filtering of the frying fat and cleaning of the fryer they are adding fresh oil every day too, this is important to note since by doing so you are continually diluting the old frying fat. In commercial operations it is not unusual at all to end up replacing 50 to 100% of the fat weight on a daily basis.

Tom Lehmann/The Dough Doctor

54

**Dough Clinic / Re: very sticky dough**

When we say 100% fermentation we are saying that the dough has been fully fermented (ideally fermented) for the product being made under a specific set of conditions. For most white pan bread doughs using the straight dough procedure and a finished dough temperature of 80F. 2.5-hours of fermentation time is typically considered to be 80% fermentation. However, this can change dramatically if you have a different finished dough temperature, more or less yeast, more or less salt, or a very strong flour. This is why we seldom use this expression of fermentation anymore. The one thing that we do concern ourselves more about

is the fermentation tolerance of a flour, some flours are very tolerant to fermentation while others are not. We can see this with some of the Caputo flours where not more than 12-hours of total fermentation time is recommended. When I first started doing my research on pizza back in the mid-1960's it was thought that both bread and pizza production shared the same technology, but as we got into understanding more about pizza it was clear that pizza production had a technology of its own and it took us many years to unravel that technology.

Tom Lehmann/The Dough Doctor

53

### **Dough Clinic / Re: adding salt too early??**

When dealing with high fat content doughs it's preferable to add the salt right up front in the mixing process and hold the fat out (like with the delayed oil addition mixing method) only this applies to all types of fat, both liquid and plastic. The reason for this is because at high levels, in addition to interfering with flour hydration it also plays havoc on gluten development often resulting in atypically long mixing times.

Tom Lehmann/The Dough Doctor

52

### **Dough Clinic / Re: adding salt too early??**

I neglected to mention that in these cases the dough is mixed to just short of the desired gluten development before the fat is added, failure to do so might result in being unable to achieve the desired level of gluten development in the dough.

Tom Lehmann/The Dough Doctor

51

### **Dough Clinic / Re: Pizza Dough over rising and deflating?? Help**

Bringing the dough balls up to room temperature after CF is probably not the best thing for you to do. Instead, allow the dough balls to warm AT (NOT TO) room temperature until the INTERNAL dough ball temperature reaches something in the 50 to 60F range, keeping in mind that the lower the temperature the easier the dough will be to handle and the higher the temperature (60F) the easier it will stretch, not a bad thing if you have the ability to work with a softer dough condition.

Tom Lehmann/The Dough Doctor

50

### **Newbie Topics / Re: Pale base, sad face.**

I'm betting that if you read the label on the bag of flour that it will not mention anything about the addition of malted barley flour or enzymes. This would be an indication that you do not have a malted flour. The two options then would be to add more sugar or to buy some diastatic malt and add that to the dough. With the malt products that you have available to you locally you will need to add between 1 and 2%.

On a different note, I'd suggest investing in a low cost scale as well as a dial/stem type thermometer, this will allow you to begin scaling your ingredients as opposed to using "estimated" volumetric portions for your "recipe". With all of your ingredients in weight measures it will be easy to convert the formula into bakers percent which will then allow you to begin making effective changes to the formula to achieve your specific desired characteristics. By weighing your ingredients you will also significantly improve the consistency of your pizzas from one bake to another.

Tom Lehmann/The Dough Doctor  
49

**Dough Clinic / Re: adding salt too early??**

One of the problems you can have by putting the salt into the dough after the fat has been added (high fat doughs only) is that it can be difficult to dissolve and disperse the salt in the dough unless the salt is a very fine granulation salt. The presence of salt in the dough prior to the addition of the fat will not have any impact upon how the fat disperses in the dough.

Are you making pizza or donuts from this dough? The picture that you attached looks more like a pizza skin. Normally when we open the dough for making donuts we open it to a thickness of about 1/2-inch/12.5-mm. using a rolling pin or a pastry pin to achieve a smooth, flat surface to the top of the dough sheet prior to cutting with a donut cutter for "hand snapped" donuts.

Tom Lehmann/The Dough Doctor  
48

**Dough Clinic / Re: Neapolitan crust isn't puffing up**

A couple of things that I see;

- 1) I'm assuming the 80 to 85F water is for activating the ADY, but that temperature is not correct, it should be 100 to 105F.
- 2) You are using ice water, but what is the finished dough temperature. The finished dough temperature is what sets the stage for the fermentation that is to come. If the dough temperature is too cold the dough ferments too slowly and if too warm it will ferment faster than anticipated.
- 3) I see you are using a poolish, how much of the total flour is in the poolish? How much yeast? Temperature of the poolish? How long do you ferment the poolish for?
- 4) Hand or machine mixing?

Tom Lehmann/The Dough Doctor  
47

**General Pizza Making / Re: Cold Bulk Fermentation questions**

After removing the dough from the fridge a good rule is to allow it to warm AT (NOT TO) room temperature until the INTERNAL dough ball temperature is in the 50 to 60F range. The dough will be a little firmer and easier for some to handle at the lower end of the temperature range while at the upper end the dough will be softer and more extensible and easier to open only if you possess the necessary skills to open a soft and extensible dough and peel it into the oven without creating a disaster.

Tom Lehmann/The Dough Doctor  
46

**Dough Clinic / Re: Dough is ripping while stretching, help!**

Make the dough again but next time use only 1/2 of the amount of starter. If that improves things you can begin incrementally increasing the amount of starter until you see or experience something you don't like, then back the amount down a little and that'll be the maximum amount you can use of that SPECIFIC starter.

Tom Lehmann/The Dough Doctor  
45

**Dough Clinic / Re: adding salt too early??**

Manually flatten the dough on the bench as you would for shaping bread dough to make a loaf of bread (plenty of good videos on the Internet), then fold the ends in a

few inches and loosely roll (about 1.5 curls) like a jelly roll, place onto a lightly floured sheet pan, lightly dust the top of the dough and cover with a sheet of plastic and allow to relax for 20-minutes, or just until the dough can be easily rolled to a thickness of 1/2-inch/12.5-mm. for immediate cutting.

Tom Lehmann/The Dough Doctor

44

### **Dough Clinic / Re: longer RT sourdough fermentation**

I've visited a lot of different type of forums over the years and one thing that I can attest to is that pizzamaking.com is one of the most sharing (by all participants), respectful and civil of all the forums. This is in great part due to the tremendous efforts of Peter, which in my world don't go unnoticed. Pizzamaking.com, if not already, is well on its way to becoming the most recognized collective authority for knowledge for the home/hobby pizza maker in the world which is quite an achievement for all at Pizzamaking.com!

Tom Lehmann/The Dough Doctor

43

### **Dough Clinic / Re: Pizza Dough over rising and deflating?? Help**

You tossed them out? Remember what we always say; Even our mistakes can taste pretty good too! If nothing else it would have been a good learning experience for you in opening a soft/slack/extensible dough which you might not otherwise get. :'(

Tom Lehmann/The Dough Doctor

42

### **General Pizza Making / Re: Cold Bulk Fermentation questions**

I wouldn't say that your time was limited in any way unless we are talking about a commercial pizzeria setting, but as the dough temperature increased after the cold refrigeration period the dough will not get any easier to work with and in fact, it might even begin to get gassy to the point where bubbles in the dough become an issue.

Tom Lehmann/The Dough Doctor

41

### **Dough Clinic / Re: adding salt too early??**

The dough should feel "lively", as opposed to like putty but it should not have large gas bubbles in it either because these will manifest themselves in the finished donut too.

Tom Lehmann/The Dough Doctor

40

### **Dough Clinic / Re: The reasons for different types of dough**

Dough absorption is ALWAYS based on just the water, never the water + oil. The oil should always be shown in the dough formulation as an ingredient percent based on the weight of the total dough flour aka bakers percent. With that said, since oil is a liquid it will possess the ability to alter the viscosity of the dough at high levels, for this reason we will take into account the amount of oil being used in the dough as an added ingredient when determining the dough absorption to be used.

Regarding your last sentence, I think that was in reference to making pizza using commercially frozen dough.

Tom Lehmann/The Dough Doctor

39

## [\*\*Off-Topic Foods / Re: How many times do you reuse your frying oil?\*\*](#)

Keeping the fat clean does help but I'm betting that the length of time the fryer is used has more to do with it. If you fire up the fryer and leave it at 365F all day long the fat will tend to go rancid faster than it would if you just fire it up to use it for an hour or so each time. The actual type of fat also plays a HUGE part in determining how fast the fat will go rancid.

Tom Lehmann/The Dough Doctor

38

## [\*\*Dough Clinic / Re: Coach my \(non-existent\) kneading skills.\*\*](#)

First off, why such a small dough size? Go with a dough sized 5 to 10 times that size. It looked more like you were trying to ball the dough than to knead the dough. The larger size dough will be a lot easier to knead than such a small dough.

Consider this, you mentioned "mixing" the dough so it sounds like you have a dough mixer. Normally the dough is not kneaded after mixing but if you want to it only needs to be kneaded for a couple of minutes, not 10 minutes as I heard mentioned. With the larger dough size you can let the weight of the dough ball work for you or you can practice bench kneading the dough, this is where the dough is placed onto the bench and pulled/stretched then laid back upon itself numerous times, there are some good videos I'm sure, which will demonstrate this method of kneading.

You really need to make a bigger dough to practice kneading ;D

Tom Lehmann/The Dough Doctor

37

## [\*\*Dough Clinic / Re: Small batches\*\*](#)

When we were doing research on dough we were always hesitant to use doughs made with less than 500-grams of flour weight because they were difficult to scale accurately, did not interact in the mixers in the same manner as a larger sized dough did and only provided a single test sample (you need at least 3 samples per batch to have any confidence in the results you're getting), and that is why I'm not a fan of making very small size doughs.

Tom Lehmann/The Dough Doctor

36

## [\*\*Off-Topic Foods / Re: How many times do you reuse your frying oil?\*\*](#)

Scottr;

Yup, there's your answer. ^^^

Tom Lehmann/The Dough Doctor

35

## [\*\*Off-Topic Foods / Re: Which herbs/vegetables are worth growing?\*\*](#)

For us its sweet basil, tomatoes, bell peppers, sweet banana peppers, chives, and our staples are potatoes, snow peas, radishes, Blue Lake beans, beets, turnips, and Swiss Chard (all grown for the greens) and our winter favorite butternut squash. With the exception of the snow peas and squash everything is grown in large plastic tubs that once held calf starter feed. Our driveway is a little over 90-feet in length and I have one entire side of it lined with the growing tubs and in addition we have a fenced off garden area in the back yard. If you add in our gooseberry and blackberry bushes, apple, peach, pear and apricot trees along with a couple of deer that I take every year we are pretty self sufficient food wise. Because we do essentially all container growing the garden is really easy to care for and to harvest from, but then there's all the preserves to make and fruit to dry

and that alone will take almost 6-weeks out of our lives every year. In the winter though it's nice to sit back and enjoy that summer and fall harvest while watching the snow fall, knowing that as soon as it stops I'll be out plowing our cul-de-sac and neighbor's driveways.

When you get to be 78-years old you've got to look for things do to keep out of trouble! ;D

Tom Lehmann/The Dough Doctor

34

### [\*\*Dough Clinic / Re: Small batches\*\*](#)

And then there's the 5-second rule.

For those who don't know what that is:

If no one is looking and you can pick it up off of the floor in less than 5-seconds it never happened. >:D >:D >:D

Tom Lehmann/The Dough Doctor

33

### [\*\*Dough Clinic / Re: Coach my \(non-existent\) kneading skills.\*\*](#)

If you will search back in the archives for discussions on biochemical gluten development it will help you understand gluten development. I used to teach home pizza making to residents here in Riley County, KS on weekends during the summer months. The only tools that were needed to make the dough were a suitably sized bowl and a wooden spoon. We mixed the dough using just a wooden spoon (has to be wooden) this way everybody knew when to stop mixing (when one was in fear of breaking the spoon it was time to stop mixing). The dough was then scraped out of the bowl onto a lightly oiled counter top, it was pulled and stretched just a couple of times to allow it to be formed into something resembling a ball, this was then placed back into the bowl which had been lightly oiled, a piece of plastic (Walmart bags were pretty commonly used) was placed over the container to prevent drying, the dough was allowed to ferment for 90-minutes, it was then turned out of the container onto a lightly dusted surface and kneaded/stretched just a few times (less than a minute) and placed back into the container to continue fermenting for another 90-minutes, the dough was then turned out of the container again and cut into four pieces, each piece was gently formed into a ball (care was taken so as NOT to stress the dough. The dough balls were covered with the same piece of plastic that was used to cover the fermenting dough and allowed to rest for 30-minutes, each dough ball was then opened into a skin by demonstrated methods (rolling pin/pastry pin/hand stretching), they were then dressed and baked in the home oven that was available in the host's kitchen. Everyone was amazed at how easy it was to make the dough (NO STRENUOUS KNEADING) and no watching the clock as all of the fermentation periods are VERY flexible so it's something that can be done on the side while you're busy with other things in your daily life.

For toppings I asked each participant to bring with them anything from hot dogs to hamburger to left overs in the fridge. This gave them the ability to use pizza as one might think of hash (a place to use left overs). At the end of the session there wasn't a bad pizza, nor a hungry person in the group.

Too many time we over think the process of making pizza and become intimidated by our own thoughts, as you can see from the above process it really isn't that difficult to make a basic pizza. Once you have mastered the basic pizza you can then branch out and explore making other types of pizza by different and more involved dough making processes. Remember the evolutionary progression of learning to sit, butt scoot, crawl, table surf, walk, trot, run but only after that can you branch out into long jumping and pole vaulting. Making pizza follows a similar

progression, hopefully on a faster track. :-D

Tom Lehmann/The Dough Doctor

32

### **Dough Clinic / Re: Dusting the ball with flour vs. water**

If slimy is less sticky....OK? In my world a little dusting flour makes my dough feel a lot less sticky than water and what are you going to do with a wet, slimy dough ball, aside from making a giant dumpling out of it?

The change in the % dough absorption is easy to calculate with either dusting flour or "water". Just weigh the dough ball before putting it into the dusting flour or water, then weigh it again after putting it into the dusting flour or water, this will give you the weight gain in of the dough ball due to the flour or water. Now, divide the dough ball weight by the sum of the total bakers percent after dividing it by 100 (easy to do by just moving the decimal place two places to the left). This will give you the flour weight in the dough ball. Lastly, divide the dough ball weight gain by the flour weight in the dough ball and this will give you the percent increase in absorption for the water or add it to the flour weight and divide the dough absorption percent by the new flour weight to find the impact on dough absorption that the added flour weight had.

Aren't you glad to didn't sleep through math class? :-D

Tom Lehmann/The Dough Doctor

31

### **Dough Clinic / Re: Guaging Fermentation**

The main byproducts of fermentation that we're concerned with are carbon dioxide, alcohol and acids (acetic, lactic and propionic) plus the necessary time for amylase and protease enzymes to do a little of their magic too. All of these combined, give us a finished dough with specific handling properties and a finished (baked) crust with certain targeted flavor and physical characteristics that we are trying to achieve. While many dough recipes and formulas do say to allow the dough to "double in size" this can be hard to ascertain in view of the wide range of dough absorption that can be employed in making the dough, for example, a 70 or 75% absorption dough will not visually look the same after "doubling in size/volume" as a 55% absorption dough would. What you are proposing I think would be assuming that a colder dough, if allowed to ferment long enough to double in volume would be the same as a warmer dough that has doubled in size (maybe I'm wrong on that?) but the truth is that the colder dough would be different from the warmer fermented dough even though they are both at the same volume, the reason being that the colder temperature has slowed or stopped the enzymatic activity and the ratio of those three main acids of fermentation will have changed which results in a different finished product flavor profile. I think it would be safe to say that there are just too many different things happening during the fermentation process to go by the volume of the dough alone.

Tom Lehmann/The Dough Doctor

30

### **Dough Clinic / Re: Is high gluten flour necessary for a pizzeria pizza dough recipe?**

No, high protein (13 to 14.5%) flour isn't necessarily needed in a commercial pizzeria environment. Your decision on flour protein content will depend upon the following:

Type of pizza you're making.

Type of store (DELCO or dine-in or both)

How long you want to hold the dough for and under what conditions.

The dough management procedure you use.

The manner in which the dough will be opened into a skin.

One type of flour that I never recommend for use in a pizzeria is all-purpose flour (AP flour), the reason for this is because there is no one accepted identity for all-purpose flour. Because of this it can be made from a blend of strong wheat varieties giving it the performance properties of a pretty decent bread type flour while at the same time other manufacturers see it differently and make it from varieties of soft wheat or even a blend of hard and soft wheat varieties. The fact is that if you buy an AP flour from one manufacturer it may or may not perform the same or similarly to that from another manufacturer. Flours that are sold as "bread" flour have an intended purpose (to make bread) and all of the milling companies mill their bread type flours to be very similar to that of their competition so if you had to change suppliers (like that has NEVER happened) you wouldn't see much, if any, change in flour performance. Once you enter into the realm of "bread" type flours there are flours of different strength and these are differentiated by their protein content with the lower protein content flours being the weaker (10.5 to 11.8%) and the higher protein content flours (13.4 to 14.5%) being the strongest. Right in the middle you have the flours with 12 to 12.8% protein content which many (myself included) look at as being a good, all around pizza flour. You can go with a higher protein flour but you will pay more for it and you should have a specific reason for using it (like a New York style pizza which is chewy) or if you will be a DELCO operation chewy is a bad word so by opting to use a lower protein flour in the 10.5 to 11.8% protein range you can reduce some of the chewiness.

Tom Lehmann/The Dough Doctor

29

### [\*\*Dough Clinic / Re: Using A Lievito Madre Plus Yeast\*\*](#)

How old is the starter? Under what conditions are you storing it?

Tom Lehmann/The Dough Doctor

28

### [\*\*Dough Clinic / Re: Is high gluten flour necessary for a pizzeria pizza dough recipe?\*\*](#)

PizzaCalcio;

In what way is spring wheat flour a lower quality flour? Just curious as to what your thoughts are.

Tom Lehmann/The Dough Doctor

27

### [\*\*Dough Clinic / Re: Dusting the ball with flour vs. water\*\*](#)

Yael;

I used to do that myself when handling extremely high absorption doughs but changed over to using a little oil on my hands years ago.

Tom Lehmann/The Dough Doctor

26

### [\*\*Dough Clinic / Re: Is high gluten flour necessary for a pizzeria pizza dough recipe?\*\*](#)

OK, if you say so. We will always make the best product using that which we have the greatest confidence in. :chef:

Tom Lehmann/The Dough Doctor  
25

**Dough Clinic / Re: Using A Lievito Madre Plus Yeast**

Since there is no real way of knowing the strength of it I'd suggest using it at maybe 10% and start out with 0.1% IDY addition and make the necessary corrections from there.

Tom Lehmann/The Dough Doctor  
24

**Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

It's not the fat that retains the gas in yeast leavened dough systems be it for bread or donuts, all the fat does is lubricate the dough for ease of expansion and coat the individual cells for better gas retention. In making butter cream icing as well as many types of cakes the fat does play an important role by entrapping air to provide a nuclei for the crumb structure development, but not in yeast leavened products, not even in sweet dough which can contain as much as 24% fat. Just for the record, low ratio cakes will typically contain fat (as a plastic fat) at an amount at least equal to that of the flour or 100%.

Tom Lehmann/The Dough Doctor  
23

**New York Style / Re: Noob question...orange oil on cheese?**

What kind of flour are you using?  
What is your dough formulation?  
Tom Lehmann/The Dough Doctor  
22

**Dough Clinic / Re: Guaging Fermentation**

Additionally, while the yeast may be semi-dormant in the fridge the flour is still being subjected to the by-products of fermentation (think of like marinating a tough cut of meat) which will have a profound effect upon the dough and crust characteristics after the cold fermentation period. For most of us, we are cold fermenting our dough to achieve certain desired characteristics but we are not typically fermenting the dough to a point where failure is imminent with a little additional fermentation or if the finished dough temperature is a little off the mark so while an additional day in the fridge won't usually result in a catastrophic failure of the dough it certainly will affect some of the dough and finished product characteristics, just not to the point where an unacceptable pizza was the end result.

Tom Lehmann/The Dough Doctor  
21

**Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

How long are you final proofing the donuts? Can you provide a picture of the proofed donuts just before going into the fryer?

Tom Lehmann/The Dough Doctor  
20

**New Forum Members / Re: deep dish pizza**

Welcome to the club! :)  
To get some background on deep-dish pizzas spend a little time looking at past discussions on deep-dish pizza, it'll provide a good primer for you to begin journey

to making some great pizzas. A couple of things that you will want to have to begin with are an inexpensive scale for weighing ingredients, a dark colored deep-dish pan 1 to 1.5-inches deep and 10 to 14-inches in diameter and a metal blade cake decorating spatula for use in removing the pizza from the pan. If you have any questions about your ingredients just let us know, there are plenty of us here to help you.

Tom Lehmann/The Dough Doctor

19

### **Dough Clinic / Re: Instant Dough**

Sure, not the best but still "pizza" none the less.

Caputo Americana flour: 100%

IDY: 1%

Oil: 1%

Salt: 2.5%

PZ-44 or RS-190 (dead yeast): 2% (variable)

Inactive dry white sour: 2% (variable)

These will be the ingredients you will want to work with, really not much of a challenge to do it.

Tom Lehmann/The Dough Doctor

18

### **Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

It does need to be pretty well developed but not as much as for making bread. Two hours final proofing time for a yeast raised donut is insane! WWAAYY too long! Try increasing the yeast to get the final proofing time down to about 45-minutes. That will help with the size too and most likely reduce fat absorption at the same time.

Tom Lehmann/The Dough Doctor

17

### **Dough Clinic / Re: Guaging Fermentation**

The whole point of an emergency dough is to produce a dough which is suitable for making "pizza" (and I do mean "pizza" very generically), within a very short time after mixing. The ingredient amounts are changed as is the dough temperature with the specific intent to give a dough that can be formed into skins for making pizza in as short a time as possible. My own personal best is 30-minutes after mixing we were opening the dough balls into skins and dressing them for baking. Some might equate this to "S-O-S" but it still looked like a pizza so that's what we're calling it. ;D

Tom Lehmann/The Dough Doctor

16

### **Dough Clinic / Re: Instant Dough**

As Peter and many of the community here know, my first experience with pizza was with the Chef Boyardee pizza mix which is really not much more than a glorified biscuit dough mix. Whatever the case, it worked to get me hooked on pizza for life!

:D

Tom Lehmann/The Dough Doctor

15

### **Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter**

What most people associate with a "yeasty" flavor isn't yeast at all, instead it's the by-products of fermentation that is providing that flavor. Yeast has a flavor that

might best be described as somewhat like that of old, wet newspapers, after all, it's a member of the mold family. So, to your question, with IDY or any other type of yeast you will just want to avoid over fermenting the dough. Typical for yeast raised donuts is mix, (75 to 80F) bulk ferment 1-hour, cut into manageable size pieces and form into loaves, allow loaves the ferment for 30-minutes (approx), sheet to 1/2-inch thickness, cut, place on proofing screens, proof at 80 to 85F (90F max.) for about 45-minutes, fry at 365F.

Think of this: a very rich sweet dough will contain over 20% sugar, and about as much fat, the yeast level will be about 4.5% IDY and there is no "yeasty" flavor because the fermentation time is very limited. By the way, the definition of a yeast raised donut dough is a very lean sweet dough.

Tom Lehmann/The Dough Doctor

14

### **Dough Clinic / Re: Guaging Fermentation**

nhnybo;

Do you cover/lid the fermentation containers when you put them into the fridge? Keep in mind that by putting the dough into the fridge/cooler the yeast doesn't immediately slow down, there is a significant cooling curve before the core of the dough ball reaches a temperature that will inhibit yeast activity. Part of this long curve is due to the heat being generated by the yeast as a result of heat of metabolism which can amount to a temperature rise of 1F per hour, so we're removing both the latent heat in the dough plus the heat being generated by the yeast as it feeds. A tool that we commonly use is to adjust the finished dough temperature. With a higher temperature there will be a longer period where the dough is in the temperature range which will support fermentation and a lower finished dough temperature means that the dough will be in this temperature range for a shorter period of time. For example, if we plan on a 7-day CF period we would target a lower finished dough temperature so there is less up front dough fermentation which means the dough won't be suitably conditioned for use at 24 or maybe even 48-hours but it will be ready to go on the 5th day after mixing and will remain good to use through the 7th day. Conversely, if we target a higher finished dough temperature the dough can be easily made to be ready to use after 24-hours CF and still provide decent results out to 48 and possibly 72-hours, but it's a pretty sure bet that it won't be in its prime out at 7-days. This highlights one of the main reasons why I don't advocate allowing the dough to ferment prior to CF. The dough becomes less dense with fermentation so it is becoming harder to cool and extract the heat being generated by the yeast. This is what leads to inconsistency in the rate of cooling the dough balls and when this happens the inconsistency will result in inconsistent dough performance or even failure several days down the road.

This is also why we highly recommend that the initial cooling of the dough (to 10C) be done with the dough box uncovered, this allows heat to freely escape, prevents condensation from forming inside of the dough box and doesn't create a dead airspace around the dough balls in the box which is just another insulating factor that will inhibit cooling the dough balls at a consistent rate.

As I used to express to my students all the time, the most important factors in making good dough (for any kind of product) are temperature control (without temperature control you cannot have effective dough management) and consistency, whatever you make, if you cannot make it consistently the same all the time, at the end of the day you still don't have anything.

Tom Lehmann/The Dough Doctor

13

## [\*\*New York Style / Re: New Park Pizza Dough... Flour Used?\*\*](#)

All Trumps? The single most popular flour used in NYC. It comes in at 14 to 14.5% protein content.

Tom Lehmann/The Dough Doctor

12

## [\*\*Dough Clinic / Re: Friction Factor and Final Dough Temperature\*\*](#)

What you were missing was the temperature of the bench top. By hand kneading you were exposing a great amount of the dough surface to the bench top which now most likely had a significant impact upon the dough to lower the temperature to something closer to the measured room temperature.

Tom Lehmann/The Dough Doctor

11

## [\*\*Dough Clinic / Re: Pizza Pockets\*\*](#)

I really can't tell much from the poor quality picture as it's all washed out. The fat flakes will be visible in the dough at the end of the mixing process, if they aren't they won't perform in the manner expected. After mixing allow the dough to rest for about 15-minutes, then sheet out to about 3/16-inch in thickness using a rolling pin or pastry pin. then follow directions provided in my original post.

If you want to read up on a similar process study the "Blitz" method for making Danish Pastry or puff pastry, or even pie dough for that matter, they're all very similar.

Tom Lehmann/The Dough Doctor

10

## [\*\*Starters/Sponges / Re: Quantity of yeast in a preferment after calculating total weight of ingredients\*\*](#)

To be a little more precise, we've found that in most cases, for a same day preferment, it's best to use the same percent yeast in the preferment as you use in the dough BUT remember that the amount of yeast in the preferment is based only on the amount of flour in the preferment. This amount of yeast is then subtracted from the total amount of yeast (based on the total formula flour). When an overnight preferment is used we found best results using 0.25% yeast (as compressed yeast/CY) or its equivalent in ADY or IDY. In this case the amount of yeast used in the preferment is NOT included in the total yeast amount.

Tom Lehmann/The Dough Doctor

9

## [\*\*Dough Clinic / Re: on fat : oil, margarine, vegetable shortening, butter\*\*](#)

Larger cell structure which promotes greater fat absorption during frying. As a general rule your donuts should weigh about the same after frying as they did before going into the fryer, if they weigh more you most likely are experiencing excessive fat absorption.

Tom Lehmann/The Dough Doctor

8

## [\*\*Dough Clinic / Re: Pizza Dough Storage & Handling Questions\*\*](#)

I don't know if Peter has my Dough Management Procedure posted here but if he doesn't PM me with your email address and I'll be glad to send you a copy of it which will lead you through the entire process from mixer to getting ready to open the dough balls.

Tom Lehmann/The Dough Doctor

### **Dough Clinic / Re: Pizza Dough Storage & Handling Questions**

That's the procedure but since then I've added the following:

The dough should remain cross stacked until the INTERNAL dough ball temperature reaches 50F/10C. NOTE: The time required for the dough ball to reach this temperature will change with the size/weight of the dough ball, so each dough ball weight will require a different time. Once you have determined the correct time for each dough ball weight you can then go by the time required to reach 50F/10C and use that for your cross-stack time for that dough ball weight.

After the CF (cold fermentation) period, remove the number of boxes of dough balls that will be required for the first three hours of operation, place the dough boxes AT room temperature (70 to 80F/21 to 26.6C) to allow the dough balls to warm TO 50F/10C INTERNAL DOUGH BALL TEMPERATURE. DO NOT ALLOW DOUGH BALLS TO WARM TO ROOM TEMPERATURE!!

Once the dough balls have warmed to the targeted temperature they are ready to begin opening into skins for immediate use. The dough balls will remain good to use for the next 2.5 to 3-hours. NOTE: If your shop is warmer than 80F/26.6C this time will be reduced and you will need to take this into account when determining how many dough boxes to remove from the cooler and at what frequency to remove them during the day.

Any dough balls nearing their expiration time at room temperature can be pre-opened, placed onto screens and stored in a wire tree rack in the cooler for use during the next busy rush period. After placing the pre-opened skins into the wire tree rack in the cooler leave the rack uncovered for 30-minutes, then cover with a plastic bag to prevent drying. To use the pre-opened skins, remove from the screen, touch up the size as needed, place onto wood prep-peel for dressing and immediate baking. If baking on screens BE SURE TO TRANSFER THE SKIN FROM THE STORAGE SCREEN TO A SEASONED BAKING SCREEN. DO NOT BAKE ON THE STORAGE SCREEN EVEN IF IT HAS BEEN SEASONED WITHOUT LIFTING IT OFF OF THE SCREEN FIRST AND THEN PLACING IT BACK ONTO THE SCREEN. FAILURE TO DO THIS WILL RESULT IN THE DOUGH BAKING INTO THE SCREEN MAKING REMOVAL FROM THE SCREEN IMPOSSIBLE WITHOUT DESTROYING THE BAKED PIZZA.

Tom Lehmann/The Dough Doctor

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### **Shop Talk / Re: Temperature of Pizzeria Oven**

It'll be hard to go wrong with a Marsal gas fired deck oven. Your baking temperature will most likely fall somewhere in the 500 to 550F range. When locating the oven be sure to allow at least 1.5 times the depth of the oven as free space in front of the oven for the oven tender to work in.

Tom Lehmann/The Dough Doctor

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### **Dough Clinic / Re: Problem with overfermenting**

Aside from the finished/mixed dough temperature please tell us all you can about the flour you're using.

Tom Lehmann/The Dough Doctor

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### **Shop Talk / Re: Temperature of Pizzeria Oven**

I haven't priced them recently but typically the Marsal ovens are cheaper than the rest of the lot. Make sure you're comparing equal size ovens.

Tom Lehmann/The Dough Doctor

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### **Dough Clinic / Re: BIGA - Flour and Yeast Amounts**

As a rule:

The more flour there is in the biga the softer and more extensible the dough will be, this in turn promotes a larger, more open crumb structure.

As for the amount of yeast used in a biga we found best results when the % of yeast in the biga was the same as used in the dough BUT remember that the the amount of yeast in the biga is based ONLY on the weight of flour in the biga. You then calculate the weight of yeast based on the yeast percent and the TOTAL flour weight then subtract the weight of yeast used in the biga, the remainder is the weight of yeast that goes into the dough side. If the biga is to be fermented overnight the amount of yeast as compressed yeast or its equivalent in ADY or IDY should not exceed 0.25%, this yeast is not considered as part of the total yeast.

Tom Lehmann/The Dough Doctor

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### **Dough Ingredients / Re: Just bought some Caputo 00 Americana. Do you guys adjust hydration by flour?**

Your Caputo Americana flour, if I remember correctly comes in around the high 12% protein content range and is already malted so you shouldn't have any problems baking at 550F. Every flour will exhibit different dough absorption properties so I would suggest starting out at 60% and adjusting up or down from there if necessary.

Tom Lehmann/The Dough Doctor

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