

What is your normal level of hard fat flakes?

Tom Lehmann/The Dough Doctor

[Re: Difference in bottom browning](#)

4001

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

[Re: Do I increment yeast just like any other ingredient?](#)

4002

An optical fireplace at that. All the heat will go right up the chimney.

Tom Lehmann/The Dough Doctor

[Re: initial wood oven questions](#)

4003

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

[Re: How to Keep the dough ready to use \(room temperature\) as long as we can?](#)

4004

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

[Re: Forgot to put dough in the refrigerator--- is it ruined?](#)

4005

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

[Re: Difference in bottom browning](#)

4006

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

[Re: Difference in bottom browning](#)

4007

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

[Re: Some advice please.](#)

4008

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

[Re: The best way to go about Thin Crust?](#)

4009

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

[Re: Some advice please.](#)

4010

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

[Re: Some advice please.](#)

4011

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

[Re: The best way to go about Thin Crust?](#)

4012

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  
[Re: The best way to go about Thin Crust?](#)  
4013

Define "far burbs" please. I'm a south sider (Tinley Park, 175th St.)  
Tom Lehmann/The Dough Doctor  
[Re: Cheers from the Chicago Burbs](#)  
4014

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  
[Re: The best way to go about Thin Crust?](#)  
4015

Are you a north sider, south sider or west sider?  
I'm a very X south sider.  
Tom Lehmann/The Dough Doctor  
[Re: Cheers from the Chicago Burbs](#)  
4016

Toppings are applied thinner in the middle and heavier towards the edge.  
Tom Lehmann/The Dough Doctor  
[Re: topping movement?](#)



4017

The edge of the pizza is the first part to bake due to exposure to heat from three dimensions, top, bottom and the side whereas 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

[Re: topping movement?](#)

4018

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

[Re: New member from Slovenia](#)

4019

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 about 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

[Re: Not quite sure why this works](#)

4020

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 presentations 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

[Re: New member from Slovenia](#)

4021

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

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

[Re: Not quite sure why this works](#)

4022

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

[Re: How to avoid burnt flour inside the oven](#)

4023

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

[Re: Not quite sure why this works](#)

4024

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

[Re: more extensible, flexible dough?](#)

4025

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

[Re: Not quite sure why this works](#)

4026

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

[Re: Survey: Salting pasta cooking water](#)

4027

Better get a donut fryer with a submersion screen.

Tom Lehmann/The Dough Doctor

[Re: Fried Dough](#)

4028

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

[Re: more extensible, flexible dough?](#)

4029

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

[Re: How to Keep the dough ready to use \(room temperature\) as long as we can?](#)  
4030

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 can sell to you at a discount. Their seconds are only color blemishes. 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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)  
4031

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

[Re: Need a low-rising dough](#)  
4032

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

[Re: Something wrong with dough](#)  
4033

Are you using the same Caputo flour that Craig used?

Tom Lehmann/The Dough Doctor

[Re: Something wrong with dough](#)  
4034

Looks about right, nice and "mellow" (soft and extensible/doesn't look to be sticky at all).

Tom Lehmann/The Dough Doctor

[Re: Non extensible dough problems](#)

4035

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

[Re: Need a low-rising dough](#)

4036

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

[Re: Non extensible dough problems](#)

4037

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

[Re: Mixing large quantities by hand](#)

4038

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

[Re: Fried Dough](#)

4039

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

[Re: Yeasty beastly question](#)

4040

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

[Re: Mixing large quantities by hand](#)

4041

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

[Re: Non extensible dough problems](#)

4042

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

[Re: Pizza Size](#)

4043

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

[Re: Mixing large quantities by hand](#)

4044

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4045

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

[Re: Why is this happening to the bottom of my Pan Pizza?](#)

4046

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

[Re: Non extensible dough problems](#)

4047

Not enough fermentation time but could be exacerbated by a finished dough temperature that is too cold....what was your finished dough temperature? Your 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

[Re: Non extensible dough problems](#)

4048

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

[Re: Mixing large quantities by hand](#)

4049

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

[Re: Why is this happening to the bottom of my Pan Pizza?](#)

4050

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

[Re: Using fresh yeast for the first time, have a question](#)

4051

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

[Re: Single dough ball...](#)



4052

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

[Re: Single dough ball...](#)

4053

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

[Re: Dehydrator](#)

4054

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

[Re: Pastry style dough/Jioio's pizza](#)

4055

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

[Re: Flour VWG protein calculator](#)

4056

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

[Re: Pastry style dough/Jioio's pizza](#)

4057

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

[Re: baking steel in poland ?](#)

4058

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.

[Re: baking steel in poland ?](#)

4059

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

[Re: The confusion surrounding the term "semolina"](#)

4060

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

[Re: Has anyone ever tried to make Neapolitan pizza in a WFO with any of the Bob Mill](#)

4061

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  $4.75 \times 4 = 19\text{-ounces}$   $\times 50\% = 9.5\text{-ounces}$ .

Tom Lehmann/The Dough Doctor

[Re: Need a low-rising dough](#)

4062

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

[Re: Strentching cheese effect after delivery](#)

4063

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

[Re: Garland Air Deck Oven](#)

4064

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

[Re: Avoid soggy and chewy dough due to hot bag](#)

4065

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

[Re: Need a low-rising dough](#)

4066

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

[Re: Freezing dough balls:](#)

4067

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

[Re: Freezing dough balls:](#)

4068

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

[Re: Pizza shop in Japan](#)

4069

Greg;

Welcome!

I hope you're planning to roll up your sleeves and 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

[Re: Looking to make the perfect pizza, always looking.](#)

4070

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

[Re: Finding eager Employees](#)

4071

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, then 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

[Re: Forgot to put dough in the refrigerator--- is it ruined?](#)

4072

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 slacking-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

[Re: Freezing dough balls:](#)

4073

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

[Re: Wood surface for preparing pizzas](#)

4074

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

[Re: Freezing dough balls:](#)

4075

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

[Re: Yeasty beastly question](#)

4076

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

[Re: Keeping fresh basil and rocket leaves](#)

4077

Not bad looking at all!

Tom Lehmann/The Dough Doctor

[Re: Dough timing](#)

4078

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

[Re: dough management](#)

4079

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

[Re: Dough timing](#)

4080

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

[Re: What is your doughball production rate?](#)

4081

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

[Re: Avoid soggy and chewy dough due to hot bag](#)

4082

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

[Re: Dough timing](#)

4083

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

[Re: Preferred method of storing bread](#)

4084

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

[Re: Preferred method of storing bread](#)

4085

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

[Re: Dough timing](#)

4086

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4087

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

[Re: Dough timing](#)

4088

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

[Re: What is your doughball production rate?](#)

4089

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

[Re: attempt to find the right flour](#)

4090

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

[Re: attempt to find the right flour](#)

4091

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4092

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4093

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

[Re: Avoid soggy and chewy dough due to hot bag](#)

4094

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

[Re: Preferred method of storing bread](#)

4095

JPB;

I should have added that whenever you leave the lid of 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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4096



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

[Re: The confusion surrounding the term "semolina"](#)

4097

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

[Re: Avoid soggy and chewy dough due to hot bag](#)

4098

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4099

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

[Re: dough alternatives no flour](#)

4100

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 question asking before you buy one.

Tom Lehmann/The Dough Doctor

[Re: dough alternatives no flour](#)

4101

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4102

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

[Re: dough management](#)

4103

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

[Re: Preferred method of storing bread](#)

4104

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  
[Re: Preferred method of storing bread](#)  
4105

The 10-Cm height boxes should work well for your application.  
Tom Lehmann/The Dough Doctor  
[Re: dough management](#)  
4106

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  
[Re: Fresh Yeast Recipe](#)  
4107

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  
[Re: Fresh Yeast Recipe](#)  
4108

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  
[Re: Fresh Yeast Recipe](#)  
4109

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  
[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)  
4110

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

[Re: Wet Unworkable Dough](#)

4111

Not too shabby for an emergency dough.

Tom Lehmann/The Dough Doctor

[Re: "Emergency" nearly-politan dough?](#)

4112

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

[Re: How will this work...](#)

4113

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

[Re: How will this work...](#)

4114

Considering the very limited specifications provided on the Italforni 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 Italforni 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 Italforni 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

[Re: Questions on two ovens](#)

4115

Lookin' good! :) :) :).

Tom Lehmann/The Dough Doctor

[Re: How will this work...](#)

4116



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 outperform 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

[Re: Helloo & Q on deck ovens!](#)

4117

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

[Re: How will this work...](#)

4118

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

[Re: Edge Stretching](#)

4119

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

[Re: Increased hydration without the slop](#)

4120

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't 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

[Re: How will this work...](#)

4121

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 use to use those things calls 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

[Re: Possible contribution to the "Pizzeria Smell"](#)

4122

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

[Re: Cracker Crust - stone vs cutter pan?](#)

4123

Does Tony G. have any restaurants/pizzerias in Toronto? :)

Tom Lehmann/The Dough Doctor

[Re: Help with my dough!!](#)

4124

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

[Re: Cracker Crust - stone vs cutter pan?](#)

4125

With regard t 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 t in in about 3 to 4-hours.

Tom Lehmann/The Dough Doctor

[Re: "Emergency" nearly-politan dough?](#)

4126

By dense I mean that the dough doesn't look "light and airy". In reading through 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

[Re: Help with my dough!!](#)

4127

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

[Re: Help with my dough!!](#)

4128

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-balling) 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

[Re: What are parameters that promote gluten relaxation or overly soft dough?](#)

4129

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4130

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4131

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

[Re: Dough handling problem...](#)

4132

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

[Re: To everyone who drops their dough ball in a bowl of flour, or a load of bench flour...](#)

4133

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

[Re: Getting the Crust Right?](#)

4134

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

[Re: Dough handling problem...](#)

4135

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

[Re: Tony's master recipe w/starter and some questions](#)

4136

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

[Re: Tony's master recipe w/starter and some questions](#)

4137

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

[Re: Okay to Use Parchment?](#)

4138

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

[Re: Figuring capacity](#)

4139

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 dough 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

[Re: Thin crust](#)

4140

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

[Re: Thin crust](#)

4141

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

[Re: Helloo & Q on deck ovens!](#)

4142

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

[Re: thin crust recipe for a conveyor oven](#)

4143

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

[Re: Figuring capacity](#)

4144

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

[Re: Got a mixer...Welbilt w20](#)

4145

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 of 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

[Re: Got a mixer...Welbilt w20](#)

4146

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

[Re: Article: Effect of Music on Restaurant Business](#)

4147

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

[Re: Food Truck Dough Management System?](#)

4148

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-minute 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

[Re: Dough for cooking on screens in convection?](#)

4149

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

[Re: Dough for cooking on screens in convection?](#)

4150

I've not seen that one here before but it is a very cool idea!

Tom Lehmann/The Dough Doctor

[Re: Pizza boxes - innovative designs](#)

4151

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

[Re: Lehmann Way](#)

4152

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

[Re: Pizza boxes - innovative designs](#)

4153

You might try Old World Spices and Seasonings in Kansas City or even Pizza Blends.

Tom Lehmann/The Dough Doctor

[Re: Bringing a product to stores question](#)

4154

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  
[Re: Bringing a product to stores question](#)  
4155

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  
[Re: Pizzaiolo Training ?](#)  
4156

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  
[Re: Newbie question about "pan" pizza.](#)  
4157

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  
[Re: Pizza boxes - innovative designs](#)  
4158

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  
[Re: soft dough](#)  
4159

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

[Re: Difficult gassy dough](#)

4160

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

[Re: Crust came out uneven](#)

4161

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

[Re: Difficult gassy dough](#)

4162

And I'd suggest forgetting the honey unless you have some ulterior motive for adding it.

Tom Lehmann/The Dough Doctor

[Re: No-knead Pizza Dough recipe calls for 8-24 counter rest. Need pizza in 5 hours](#)

4163

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

[Re: What causes this?](#)

4164

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

[Re: Fermentation Questions](#)

4165

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

[Re: What causes this?](#)

4166

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

[Re: Difficult gassy dough](#)

4167

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

[Re: too many bubbles in my stretched dough?](#)

4168

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

[Re: Anyone ever tried stretch and folds over multiple hours?](#)

4169

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

[Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above](#)

4170

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

[Re: What causes this?](#)

4171

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

[Re: ServSafe and implications for home cooking](#)

4172

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

[Re: Pizza shows horrible chewiness when cooled down](#)

4173

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

[Re: Crust came out uneven](#)

4174

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 then 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

[Re: Fermentation Questions](#)

4175

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

[Re: Sheeted dough management](#)

4176

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. I like to use U.G. as the basis for all of my multi-grain breads, rolls and pizza crusts.

Tom Lehmann/The Dough Doctor

[Re: A test using ConAgra Ultragrain for a Neapolitan bake](#)

4177

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

[Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above](#)

4178

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

[Re: Newb looking for my ideal pizza a cracker bottom with a little bit of chew above](#)

4179

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

[Re: Low Diastatic Malt](#)

4180

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

[Re: Fermentation Questions](#)

4181

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

[Re: Dough not rising well after being in freezer \(or fridge\)...](#)

4182

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 to be a bit more specific.

Tom Lehmann/The Dough Doctor

[Re: What causes this?](#)

4183

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

[Re: Sheeted dough management](#)

4184

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

[Re: Sheeted dough management](#)

4185

Welcome!

Can you tell us how hot your home oven will get? Also you 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

[Re: hello from Mï¿½xico](#)

4186

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

[Re: Burger-Flipping Robot Could Mean The End Of Teen Employment](#)

4187

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

[Re: Re-Balling for Oven Spring?](#)

4188

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

[Re: Re-Balling for Oven Spring?](#)

4189

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

[Re: multi-day fermentation vs. same day](#)

4190

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

[Re: multi-day fermentation vs. same day](#)

4191

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

[Re: From fresh to frozen](#)

4192

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

[Re: I have tons of leftover grape tomatoes; any good sauce recipes I can use?](#)

4193

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

[Re: Cracker Crust - stone vs cutter pan?](#)

4194

A cutter pan without question, but with some type of decking under it.

Tom Lehmann/The Dough Doctor

[Re: Cracker Crust - stone vs cutter pan?](#)

4195

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

[Re: Wet dough is for high or low temp oven?](#)

4196

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

[Re: Too much gas??](#)

4197

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

[Re: Wet dough is for high or low temp oven?](#)

4198

My yeast level for that process is 0.25% IDY.

Tom Lehmann/The Dough Doctor

[Re: gluten strands](#)

4199



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

[Re: gluten strands](#)

4200

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

[Re: Pizza restaurants using "emergency-type" dough?](#)

4201

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

[Re: Forgot the YEAST! What can I do with this Dough?](#)

4202

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  
[Re: Garlic Oil](#)  
4203

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  
[Re: Pizza restaurants using "emergency-type" dough?](#)  
4204

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

[Re: How to tell when flour goes bad?](#)

4205

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

[Re: Garlic Oil](#)

4206

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

[Re: How to tell when flour goes bad?](#)

4207

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 bread 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

[Re: gluten strands](#)

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.lloydpan.com](http://www.lloydpan.com)> / Paul Tiffany <[ptiffany@lloydpan.com](mailto:ptiffany@lloydpan.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

[Re: Pizza pros, GET IN! Need expert opinion](#)

4209

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

[Re: How to tell when flour goes bad?](#)

4210

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

[Re: gluten strands](#)

4211

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

[Re: pizza doughnut](#)

4212

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

[Re: How to tell when flour goes bad?](#)

4213

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

[Re: pizza doughnut](#)

4214

Now you're talkin' my language! ^^^

Tom Lehmann/The Dough Doctor

[Re: freezing tomatoes to release water for reduction?](#)

4215

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

[Re: Diastatic Malt powder](#)

4216

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 then, 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

[Re: pizza doughnut](#)

4217

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

[Re: Over knead vs. under knead](#)

4218

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

[Re: Getting started...](#)

4219

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

[Re: Over knead vs. under knead](#)

4220

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4221

JPB;

Didn't somebody one say something about "Outta sight, outta mind"? It happens here more that 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

[Re: There are so many fine ways to mess up dough](#)

4222

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

[Re: Making a pizza that travels well and people with eat 2 hours later.](#)

4223

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

[Re: Over knead vs. under knead](#)

4224

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

[Re: Over knead vs. under knead](#)

4225

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 perceptable 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

[Re: There are so many fine ways to mess up dough](#)

4226

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

[Re: Opening a restaurant](#)

4227

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

[Re: Baker's percentage with combination of different flours?](#)

4228

Are you using a light, medium or dark rye flour?

Tom Lehmann/The Dough Doctor

[Re: Baker's percentage with combination of different flours?](#)

4229

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

[Re: Feedback on Eurodib 30qt spiral mixer?](#)

4230

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

[Re: Baker's percentage with combination of different flours?](#)

4231

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4232

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

[Re: pizza doughnut](#)

4233

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

[Re: Dough not rising well after being in freezer \(or fridge\)...](#)

4234

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 United 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 = hmmm, 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

[Re: pizza doughnut](#)

4235

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

[Re: Dough not rising well after being in freezer \(or fridge\)...](#)

4236

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

[Re: Planning to open restaurant serving whole wheat pizza](#)

4237

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

[Re: new to mixers looking at a spiral mixer](#)

4238

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

[Re: new to mixers looking at a spiral mixer](#)

4239

The problem with freezing the tomatoes is that most of the "juice sacks" (there is a correct name for them but it 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

[Re: freezing tomatoes to release water for reduction?](#)

4240

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

[Re: Anyone know anything about this Red Star bread machine IDY yeast?](#)

4241

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

[Re: balling technique and schedule](#)

4242

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

[Re: Any issues w/ keeping pre-measured amounts of flour and yeast mixed in the](#)

[same container?](#)

4243

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

[Re: Feedback on Eurodib 30qt spiral mixer?](#)

4244

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

[Re: Feedback on Eurodib 30qt spiral mixer?](#)

4245

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

[Re: Do you use any seasonings in your dough?](#)

4246

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

[Re: Wet Unworkable Dough](#)

4247

24-hours minimum with 48 even better.

Tom Lehmann/The Dough Doctor

[Re: Wet Unworkable Dough](#)

4248

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

[Re: How to get sauce to be thicker](#)

4249

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

[Re: How to get sauce to be thicker](#)

4250

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

[Re: Vegetable Oil vs. Olive Oil](#)

4251

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

[Re: Baker's percentage with combination of different flours?](#)

4252

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 spelt flour weight is divided by 10 and multiplied by 100 to give the correct bakers percent for the spelt 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

[Re: Baker's percentage with combination of different flours?](#)

4253

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

[Re: Pizza \(!?\) oven found in Mexican ghost town](#)

4254

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

[Re: Trying to figure out the Cracker Crust theory](#)

4255

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

[Re: Fresh yeast](#)

4256

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

[Re: Vegetable Oil vs. Olive Oil](#)

4257

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

[Re: Why Sourdough Bread is One of the Healthiest Breads \(Authority Nutrition\)](#)

4258

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 excessive 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

[Re: Wet Unworkable Dough](#)

4259

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

[Re: RT/CF fail, not totally sure why](#)

4260

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

[Re: RT/CF fail, not totally sure why](#)

4261

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

[Re: Fresh yeast](#)

4262

You keep going back to the word "elastic" that is a word that aptly describes a slightly to 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 to 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

[Re: RT/CF fail, not totally sure why](#)

4263

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

[Re: RT/CF fail, not totally sure why](#)

4264

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

[Re: Poolish vs. biga](#)

4265

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 proteases in the papaya can aid in digestion); Fresh pineapple is also a good source too.

Protease = (pro-tea-ace) :)

Tom Lehmann/The Dough Doctor

[Re: Protease...](#)

4266

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 it 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

[Re: Poolish vs. biga](#)

4267

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

[Re: Grandma & Grandpa](#)

4268

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

[Re: Grandma & Grandpa](#)

4269

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

[Re: Pizza dough VERY tough to stretch](#)

4270

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

[Re: Starting Out ... Help with Dough?](#)

4271

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

[Re: Powdered Cellulose in granulated cheeses](#)

4272

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

[Re: Powdered Cellulose in granulated cheeses](#)

4273

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

[Re: Poolish vs. biga](#)

4274

A good flour for you to work with is Pillsbury Bread flour available at most supermarkets.

Tom Lehmann/The Dough Doctor

[Re: Starting Out ... Help with Dough?](#)

4275

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

[Re: Poolish vs. biga](#)

4276

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

[Re: Too much gas??](#)

4277

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

[Re: Trying to perfect a no knead american style](#)

4278

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

[Re: Best Frozen Pizza Brand \(for when time or money is tight\)?](#)

4279

"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

[Re: \[Video\] \\$5 Pizza vs. \\$135 Pizza](#)

4280

Tattoo;

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



[Re: opening a pizzeria very soon!!! dough amount???](#)

4281

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

[Re: Best Frozen Pizza Brand \(for when time or money is tight\)?](#)

4282

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

[Re: Trying to perfect a no knead american style](#)

4283

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

[Re: Which types of cheese go on which types of pizzas](#)

4284

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

[Re: Are bread machines worth it?](#)

4285

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

[Re: For when time/money is short, what is the best jarred sauce?](#)

4286

Evelyn and I discussed this a number of times 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 (sulfhydryl/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/KBRO3, 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 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

[Re: Resting During Mixing... Why?!](#)

4287

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

[Re: Anyone else get exhausted after pizza making?](#)

4288

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 uniform 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> requesting the video of dough being opened at AJ's Pizzeria.

Tom Lehmann/The Dough Doctor

[Re: How do you stretch out pizza dough?](#)

4289

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

[Re: Resting During Mixing... Why?!](#)

4290

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

[Re: opening a pizzeria very soon!!! dough amount???](#)

4291

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

[Re: Peel help](#)

4292

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

[Re: Resting During Mixing... Why?!](#)

4293

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

[Re: How do you cook the crust without burning the cheese?](#)

4294

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 this 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 t 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

[Re: More fermented vs. less fermented dough?](#)

4295

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

[Re: Reducing bake time](#)

4296

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

[Re: How do you cook the crust without burning the cheese?](#)

4297



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/chunky 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

[Re: Dough recipe for a Hamilton, NJ style tomato pie like Delorenzo's or Papa's](#)  
4298

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

[Re: Anybody made gluten-free pizza with an Uuni?](#)  
4299

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

[Re: Different sources give me different advice on dough? What's the difference?](#)

4300

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

[Re: Basic Primal Flavors](#)

4301

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

[Re: Basic Primal Flavors](#)

4302

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

[Re: Do you use any seasonings in your dough?](#)

4303

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

[Re: How much of a difference does brand of flour make?](#)

4304

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 to 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

[Re: How do you cook the crust without burning the cheese?](#)

4305

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

[Re: Oven for low commercial production?](#)

4306

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

[Re: Oven for low commercial production?](#)

4307

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

[Re: First Fully Stuffed Deep Dish under "cruel" conditions](#)

4308

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

[Re: Oven for low commercial production?](#)

4309

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

[Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment](#)

4310

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

[Re: Sharpening stone](#)

4311

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

[Re: What size pizza pans](#)

4312

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

[Re: Sharpening stone](#)

4313

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

[Re: Help plesae with IDY adjustment for Room Temperature Ferment vs Cold Ferment](#)

4314

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

[Re: Influence of salt over dough rising](#)

4315

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

[Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment](#)

4316

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

[Re: Fluffing and Collapsing dough?](#)

4317

Peter? Got your ears on? Now that dates me! :)

Tom Lehmann/The Dough Doctor

[Re: How to make a perfect pizza dough](#)

4318

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

[Re: Fluffing and Collapsing dough?](#)

4319

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

[Re: Trying to perfect a no knead american style](#)

4320

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](mailto:bberry@ohiorestaurant.org)> would be the person to contact to explore any possibilities.

Tom Lehmann/the Dough Doctor

[Re: Pizza Making.com Fest 2017](#)

4321

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

[Re: Trying to perfect a no knead american style](#)

4322

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

[Re: Detroit Pan crust crispness](#)

4323

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

[Re: Fluffing and Collapsing dough?](#)

4324

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. :)

[Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment](#)

4325

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 been 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

[Re: Detroit Pan crust crispness](#)

4326

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 NO use zip-lock bags) or you can also use 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

[Re: Fluffing and Collapsing dough?](#)

4327



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 is you make a 12" deep-dish pizza in a 16" pan.

In 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

[Re: What size pizza pans](#)

4328

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

[Re: Separating dough ball for multiple pies?](#)

4329

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

[Re: Separating dough ball for multiple pies?](#)

4330

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4331

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

[Re: What size pizza pans](#)

4332

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

[Re: Dough hook on 5 qt KA mixer question](#)

4333

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 leoparding 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

[Re: Testing doughs without cheese?](#)

4334

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

[Re: Starting a pizza shop for the second time](#)

4335

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

[Re: Testing doughs without cheese?](#)

4336

I wasn't aware that "real" Italians made it any other way. :-D

Tom Lehmann/The Dough Doctor

[Re: Pizza Sauce with Anchovies?](#)

4337

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4338

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

[Re: Dough hook on 5 qt KA mixer question](#)

4339

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

[Re: Cold Ferment in the pizza pan or in a ball](#)

4340

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

[Re: Fermenting and Proofing question](#)

4341

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.lloydpan.com>](http://www.lloydpan.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 a 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

[Re: Deep dish pizza pan](#)

4342

To add another log to 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 to 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-balling 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

[Re: 1st attempt of Tom Lehmann's NY style Dough](#)

4343

Those pizzas look like they were topped with diced cheese.

Tom Lehmann/The Dough Doctor

[Re: Colony Grill spots on cheese?](#)

4344

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

[Re: How to make this pizza? | What kind of pizza?](#)

4345

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

[Re: Baker's Pride Il Forno Classico vs Y600](#)

4346

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

[Re: 1st attempt of Tom Lehmann's NY style Dough](#)

4347

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

[Re: Prevent skin during bulk cold ferment](#)

4348

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

[Re: Mickey's frozen pizza in Loganville](#)

4349

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

[Re: Prevent skin during bulk cold ferment](#)

4350

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 created 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 of the secrets to keeping the vegetable toppings looking so fresh on the Di Giorno pizzas.

Tom Lehmann/The Dough Doctor

[Re: Mickey's frozen pizza in Loganville](#)

4351

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

[Re: How to make a perfect pizza dough](#)

4352

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

[Re: dough management](#)

4353

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 flat 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 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

[Re: Effects of hydration levels](#)

4354

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

[Re: Dr.'s email?](#)

4355

Yes, I'm located in Manhattan, Kansas.

Tom Lehmann/The Dough Doctor

[Re: Dr.'s email?](#)

4356

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 dough skin is tearing during the pressing operation the dough is too stiff.

Tom Lehmann/The Dough Doctor

[Re: repairing dough presses and repair parts](#)

4357

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

[Re: Dr.'s email?](#)

4358

Apone;

Yes, you are correct.

Tom Lehmann/The Dough Doctor

[Re: Problems handling wet dough. Sticking, etc.](#)

4359

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

[Re: Problems handling wet dough. Sticking, etc.](#)

4360

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

[Re: Freezing Pizza dough](#)

4361

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

[Re: Super Bowl Predictions.....?](#)

4362

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

[Re: Sliced mozzarella vs shredded](#)

4363

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

[Re: Golden 86](#)

4364

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

[Re: Golden 86](#)

4365

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)



4366

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4367

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

[Re: How I roll!](#)

4368

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4369

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

[Re: Dough Divider](#)

4370

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

[Re: Freezing Pizza dough](#)

4371

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

[Re: Freezing Pizza dough](#)

4372

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

[Re: How I roll!](#)

4373

In two words: You bet! :)

Tom Lehmann/The Dough Doctor

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4374

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

[Re: Problems handling wet dough. Sticking, etc.](#)

4375

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 X number of pizzas made during a year divided by 16 X 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

[Re: Oregano Pre/Post bake](#)

4376

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

[Re: Thoughts on Natural Leaven in commercial setting](#)

4377

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

[Re: New dough ideas?](#)

4378

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4379

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

[Re: twin diving arm mixers for brick oven](#)

4380

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

[Re: New dough ideas?](#)

4381

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

[Re: Chemicals in fast food packaging](#)

4382

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

[Re: Do I still need warm water after proofing yeast?](#)

4383

My mind is wired to think in bakers%.

Tom Lehmann/The Dough Doctor

[Re: Portioning](#)

4384

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). Shhhhhhhhhh, 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

[Re: Chemicals in fast food packaging](#)

4385

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 ease 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

[Re: Got lost in details on my way to a great pizza dough](#)

4386

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

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  $\times 7 = 32.81$ -pounds a week or 1,706.25-pounds a year  $\times$  cheese cost at let's say \$3.50 per pound = \$5,971.88 loss per year  $\times$  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

[Re: Portioning](#)

4388

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

[Re: Chemicals in fast food packaging](#)

4389

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

[Re: Question about cold packed jarred pizza sauce](#)

4390

No turning back now! :)

Tom Lehmann/The Dough Doctor

[Re: Wow! \(first pizza since joining this forum\)](#)

4391

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

[Re: Portioning](#)

4392

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

[Re: Thoughts on Natural Leaven in commercial setting](#)

4393

I weigh all of my ingredients.

Tom Lehmann/The Dough doctor

[Re: Portioning](#)

4394

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

[Re: Thoughts on Natural Leaven in commercial setting](#)

4395

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

[Re: Basil added to dough - Does it actually add taste to the crust?](#)

4396

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

[Re: Do I still need warm water after proofing yeast?](#)

4397

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

[Re: Thoughts on Natural Leaven in commercial setting](#)

4398

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

[Re: Dough retarding in bags\(?\)](#)

4399

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

[Re: Dough retarding in bags\(?\)](#)

4400

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

[Re: dry crumb help](#)

4401

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 and 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'd 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

[Re: Dense Crumb](#)

4402

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

[Re: Question about cold packed jarred pizza sauce](#)

4403

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

[Re: Question about cold packed jarred pizza sauce](#)

4404

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

[Re: Got lost in details on my way to a great pizza dough](#)

4405

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

[Re: Dense Crumb](#)

4406

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 will 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-balling 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

[Re: Freezing Dough](#)

4407

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

[Re: Freezing Dough](#)

4408

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

[Re: Rotating ovens](#)

4409

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

[Re: Rotating ovens](#)

4410

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

[Re: Question about cold packed jarred pizza sauce](#)

4411

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

[Re: Deep Dish Pan Question](#)

4412

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

[Re: Air bubbles after bulk ferment](#)

4413

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

[Re: Pizza bottom nice and brown, top side wet - why?](#)

4414

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

[Re: Best brand of corn oil for deep dish?](#)

4415

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

[Re: Dough Proofing](#)

4416

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

[Re: Dough Proofing](#)

4417

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

[Re: Dough Proofing](#)

4418

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

[Re: do you brush your crust with anything?](#)

4419

I use instant dry yeast (IDY) and Pillsbury Bread Flour.

Tom Lehmann/The Dough Doctor

[Re: General Dough Making](#)

4420

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 calzines (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

[Re: Dough recipe calls for 00 flour, does it matter if it is "All Purpose 00 flour?"](#)

4421

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

[Re: Recipe calls for "light" or "extra virgin" olive oil. But oven runs 550, so why](#)

4422

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

[Re: Deck Oven Disassembly](#)

4423

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

[Re: Help please with IDY adjustment for Room Temperature Ferment vs Cold Ferment](#)

4424

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

[Re: Pizza peel has now been revolutionized](#)

4425

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

[Re: Pizza peel has now been revolutionized](#)

4426

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

[Re: Music Fermentation Method ?](#)

4427

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

[Re: Double Deck Marsal M60 vs BP vs Blodgett](#)

4428

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 stearyl 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

[Re: Tough Leathery Crust - Why oh WHY](#)

4429

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

[Re: Dough Proofing](#)

4430

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

[Re: Dough Proofing](#)

4431

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

[Re: Modifying Aluminum Peel](#)

4432

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

[Re: Modifying Aluminum Peel](#)

4433

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

[Re: Dough recipe calls for 00 flour, does it matter if it is "All Purpose 00 flour?"](#)

4434

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

[Re: Dough Proofing](#)

4435

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

[Re: How to achieve "micro-blistering" with cold ferment only](#)

4436

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

[Re: Tough Leathery Crust - Why oh WHY](#)

4437

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

[Re: How to achieve "micro-blistering" with cold ferment only](#)

4438

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

[Re: the finger test](#)

4439

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

[Re: par bake trouble shooting](#)

4440

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

[Re: Best RPM with Spiral Mixer for Neapolitan Pizza](#)

4441

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

[Re: Freezing dough balls:](#)

4442

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

[Re: Tough Leathery Crust - Why oh WHY](#)

4443

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

[Re: Dough retarding in bags\(?\)](#)

4444

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

[Re: Dough balls](#)

4445

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

[Re: idy vs ady vs fresh yeast dough flavor?](#)

4446

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

[Re: organic vs. non-organic flour?](#)

4447

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

[Re: the finger test](#)

4448

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

[Re: par bake trouble shooting](#)

4449

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

[Re: Patent Flour](#)

4450

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

[Re: Patent Flour](#)

4451

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

[Re: Smartphones, Finally Had To Get One!!!! What's everyone else got??](#)

4452

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

[Re: Can I make dough by hand in a plastic bowl or does it have to be glass?](#)

4453

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

[Re: par bake trouble shooting](#)

4454

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.



[Re: How to achieve the burnt char dough taste?](#)

4455

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

[Re: par bake trouble shooting](#)

4456

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

[Re: par bake trouble shooting](#)

4457

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

[Re: Oil For Use in Various Styles Using Pans](#)

4458

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

[Re: Oil For Use in Various Styles Using Pans](#)

4459

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

[Re: How to achieve the burnt char dough taste?](#)

4460

That is a "slug" of malt at (60L). I'm surprised that the dough isn't getting sticky.

Tom Lehmann/The Dough Doctor

[Re: par bake trouble shooting](#)

4461

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

[Re: How to achieve the burnt char dough taste?](#)

4462

Do you know what Lintner value it is?

Tom Lehmann/The Dough Doctor

[Re: par bake trouble shooting](#)

4463

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

[Re: Hobart HL600-1STD 60Q Planetary Mixer Feedback](#)

4464

Really nice looking crumb structure!

Tom Lehmann/The Dough Doctor

[Re: My Detroit style](#)

4465

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

[Re: smooth vs rough dough, windowpaning](#)

4466

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

[Re: Hobart HL600-1STD 60Q Planetary Mixer Feedback](#)

4467

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

[Re: Lehmann vs Trader Joes - What's makes dough/crust so flavorful?](#)

4468

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

[Re: Switching Flour - Changes?](#)

4469

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 characteristics 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 characteristics 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

[Re: smooth vs rough dough, windowpaning](#)

4470

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 too 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

[Re: par bake trouble shooting](#)

4471

Carl/Peter;

I went back into the link provided by Peter and offered my comments.

Tom Lehmann/The Dough Doctor

[Re: Dough ball temperature after 24 hrs in fridge](#)

4472

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

[Re: Help with my dough](#)

4473

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

[Re: par bake trouble shooting](#)

4474

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

[Re: Dough ball temperature after 24 hrs in fridge](#)

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

[Re: organic vs. non-organic flour?](#)

4476

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

[Re: Best \(or good\) mixer for pizza dough](#)

4477

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

[Re: organic vs. non-organic flour?](#)

4478

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

[Re: Would this pan be ok for a Chicago Deep Dish pizza?](#)

4479

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

[Re: What have i done wrong](#)

4480

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

[Re: Deep Dish - Why can't I get it right?](#)

4481

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 responsibly, 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

[Re: Deep Dish - Why can't I get it right?](#)

4482

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

[Re: Assembly line concepts, no love for Neapolitan?](#)

4483

DITTO!

The price is right too!

Tom Lehmann/The Dough Doctor

[Re: Double Deck Marsal M60 vs BP vs Blodgett](#)

4484

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

[Re: How to achieve the burnt char dough taste?](#)

4485

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

[Re: How do I reduce this dough recipe?](#)

4486

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

[Re: Chicago style with dual thermostat oven](#)

4487

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

[Re: new york with power flour](#)

4488

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

[Re: Hello need some help with a fresh yeast 24/72 hour rise](#)

4489

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

[Re: Pizza pan on a stone](#)

4490

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

[Re: Hand mixing/kneading](#)

4491

I guess I should have opened the link to the Dutchess rounder you were referring to. I thought your reference was to the JN model dough divider-rounder. That's the one that really handles the stiffer doughs quite well. Sorry about not being more specific.

Tom Lehmann/The Dough Doctor

[Re: Dough Rounder decision help](#)

4492

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

[Re: Preferred dough recipe for Calzones?](#)

4493

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

[Re: Hand mixing/kneading](#)

4494

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

[Re: Hand mixing/kneading](#)

4495

Yep, soybean oil, it polymerizes faster than most other oils.

Tom Lehmann/The Dough Doctor

[Re: Pizza screens - seasoning](#)

4496

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

[Re: Hello from New Zealand](#)

4497

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

[Re: Hello need some help with a fresh yeast 24/72 hour rise](#)

4498

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 of 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

[Re: Hello from New Zealand](#)

4499

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

[Re: Gas vs Electric Oven for NY style pizza](#)

4500

Not quite.

$0.013 \times 1000$  (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  $0.375 \times 1000$  (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  $0.125 \times 1000$  (press the "%" key) and read 1.25-grams in the display window.

Tom Lehmann/The Dough Doctor

[Re: yeast weight when using percentages](#)

4501

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

[Re: Gas vs Electric Oven for NY style pizza](#)

4502

It is about as close to hand balled as you can get with a stiff dough.

Tom Lehmann/The Dough Doctor

[Re: Dough Rounder decision help](#)

4503

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

[Re: Dough Rounder decision help](#)

4504

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

[Re: Varimixer Teddy W5A](#)

4505

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

[Re: Pizza screens - seasoning](#)

4506

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

[Re: To buy or Lease Pizza truck?](#)

4507

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

[Re: dough management](#)

4508

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

[Re: Shaping CF Dough vs. RF Dough](#)

4509

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

[Re: dough management](#)

4510

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

[Re: All Trumps High Gluten Flour-Why I won't Buy It Again](#)

4511

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

[Re: Stuffed Giordanos style](#)

4512

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

[Re: High Gluten Flour](#)

4513

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

[Re: High Gluten Flour](#)

4514

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

[Re: High Gluten Flour](#)

4515

Nish;

Normally about 48-hours cold fermentation is sufficient for making a pretty decent pizza crust.

tom Lehmann/The Dough Doctor

[Re: Dough Becoming Very Brown](#)

4516

Are you wanting to make a soft bread stick?

tom Lehmann/The Dough Doctor

[Re: Can I make breadsticks in my WFO with my Neapolitan dough?](#)

4517

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

[Re: High Gluten Flour](#)

4518

Nish;

No, the reason why the skin snaps back is because the dough has not been sufficiently fermented.

Tom Lehmann/The Dough Doctor

[Re: Dough Becoming Very Brown](#)

4519

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 got 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

[Re: High \\$\\$\\$ vs. Lower \\$\\$, Organic vs. Non-Organic Poultry](#)

4520

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 web 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 s 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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4521

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 than 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 in 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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4522

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

[Re: Deep Dish - Why can't I get it right?](#)

4523

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

[Re: High \\$\\$\\$ vs. Lower \\$\\$, Organic vs. Non-Organic Poultry](#)

4524

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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4525

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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4526

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

[Re: Dough Becoming Very Brown](#)

4527

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

[Re: need help .... ordinary pizza to elite pizza](#)

4528

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

[Re: Makin my first pie and yeast amount question](#)

4529

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

[Re: Using both poolish and biga in dough](#)

4530

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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4531

Norma;

It looks to be just vegetable oil and lecithin to keep it in place on vertical surfaces.

Tom Lehmann/The Dough Doctor

[Re: GOOP - No more dough sticking to pan!](#)

4532

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

[Re: sprinkle flour vs. oiling the bowl/proofing box?](#)

4533

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

[Re: Deep Dish - Why can't I get it right?](#)

4534

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

[Re: GOOP - No more dough sticking to pan!](#)

4535

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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4536

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

[Re: Makin my first pie and yeast amount question](#)

4537

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

[Re: Deep Dish - Why can't I get it right?](#)

4538

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

[Re: GOOP - No more dough sticking to pan!](#)

4539

Norma;

PJs gives tours of their commissary facilities.

Tom Lehmann/The Dough Doctor

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4540

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

[Re: diary of a pizza fanboy: DiGiorno's HQ](#)

4541

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

[Re: Makin my first pie and yeast amount question](#)

4542

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

[Re: NY Pizza inquire](#)

4543

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

[Re: Old dough - why not make it ahead and freeze](#)

4544

Your baking times will most likely be a little shorter too using gas as opposed to electric.

Tom Lehmann/The Dough Doctor

[Re: Gas vs Electric Oven for NY style pizza](#)

4545

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

[Re: Old dough - why not make it ahead and freeze](#)

4546

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

[Re: Old dough - why not make it ahead and freeze](#)

4547

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

[Re: tips for more uniformly round pizza?](#)

4548

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

[Re: Old dough - why not make it ahead and freeze](#)

4549

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

[Re: tips for more uniformly round pizza?](#)

4550

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

[Re: tips for more uniformly round pizza?](#)

4551

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

[Re: Arm & Hammer Article on Chemical Leavening Systems](#)

4552

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

[Re: Deep Dish - Why can't I get it right?](#)

4553

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

[Re: Dough Becoming Very Brown](#)

4554

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

[Re: physics and chemistry of frozen doughs](#)

4555

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

[Re: Deep Dish - Why can't I get it right?](#)

4556

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

[Re: Using both poolish and biga in dough](#)

4557

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

[Re: Opening dough right out of the fridge](#)

4558

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

[Re: Thick crust and even cooking at home](#)

4559

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

[Re: Opening dough right out of the fridge](#)

4560

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

[Re: Dough Becoming Very Brown](#)

4561

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

[Re: Dough fermentation and tender crust](#)

4562

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

[Re: Deep Dish - Why can't I get it right?](#)

4563

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

[Re: Old Pizza Recipes](#)

4564

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

[Re: Opening dough right out of the fridge](#)

4565

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

[Re: how are small weight/hydration differences manifested in dough?](#)

4566

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

[Re: Opening dough right out of the fridge](#)

4567

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

[Re: A question about the color of under fermented pizza.](#)

4568

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

[Re: A question about the color of under fermented pizza.](#)

4569

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

[Re: Dough Becoming Very Brown](#)

4570

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

[Re: Dough and Drains](#)

4571

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

[Re: Very hard crust, moist cheeze](#)

4572

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

[Re: Cold Ferment and More Flavor in Dough](#)

4573

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 affect 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 off-setting 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

[Re: Tweaking dough formula to last longer](#)

4574

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

[Re: Using Milk in Dough](#)

4575

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

[Re: How can one estimate flour protein levels or suitability?](#)

4576

Dave;

Sure, not a problem. My number is 785-537-1037.

Tom Lehmann/The Dough Doctor

[Re: Crispyness of dough after pizza gets cold](#)

4577

PizzaGarage;

Amen to that brother! :)

Tom Lehmann/The Dough Doctor

[Re: Crispyness of dough after pizza gets cold](#)

4578

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

[Re: How can one estimate flour protein levels or suitability?](#)

4579

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

[Re: Tweaking dough formula to last longer](#)

4580



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

[Re: Very hard crust, moist cheeze](#)

4581

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

[Re: Very hard crust, moist cheeze](#)

4582

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

[Re: Recipe question](#)

4583

Werty20;

If the crust color is too dark for you I'd suggest eliminating the added sugar.

Tom Lehmann/The Dough Doctor

[Re: Using Milk in Dough](#)

4584

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

[Re: Salt and yeast mix](#)

4585

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

[Re: Using Milk in Dough](#)

4586

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

[Re: Salt and yeast mix](#)

4587

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

[Re: Salt and yeast mix](#)

4588

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

[Re: What's makes Jakes Pizzas around Chicago so special.....I miss it!](#)

4589

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

[Re: how to get tangy flavor in dough](#)

4590

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

[Re: What's makes Jakes Pizzas around Chicago so special.....I miss it!](#)

4591

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

[Re: my pans aren't flat](#)

4592

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

[Re: Salt and yeast mix](#)

4593

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?

[Re: Deck oven advice](#)

4594

In large commercial bakeries white mineral oil (food grade) is the sole lubricant for dough dividers and rounders, in fact, in 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

[Re: Thoughts about fermenting/proofing style](#)

4595

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

[Re: convert recipe using 5 lbs of flour](#)

4596

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

[Re: Thoughts about fermenting/proofing style](#)

4597

Got Rocks;

I quote "with one exception" Speaking only for myself, any oven made by 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

[Re: pizzeria opportunity](#)

4598

bmac;

Or is it 350 ml.? That is the question. :-D

Tom Lehmann/The Dough Doctor

[Re: convert recipe using 5 lbs of flour](#)

4599

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

[Re: Oil and oven spring](#)

4600

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



[Re: Ideal Ratio for 4 cheese blend?](#)

4601

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

[Re: Ideal Ratio for 4 cheese blend?](#)

4602

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

[Re: pizzeria opportunity](#)

4603

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

[Re: pizzeria opportunity](#)

4604

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

[Re: Oil and oven spring](#)

4605

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, forgot 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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)

4606

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

[Re: First time dough maker!](#)

4607

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

[Re: The small things...](#)

4608

The flat beater aka paddle is used primarily for blending things like cake batter, cookie dough, etc.

Tom Lehmann/The Dough Doctor

[Re: Help with KitchenAid](#)

4609

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

[Re: Help with KitchenAid](#)

4610

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

[Re: Yeast %](#)

4611

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

[Re: Here's my recipe. Why is it not crispy?](#)

4612

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.lloydpan.com](http://www.lloydpan.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

[Re: Perf disk](#)

4613

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

[Re: Dough with butter?](#)

4614

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 downsizing 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

[Re: convert recipe using 5 lbs of flour](#)

4615

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

[Re: Thoughts about fermenting/proofing style](#)

4616

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

[Re: convert recipe using 5 lbs of flour](#)

4617

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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)

4618

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

[Re: how to get tangy flavor in dough](#)

4619

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 Cree, 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

[Re: Thoughts about fermenting/proofing style](#)

4620

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

[Re: convert recipe using 5 lbs of flour](#)

4621

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

[Re: Trying to learn stainless steel cookware](#)

4622

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 by 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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)

4623

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

[Re: Toppings - pre cooking in house vs. pre cooked](#)

4624

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

[Re: Tried lots of recipes but not getting the flavor. Please help!](#)

4625

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

[Re: Re: Bo Pizza](#)

4626

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

[Re: thin crust pizza](#)

4627

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

[Re: Hamburger, Hotdog Buns](#)

4628

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

[Re: Opening a pizzeria in January.](#)

4629

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

[Re: Re: Bo Pizza](#)

4630

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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)  
4631

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

[Re: Starter question](#)

4632

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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)

4633

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

[Re: Type of Pizza for new Pizza shop questions](#)

4634

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

[Re: Hamburger, Hotdog Buns](#)

4635

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

[Re: Costco Ingredients Pizza Making Challenge](#)

4636

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

[Re: Anyone using a Ankarsrum mixer?](#)

4637

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

[Re: dough roller tears up dough](#)

4638

Which mixing attachment are you using?

Tom Lehmann/The Dough Doctor

[Re: Anyone using a Ankarsrum mixer?](#)

4639

Hermit;

Yes, that's the spiral dough arm that I was referencing in my response to Alvin.

Tom Lehmann/The Dough Doctor

[Re: Dough ball not smooth or silky](#)

4640

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

[Re: Dough ball not smooth or silky](#)

4641

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

[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)

4642

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  
[Re: Caramelize Onions in Conveyor Oven?](#)  
4643

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  
[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)  
4644

And I thought that egg on my face was left over from breakfast. :-D

Tom Lehmann/The Dough Doctor  
[Re: 13-14 inch ny pizza?](#)  
4645

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  
[Re: First try at Tom Lehmann's New York Style Pizza Recipe, looking for advice](#)  
4646

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

[Re: How do you serve your 14 inch and bigger pizza?](#)

4647

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

[Re: 13-14 inch ny pizza?](#)

4648

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

[Re: Tried lots of recipes but not getting the flavor. Please help!](#)

4649

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

[Re: Crispyness of dough after pizza gets cold](#)

4650

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

[Re: Crispyness of dough after pizza gets cold](#)

4651

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

[Re: Mixing Yeasts](#)

4652

Can you share with us the exact dough "recipe" that you are using?

Tom Lehmann/The Dough Doctor

[Re: Tried lots of recipes but not getting the flavor. Please help!](#)

4653

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

[Re: Mixing Yeasts](#)

4654

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

[Re: Yeast + Baking powder](#)

4655

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

[Re: Yeast + Baking powder](#)

4656

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

[Re: A Question On Yeast Reduction In a Formula.](#)

4657

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

[Re: A Question On Yeast Reduction In a Formula.](#)

4658

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

[Re: Yeast + Baking powder](#)

4659

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

[Re: Mixing Yeasts](#)

4660

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

[Re: Help with using KA Bread flour instead of Sir Lancelot in dough recipe](#)

4661

Yep, not a problem. They are all of the same strain, *Saccheromyces Cerevisae*, 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 it's 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

[Re: Mixing Yeasts](#)

4662

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

[Re: Yeast + Baking powder](#)

4663

Wolf;

Don't forget to season your screen(s) well before their first use.

Tom Lehmann/The Dough Doctor

[Re: New pizza screen has bulge](#)

4664

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

[Re: Incorporating oil into dough](#)

4665

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

[Re: Yeast + Baking powder](#)

4666

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  
[Re: Incorporating oil into dough](#)  
4667

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  
[Re: Incorporating oil into dough](#)  
4668

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  
[Re: Gluten: Strength - Development - Arrangement](#)  
4669

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  
[Re: Gluten: Strength - Development - Arrangement](#)  
4670

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  
[Re: Unique crumb](#)  
4671

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

[Re: Gluten: Strength - Development - Arrangement](#)

4672

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

[Re: Unique crumb](#)

4673

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

[Re: Gluten: Strength - Development - Arrangement](#)

4674

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

[Re: Unique crumb](#)

4675

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

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4676

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

[Re: Natural yeast WITH or WITHOUT commercial yeast](#)

4677

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 nwhich is an indicator of an under mixed dough.

Tom Lehmann/The Dough Doctor

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4678

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

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4679

What are your mixing and dough management procedures?

Tom Lehmann/The Dough Doctor

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4680

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

[Re: help modify this recipe](#)

4681

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 if 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

[Re: starter storage..](#)

4682

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

[Re: Mixing IDY with RTF dough](#)

4683

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

[Re: Hello from korea](#)

4684

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 as 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

[Re: Practice dough](#)

4685

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](mailto: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

[Re: Practice dough](#)

4686

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

[Re: dough roller tears up dough](#)

4687

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

[Re: Practice dough](#)

4688

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

[Re: Practice dough](#)

4689

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

[Re: Yeast + Baking powder](#)

4690

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

[Re: Yeast + Baking powder](#)

4691

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

[Re: Yeast + Baking powder](#)

4692

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

[Re: dough roller tears up dough](#)

4693

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

[Re: What do you think about this Aluminum Peel?](#)

4694

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

[Re: starter storage..](#)

4695

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 (0.097-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

[Re: Two weeks of progress, but lots of questions...](#)

4696

You are correct.

No more confusion :)

Tom Lehmann/The Dough Doctor

[Re: Need help making dough more extensible](#)

4697

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 our 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



[Re: Yeast + Baking powder](#)

4698

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-degrees 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

[Re: dough roller tears up dough](#)

4699

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

[Re: Need help making dough more extensible](#)

4700

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

[Re: Yeast + Baking powder](#)

4701

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

[Re: starter storage..](#)

4702

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

[Re: Dough & Food Safety](#)

4703

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

[Re: Yeast + Baking powder](#)

4704

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

[Re: Yeast + Baking powder](#)

4705

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

[Re: Dough & Food Safety](#)

4706

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

[Re: Found this Hobart C100 at an estate sale](#)

4707

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

[Re: equipment list, getting started recipe?](#)

4708

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 tinkling sound with the bowl in the full up position, now you're ready to set the operating gap.

Tom Lehmann/The Dough Doctor  
[Re: Found this Hobart C100 at an estate sale](#)  
4709

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  
[Re: equipment list, getting started recipe?](#)  
4710

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  
[Re: Found this Hobart C100 at an estate sale](#)  
4711

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  
[Re: Kneading dough problem](#)  
4712

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  
[Re: Kneading dough problem](#)  
4713

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  
[Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe](#)  
4714

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

[Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe](#)

4715

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

[Re: Help choosing a peel\(s\)](#)

4716

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

[Re: Test pizzas taste "home made"](#)

4717

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

[Re: New guy looking for recipe correction for different pan size](#)

4718

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

[Re: Turbochef Fire Pizza Oven](#)

4719



That's some pretty decent looking pizza! A little bit like a Domino's but with a firmer crust.

Tom Lehmann/The Dough Doctor

[Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe](#)

4720

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

[Re: Gluten: Strength - Development - Arrangement](#)

4721

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

[Re: Test pizzas taste "home made"](#)

4722

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

[Re: dough stretching](#)

4723

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

[Re: no rise](#)

4724

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

[Re: Help with dough! Too sticky too elastic](#)

4725

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 or 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

[Re: Spiral mixer and Tom's Dough Management Procedure](#)

4726

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

[Re: Yeast + Baking powder](#)

4727

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

[Re: Gluten: Strength - Development - Arrangement](#)

4728

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

[Re: Yeast + Baking powder](#)

4729

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

[Re: Yeast + Baking powder](#)

4730

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.

[Re: Good browning, limited dough flavour](#)

4731

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

[Re: Gluten: Strength - Development - Arrangement](#)

4732

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

[Re: Beginner Pizza experience - Questions with Pictures](#)

4733

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

[Re: Pizza Recipe](#)

4734

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

[Re: Gluten: Strength - Development - Arrangement](#)

4735

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

[Re: Gluten: Strength - Development - Arrangement](#)

4736

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

[Re: Gluten: Strength - Development - Arrangement](#)

4737

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

[Re: Simple Pizza Sauce](#)

4738

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

[Re: Gluten: Strength - Development - Arrangement](#)

4739

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

[Re: Gluten: Strength - Development - Arrangement](#)

4740

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

[Re: Beginner Pizza experience - Questions with Pictures](#)

4741

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

[Re: counter top oven](#)

4742

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

[Re: GM All Trumps - other uses?](#)

4743

U.L. approved?

Tom Lehmann/The Dough Doctor

[Re: counter top oven](#)

4744

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

[Re: Two weeks of progress, but lots of questions...](#)

4745

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

[Re: Yeast + Baking powder](#)

4746

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

[Re: Yeast + Baking powder](#)

4747

Ryan;

Yes, it does increase the propensity for surface bubbles.

Tom Lehmann/The Dough Doctor

[Re: Yeast + Baking powder](#)

4748

Cool! Where there's a will, there's a way! :)



Tom Lehmann/The Dough Doctor

[Re: How i get always the perfect Temperature for my dough](#)

4749

Your 8 X 10 pan has 80-square inches of surface area. The dough weight is 340.21-grams so,  $340.21 \div 80 = 4.25$ -grams of dough per square inch. Your new pan size is 12 X 18 or 216-square inches. Now multiply  $4.25 \times 216 = 918$ -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

[Re: New guy looking for recipe correction for different pan size](#)

4750

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

[Re: Yeast + Baking powder](#)

4751

Sounds like too much bottom heat too soon in the baking cycle.

Tom Lehmann/The Dough Doctor

[Re: Detroit Style pizza problems...](#)

4752

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

[Re: Reversible Sheeter / Doughball Divider/Rounder](#)

4753

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

[Re: Simple Pizza Sauce](#)

4754

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

[Re: Deep dish in WFO?](#)

4755

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

[Re: New guy looking for recipe correction for different pan size](#)

4756

Ron;

Use a wood peel. Use peel dust. I make mine from equal parts of regular flour, semolina flour and fine corn meal, but is 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

[Re: NEED SAUCE FLOUR AND YEAST HELP!](#)

4757

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

[Re: Yeast + Baking powder](#)

4758

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

[Re: Garden 2016.](#)

4759

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

[Re: NEED SAUCE FLOUR AND YEAST HELP!](#)

4760

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

[Re: Converting a dough recipe to bakers percentages](#)

4761

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 your self 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

[Re: Newbie needs all the good ingredience](#)

4762

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

[Re: Newbie needs all the good ingredience](#)

4763

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

[Re: Newbie needs all the good ingredience](#)

4764

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

[Re: Simple Pizza Sauce](#)

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

[Re: Yeast + Baking powder](#)

4766

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

[Re: Newbie needs all the good ingredience](#)

4767

Jt77;

Have you looked at the Dutchess 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

[Re: Reversible Sheeter / Doughball Divider/Rounder](#)

4768

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 whet 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 it 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

[Re: Yeast + Baking powder](#)

4769

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

[Re: General Mills Gold Medal Flour Recall](#)

4770

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 responsibly 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

[Re: Yeast + Baking powder](#)

4771

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

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4772

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

[Re: Cooked pizza display cabinet \(pizza sold by slice\) - heated or not?](#)

4773

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

[Re: Reducing Large Bubbles in NY-Style Crust](#)

4774

Darticus;

Yes, just play it over the hearth. You will be able to see any hot spots too.

Tom Lehmann/The Dough Doctor

[Re: Pizza Oven: Pellets and thermometer?](#)

4775

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

[Re: Reversible Sheeter / Doughball Divider/Rounder](#)

4776

Even more than tomato? :)

Tom Lehmann/The Dough Doctor

[Re: Oregano Pre/Post bake](#)

4777

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

[Re: PIZZA OVEN PELLET AND THERMOMETER](#)

4778

Typically the thicker the slice, the less cupping you will get.

Tom Lehmann/The Dough Doctor

[Re: How to PREVENT pepperoni from "cupping"?](#)

4779

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

[Re: Reversible Sheeter / Doughball Divider/Rounder](#)

4780

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

[Re: Deep dish in WFO?](#)

4781

Duke;

I did something similar last year to what you did. Due to an early frost we have an abundance of green tomatoes, more that 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

[Re: Chile Verde Pizza - Does this sound good or gross?](#)

4782

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

[Re: Use of screens for larger sized pizzas - pros and cons](#)

4783

More surface area for the topping ingredients to migrate from.

Tom Lehmann/The Dough Doctor

[Re: This is why I avoid buying LARGE pies.](#)

4784

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

[Re: How I am storing the big 6 lb cans of sauce :\)](#)

4785

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

[Re: Caputo Flour 00 question](#)

4786

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

[Re: This is why I avoid buying LARGE pies.](#)

4787

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 coast, 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

[Re: Caputo Flour 00 question](#)

4788

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

[Re: Caputo Flour 00 question](#)

4789

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

[Re: Oregano Pre/Post bake](#)

4790

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

[Re: Caputo Flour 00 question](#)

4791

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

[Re: Thick crust and even cooking at home](#)

4792

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

[Re: Foldable, chewy crust](#)

4793

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

[Re: Cooking bulk ground meats](#)

4794

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 the extra length bothers you it's easy to cut the length of the handle back.

Tom Lehmann/The Dough Doctor

[Re: Use of screens for larger sized pizzas - pros and cons](#)

4795

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

[Re: Deck oven advice](#)

4796

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

[Re: Foldable, chewy crust](#)

4797

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 slacking 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

Tom Lehmann/The Dough Doctor

[Re: Salt and Yeast](#)

4798

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

[Re: Foldable, chewy crust](#)

4799

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 slacking 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

[Re: Salt and Yeast](#)

4800

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4801

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

[Re: Hydration](#)

4802

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4803

Norma;

Diastatic malt?

Tom Lehmann/The Dough Doctor

[Re: Salt and Yeast](#)

4804

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4805

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

[Re: Salt and Yeast](#)

4806

Nat;

Some say two hours, others say three hours.

Tom Lehmann/The Dough Doctor

[Re: Cooked pizza display cabinet \(pizza sold by slice\) - heated or not?](#)

4807

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 from 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

[Re: Here's my recipe. Why is it not crispy?](#)

4808

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4809

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

[Re: Cooked pizza display cabinet \(pizza sold by slice\) - heated or not?](#)

4810

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4811

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

[Re: Real Pizza Dough Flavor @ \\$52/lb](#)

4812

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

[Re: Need help making dough more extensible](#)

4813

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% ( $44.84$  divided by  $1521.16 \times 100 = 2.94775$ )

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 =  $1032.78$  divided by  $1521.16 \times 100 = 67.89\%$

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, from 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

[Re: Need help making dough more extensible](#)

4814

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. I 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

[Re: Anodized aluminum pans](#)

4815

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

[Re: how the crispiness of the pizza last for 15 mins after cooking?](#)

4816

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

[Re: Full Stregth vs Bread Flour and/or All Purpose flour for Sandwich Rolls](#)

4817

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

[Re: Anodized aluminum pans](#)

4818

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

[Re: Real Pizza Dough Flavor @ \\$52/lb](#)

4819

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

[Re: Dough will not windowpane](#)

4820

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

[Re: Prep table that can keep temps in 100 degree heat](#)

4821

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

[Re: Deep dish in WFO?](#)

4822

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

[Re: Dough thin in middle](#)

4823

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

[Re: Deep dish in WFO?](#)

4824

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

[Re: Dough thin in middle](#)

4825

Gossen;

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

[Re: Wild mushroom hunters?](#)

4826

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

[Re: First time using a Deck Oven](#)

4827

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

[Re: Deep dish in WFO?](#)

4828

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

[Re: Wild mushroom hunters?](#)

4829

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

[Re: Newbie from Northern Ireland](#)

4830

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

[Re: Steel Number Tents](#)

4831

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

[Re: Steel Number Tents](#)

4832

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

[Re: La Romanella Hi Gluten Flour](#)

4833

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

[Re: How to make homemade PZ-44 ?](#)

4834

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

[Re: How to make homemade PZ-44 ?](#)

4835

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

4836

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

[Re: Wild mushroom hunters?](#)

4837

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

[Re: Newbie from Northern Ireland](#)

4838

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

[Re: Jamaican meat patties NY style](#)

4839

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, then 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. Hosney 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

[Re: Factors Affecting Gluten](#)

4840

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

[Re: Help - Pizza Dough too fragile](#)

4841

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

[Re: Do you eat the crust of a NY pizza or chuck it?](#)

4842

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

[Re: Saucing help..or maybe it's the dough](#)

4843

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

[Re: Deactivated Yeast](#)

4844

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

[Re: Factors Affecting Gluten](#)

4845

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

[Re: How to make homemade PZ-44 ?](#)

4846

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

[Re: Deactivated Yeast](#)

4847

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

[Re: dough mixing and biochemical gluten development](#)

4848

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

[Re: Maximising gluten development for relaxed dough for handstretching](#)

4849

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

[Re: Deactivated Yeast](#)

4850

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

[Re: Maximising gluten development for relaxed dough for handstretching](#)

4851

How much flour are you using in your dough?

Tom Lehmann/The Dough Doctor

[Re: dough mixing and biochemical gluten development](#)

4852

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

[Re: dough mixing and biochemical gluten development](#)

4853

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

[Re: Deactivated Yeast](#)

4854

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

[Re: Found this Hobart C100 at an estate sale](#)

4855

QwertyJuan;

How are you defining tenderness of the dough?

Tom Lehmann/ The Dough Doctor

[Re: dough mixing and biochemical gluten development](#)

4856

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 sulfhydryl (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 diactyl 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 then 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 hydrolized 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 hydrolized 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

[Re: Factors Affecting Gluten](#)

4857

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

[Re: Here's my recipe. Why is it not crispy?](#)

4858

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

[Re: Factors Affecting Gluten](#)

4859

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

[Re: Here's my recipe. Why is it not crispy?](#)

4860

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 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

[Re: Need help to identify a pizza style from just photos and description](#)

4861

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

[Re: some questions about curing my new WFO](#)

4862

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

[Re: Need help to identify a pizza style from just photos and description](#)

4863

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 with 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

[Re: our dessert pizza experiments](#)

4864

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

[Re: Pizza at home methods-](#)

4865

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

[Re: some question](#)

4866

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

[Re: Thickness Factor \(TF\), what is it?](#)

4867

Peter;

Taking that to the next level:

If you know the TF you 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)  $\times$  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

[Re: Thickness Factor \(TF\), what is it?](#)

4868

Parallel;

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

[Re: Thickness Factor \(TF\), what is it?](#)

4869

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

[Re: some question](#)

4870

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

[Re: Thickness Factor \(TF\), what is it?](#)

4871

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

[Re: some question](#)

4872

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 X 100 = 7.46% more pizza = a better deal for us. :)

Tom Lehmann/The Dough Doctor

[Re: Thickness Factor \(TF\), what is it?](#)

4873

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

[Re: Location and menu design](#)

4874

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

[Re: Backup dough on the side or just for one bake ?](#)

4875

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

[Re: Better Tasting Dough](#)

4876

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

[Re: Food on Floor: Five Second Rule](#)

4877

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

[Re: Thickness Factor \(TF\), what is it?](#)

4878

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

[Re: Thickness Factor \(TF\), what is it?](#)

4879

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

[Re: Thickness Factor \(TF\), what is it?](#)

4880

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

[Re: Saucing help..or maybe it's the dough](#)

4881

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

[Re: Hello from Montreal Canada](#)  
4882

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

[Re: Saucing help..or maybe it's the dough](#)  
4883

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

[Re: Yup, humidity levels do affect pizza](#)  
4884

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



[Re: need some assistance please](#)

4885

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

[Re: why not use virgin olive oil](#)

4886

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

[Re: Yup, humidity levels do affect pizza](#)

4887

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

[Re: Yup, humidity levels do affect pizza](#)

4888

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 this 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

[Re: Yup, humidity levels do affect pizza](#)

4889

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

[Re: Homegrown tomatoes and frozen sauce question](#)

4890

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

[Re: Welded to a pan. Advice please](#)

4891

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

[Re: Yup, humidity levels do affect pizza](#)

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

[Re: Saucing help..or maybe it's the dough](#)

4893

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

[Re: Homegrown tomatoes and frozen sauce question](#)

4894

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 comes 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

[Re: Is this safe to use?](#)

4895

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

[Re: Is this safe to use?](#)

4896

Didn't we just recently discuss this topic?

Tom Lehmann/The Dough Doctor

[Re: Plan On Using Whey Left Over From Making Yogurt, anyone tried It?](#)

4897

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

[Re: fresh milled flour](#)

4898

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 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

[Re: fresh milled flour](#)

4899

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

[Re: 50lb+ Flour Storage](#)

4900

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

[Re: My Pizza Sauce](#)

4901

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

[Re: Hydration/dough opening](#)

4902

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

[Re: Sticky dough and pre ferment questions](#)

4903

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

[Re: 50lb+ Flour Storage](#)

4904

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

[Re: 50lb+ Flour Storage](#)

4905

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

[Re: 50lb+ Flour Storage](#)

4906

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

[Re: 50lb+ Flour Storage](#)

4907

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

[Re: Article on Protein in Baked Goods](#)

4908

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 entillator 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

[Re: 50lb+ Flour Storage](#)

4909

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

[Re: Article on Protein in Baked Goods](#)

4910

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 (Maturox) 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

[Re: fresh milled flour](#)

4911

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

[Re: Dough ripping](#)

4912

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

[Re: Balling \(issues?\)](#)

4913

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

[Re: How to planning](#)

4914

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

[Re: Burger Bun Recipe](#)

4915

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

[Re: Balling \(issues?\)](#)

4916

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

[Re: Adding a powdered cheese \(ie: parmesan\) to your sauce](#)

4917

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

[Re: Home milling high gluten flour](#)

4918

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

[Re: Each time I bake a \(Sicilian\) pizza lately, kitchen smokes up.](#)

4919

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

[Re: Each time I bake a \(Sicilian\) pizza lately, kitchen smokes up.](#)

4920

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

[Re: Adding a powdered cheese \(ie: parmesan\) to your sauce](#)

4921

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

[Re: Par baked/frozen skins](#)

4922

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

[Re: Par baked/frozen skins](#)

4923

John;

That was John Crow, President of Lloyd Pans. Pizza Paul (Paul Nyland) passed away about four years ago.

Tom Lehmann/The Dough Doctor

[Re: dough mixing and biochemical gluten development](#)

4924

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>

[Re: Need advice on how to make it easier for people to make pizzas](#)

4925

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

[Re: What does gluten development look like?](#)

4926

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

[Re: dough mixing and biochemical gluten development](#)

4927

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

[Re: SO, how big are your dough balls?](#)

4928

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

[Re: Pizza bottom sticking to the WFO floor - WTF?](#)

4929

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

[Re: Crust Color and Pre-Ferment](#)

4930

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

[Re: Last Little Bit of Elasticity](#)

4931

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

[Re: Crust Color and Pre-Ferment](#)

4932

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

[Re: New to dough and having same problem](#)

4933

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

[Re: I want dough with lots of air pockets.](#)

4934

John;

What year did you attend my pizza class?

Tom Lehmann/The Dough Doctor

[Re: dough mixing and biochemical gluten development](#)

4935

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

[Re: Dockers.. Plastic vs. Metal pins.. any good plastic ones recommended for docking in the pan?](#)

4936

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

[Re: Cold fermentation](#)

4937

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

[Re: dough mixing and biochemical gluten development](#)

4938

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

[Re: I want dough with lots of air pockets.](#)

4939

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

[Re: Par baked/frozen skins](#)

4940

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

[Re: Does oil affect gluten development](#)

Chris;

It isn't that your starter was contaminated 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

[Re: Do i have to wash my starter?](#)

4942

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

[Re: How Elevation Affects Baking Performance](#)

4943

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

[Re: Shakey's nutrition, a clue?](#)

4944

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 then 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.

[Re: How Elevation Affects Baking Performance](#)

4945

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 too 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

[Re: Question on preferment](#)

4946

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 anything 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.

[Re: How Elevation Affects Baking Performance](#)

4947

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



[Re: Question on preferment](#)

4948

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

[Re: Doughpro PP1818 pizza press](#)

4949

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

[Re: Opinions on canned tomato products](#)

4950

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

[Re: Trying to get crust crispy++](#)

4951

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

[Re: Question on preferment](#)

4952

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

[Re: Opening a new store, recommendations ref ovens](#)

4953

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 anyplace 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

[Re: Question on preferment](#)

4954

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

[Re: Is my NY Style dough formula ok ?](#)

4955

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

[Re: Par baked/frozen skins](#)

4956

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

[Re: Par baked/frozen skins](#)

4957

Carl;

In Mexico we used to call it Madre de le 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

[Re: Old dough in new?](#)

4958

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

[Re: Is my NY Style dough formula ok ?](#)

4959

You say "freezer" but do you mean refrigerator/cooler/retarder?

Tom Lehmann/The Dough Doctor

[Re: Is my NY Style dough formula ok ?](#)

4960

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

[Re: Par baked/frozen skins](#)

4961

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

[Re: Is my NY Style dough formula ok ?](#)

4962

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

[Re: All Trumps gluten development at home can't be done?](#)

4963

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 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

[Re: All Trumps gluten development at home can't be done?](#)

4964

Butter flavored Crisco.

Tom Lehmann/The Dough Doctor

[Re: Papa Murphy's-esque butter flavored oil for bottom of pan pizza?](#)

4965

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

[Re: Chimney Sweep? How often?](#)

4966

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

[Re: Pizza too soft after baking, hand stretch issue.](#)

4967

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

[Re: Thin crust pizza dough for dough press](#)

4968

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 Store 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

[Re: 5 Chefs on How They'd Doctor Up Frozen Pizza](#)

4969

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

[Re: Thin crust pizza dough for dough press](#)

4970

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

[Re: Thin crust pizza dough for dough press](#)

4971

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

[Re: Pizza dough fermentation](#)

4972

A number 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

[Re: Mobile Business Growing](#)

4973

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).

[Re: Thin crust pizza dough for dough press](#)

4974

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

[Re: Thin crust pizza dough for dough press](#)

4975

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

[Re: Spiral Mixer - Mecnosud 44kg 240v single phase review](#)

4976

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

[Re: Spiral Mixer - Mecnosud 44kg 240v single phase review](#)

4977

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

[Re: Is this steel usable?](#)

4978

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

[Re: my dough ball skin is dry, please help.](#)

4979

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

[Re: Brick oven vs NY style pizza Doughs](#)

4980

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

[Re: Pizza themed bric-a-brac and knickknacks](#)

4981

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

[Re: Dough Handling](#)

4982

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

[Re: Brick oven vs NY style pizza Doughs](#)

4983

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-balling 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

[Re: Autolysis through fridge and Ph](#)

4984

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 (Boyles 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

[Re: Temperature and humidity](#)

4985

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

[Re: Temperature and humidity](#)

4986

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

[Re: My 48 hour emergency dough is flavorless, WTH?](#)

4987

Are you saying that the dough is too elastic and difficult to stretch?

Tom Lehmann/The Dough Doctor

[Re: Autolysis through fridge and Ph](#)

4988

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

[Re: Dough Handling](#)

4989

Harry;

Humidity has little to no impact at the commercial level, neither does temperature as long as 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

[Re: Temperature and humidity](#)

4990

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

[Re: my dough ball skin is dry , please help.](#)

4991

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

[Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)

4992

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

[Re: Breakfast Calzone](#)

4993

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

[Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)

4994

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

[Re: Breakfast Calzone](#)

4995

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 we 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

[Re: Ideal Flour Protein Content and Favorite Flours](#)

4996

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, whereas 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

[Re: Wet and dry Gluten](#)

4997

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

[Re: Temperature and humidity](#)

4998

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

[Re: Ideal Flour Protein Content and Favorite Flours](#)

4999

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

[Re: Why not cook sauce? Isn't it already cooked before being canned?](#)

5000

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

[Re: Why not cook sauce? Isn't it already cooked before being canned?](#)

5001

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

[Re: I need some help from you all Pizza lovers](#)

5002

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

[Re: Deep Dish](#)

5003

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

[Re: Pizza dough fermentation](#)

5004

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

[Re: Oil application](#)

5005

N.S.P.;

Not a problem, glad to help.

Tom Lehmann/The Dough Doctor

[Re: How do you experts recommend seasoning an aluminum sicilian pan?](#)

5006

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

[Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)

5007

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, whichever 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

[Re: How do you experts recommend seasoning an aluminum sicilian pan?](#)

5008

M.R.;

I'm with you brother! :)

Tom Lehmann/The Dough Doctor

[Re: My Pizza Sauce](#)

5009

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

[Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)

5010



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

[Re: How do you experts recommend seasoning an aluminum sicilian pan?](#)

5011

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

[Re: bus tub dough?](#)

5012

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

[Re: Weak Gluten Development?](#)

5013

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

[Re: Dense pizza dough- need help! How to make lighter and more airy pizza?](#)

5014

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 Brabrender 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

[Re: Hydration Basics](#)

5015

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

[Re: I need some help from you all Pizza lovers](#)

5016

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

[Re: Deep Dish](#)

5017

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

[Re: How do I get a soft crust?](#)

5018

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

[Re: Deep Dish](#)

5019

Lloyd Pans <[www.lloydpan.com](http://www.lloydpan.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@lloydpan.com](mailto:ptiffany@lloydpan.com).

Tom Lehmann/The Dough Doctor

[Re: Reheating precooked chicken cutlets and wings](#)

5020

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

[Re: How do I get a soft crust?](#)

5021

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

[Re: Hard to close dough ball after bulk CF?](#)

5022

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

[Re: To mechanical mix or not??](#)

5023

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

[Re: Re: Bo Pizza](#)

5024

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

[Re: Re: Bo Pizza](#)

5025

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

[Re: why my pie looks more a bread than a pizza?](#)

5026

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

[Re: Re: Bo Pizza](#)

5027

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, whichever 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 "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

[Re: Evolution of the NY Style Pizza \(Split Topic\)](#)

5028

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

[Re: Re: Bo Pizza](#)

5029

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 where as 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

[Re: why my pie looks more a bread than a pizza?](#)

5030

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

[Re: Re: Bo Pizza](#)

5031

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

[Re: Troubleshooting Help](#)

5032

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

[Re: why my pie looks more a bread than a pizza?](#)

5033

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

[Re: Re: Bo Pizza](#)

5034

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

[Re: why my pie looks more a bread than a pizza?](#)

5035

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 a 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

[Re: Re: Bo Pizza](#)

5036

Norma;



Yes, that's correct.

Tom Lehmann/The Dough Doctor

[Re: Bromated flour and extended fermentation](#)

5037

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 an 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's 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

[Re: Re: Bo Pizza](#)

5038

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

[Re: why my pie looks more a bread than a pizza?](#)

5039

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

[Re: Bromated flour and extended fermentation](#)

5040

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

5041

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

[Re: Re: Bo Pizza](#)

5042

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

[Re: why my pie looks more a bread than a pizza?](#)

5043

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

[Re: Latest pizzas and... Chewing gum](#)

5044

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 that 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

[Re: Bromated flour and extended fermentation](#)

5045

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5046

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5047

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  $A_w$  tend to exhibit better yeast survival than like doughs with a higher water activity  $A_w$ . 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  $A_w$  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  $A_w$  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 CO2 fire extinguisher, to blow the CO2 snow into the dough while its mixing. It is interesting to not that for whatever reason we were never able to reduce the dough temperature using CO2 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 (CO2 is expensive as a processing tool).

Tom Lehmann/The Dough Doctor

[Re: Tom Lehmann's Dough Management Procedure](#)

5048

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

[Re: Meat or seafood toppings question](#)

5049

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5050

While I'm a real seafood pizza lover I try to avoid shrimp on my pizzas because it's too easy to get them over cooked 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 compliments 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

[Re: Meat or seafood toppings question](#)

5051

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 mixes, 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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5052

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

[Re: Surprise fail](#)

5053

Peter;

No, salt isn't an antioxidant. Due to 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

[Re: Tom Lehmann's Dough Management Procedure](#)

5054

A large, heavy duty rolling pin works well.

Tom Lehmann/The Dough Doctor

[Re: Affordable Manual Dough Sheeter?](#)

5055

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5056

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

[Re: Anyone do a whole milk mozz/provolone blend?](#)

5057

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5058

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

5059

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

[Re: Quick dough question from a complete newbie](#)

5060

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

[Re: Pizza ovens](#)

5061

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

[Re: Tom Lehmann's Dough Management Procedure](#)

5062

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

[Re: Quick dough question from a complete newbie](#)

5063

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

[Re: Need help choosing KA mixer...](#)

5064

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

[Re: Pre stretching pizza dough](#)

5065

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

[Re: Cricket Flour Dough for Pizza](#)

5066

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

[Re: Pizza Pans](#)

5067

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 observed, 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

[Re: help please](#)

5068

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

[Re: Pre stretching pizza dough](#)

5069

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

[Re: Pizza Pans](#)

5070

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 your finished dough temperature should be.

Tom Lehmann/The Dough Doctor

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

5071

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

[Re: 10 minute mix in a KA, dough ready for balling?](#)

5072

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

[Re: Dough gets dry crusty layer on outside](#)

5073

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

[Re: 10 minute mix in a KA, dough ready for balling?](#)

5074

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

[Re: Adding basil before mozzarella](#)

5075

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

5076

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

[Re: Convection baking - good or bad?](#)

5077

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

[Re: Pizza Pans](#)

5078

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)

5079

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)  
5080

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)  
5081

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

[Re: Dough ball, how to end up with proofed nice, non flattened, dough ball](#)  
5082

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

[Re: 10 minute mix in a KA, dough ready for balling?](#)  
5083

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5084

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

[Re: Pizza Pans](#)

5085

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

[Re: Why not cook sauce? Isn't it already cooked before being canned?](#)

5086

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 Hunts 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

[Re: Why not cook sauce? Isn't it already cooked before being canned?](#)

5087

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

[Re: Pizza Pans](#)

5088

Norma;

Are you putting oil in the pans when you bake the pizzas too?

Tom Lehmann/The Dough Doctor

[Re: Pizza Pans](#)

5089

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

[Re: Why not cook sauce? Isn't it already cooked before being canned?](#)

5090

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

[Re: Detroit Style in Wood Fired Oven](#)

5091

Heijko;

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5092

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5093

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

[Re: Mozzarella browning in WFO](#)

5094

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

[Re: crust rising too much in the oven problems](#)

5095

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

[Re: help please](#)

5096

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

[Re: Bread sticks](#)

5097

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

[Re: hi, I am a mother of a 9 year old.](#)

5098

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

[Re: help please](#)

5099

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

[Re: help please](#)

5100

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 withheld 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 peace 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

[Re: Catch a contractor](#)

5101

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

[Re: Mixer for Neo-Neapolitan?](#)

5102

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

[Re: GFS Store vs Restaurant Depot vs Clubs vs Sysco/US Foods](#)

5103

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

[Re: Making a Bigger Pizza](#)

5104

Do you clean your pizza stone?

Tom Lehmann/The Dough doctor

[Re: Making a Bigger Pizza](#)

5105

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

[Re: Hard to close dough ball after bulk CF?](#)

5106

How about an 18" stone for your oven?

[Re: Making a Bigger Pizza](#)

5107

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

[Re: Hard to close dough ball after bulk CF?](#)

5108

Are you trying to make a pizza using a par-baked crust?

Tom Lehmann/The Dough Doctor

[Re: New Member wants to fix chewy dough](#)

5109

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 more protein content. If you can't find a flour with 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

[Re: Dough stretches too much \(can't pick it up\)](#)

5110

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

[Re: Wooden peels commonly used for neapolitan pizza](#)

5111

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 and 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

[Re: Dough stretches too much \(can't pick it up\)](#)

5112

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

[Re: help please](#)

5113

Yep, that's the one we're looking for.

Tom Lehmann/The Dough Doctor

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5114

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5115

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

[Re: Neapolitan Dough with oil and some sugar](#)

5116

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5117

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

[Re: Beginner recipe for hand kneaded, home oven pizza?](#)

5118

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

[Re: help please](#)

5119

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

[Re: help please](#)

5120

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

[Re: help please](#)

5121

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

[Re: help please](#)

5122

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

[Re: Dough timing commercial enviroment](#)

5123

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

[Re: Help figuring out if I undermixed my dough](#)

5124

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

[Re: Tips for preventing the pizza to become too sour](#)

5125

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>

[Re: Arabic/Lebanese bread as base for pizza?](#)

5126

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 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

[Re: How Pizza Works](#)

5127

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

[Re: Tips for preventing the pizza to become too sour](#)

5128

That pizza looks awfully good to me!!! :)

Tom Lehmann/The Dough Doctor

[Re: My dough mixing process](#)

5129

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

[Re: Pizza Pans](#)

5130

Do you have a restaurant supply store near you?

Tom Lehmann/The Dough Doctor

[Re: Pizza Pans](#)

5131

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

[Re: Humidity in wine cooler used for dough...?](#)

5132

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

[Re: Tips for preventing the pizza to become too sour](#)

5133

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

[Re: Grimaldi's Clone Recipe - Can We Figure It Out?](#)

5134

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

[Re: Humidity in wine cooler used for dough...?](#)

5135

Peter;

How are you able to dig that stuff out so easily??? You're the man!

Thanks,

Tom Lehmann/The Dough Doctor

[Re: NY Water](#)

5136

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

[Re: NY Water](#)

5137

You bet!!!

Tom Lehmann/The Dough Doctor

[Re: Electric Pizza Ovens?](#)

5138

Ditto.

Tom Lehmann/The Dough Doctor

[Re: Multiple pies - keep warm?](#)

5139

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

[Re: My dough mixing process](#)

5140

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

[Re: Electric Pizza Ovens?](#)

5141

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

[Re: My dough mixing process](#)

5142

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 spritzing 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

[Re: Off topic equipment question](#)

5143

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

[Re: Source for cutter pan](#)

5144

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

[Re: Arabic/Lebanese bread as base for pizza?](#)

5145

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

[Re: Tips for preventing the pizza to become too sour](#)

5146

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

[Re: Il Fornino Ovens](#)

5147

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

[Re: reducing carbs](#)

5148

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

[Re: Tips for preventing the pizza to become too sour](#)

5149

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 too slow for "pizzeria" use if you are going to be doing any kind of volume.

Tom Lehmann/The Dough Doctor

[Re: Electric Pizza Ovens?](#)



5150

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

[Re: reducing carbs](#)

5151

Peter;

That's the one.

Your help is appreciated.

Tom Lehmann/The Dough Doctor

[Re: Dough timing commercial enviroment](#)

5152

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

[Re: Marino's pizza](#)

5153

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

[Re: Dough not coming out smooth after kneading](#)

5154

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 pizzeria chains too.

Tom Lehmann/The Dough Doctor

[Re: Dough timing commercial enviroment](#)

5155

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

[Re: Tips for preventing the pizza to become too sour](#)

5156

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

[Re: Pizza Pans](#)

5157

What kind of pizzas are you planning to make and what kind of production capacity are you looking at?

Tom Lehmann/The Dough Doctor

[Re: Electric Pizza Ovens?](#)

5158

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

[Re: Tips for preventing the pizza to become too sour](#)

5159

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

[Re: A few newbie questions \(crust problems + taste\)](#)

5160

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

[Re: My dough mixing process](#)

5161

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

[Re: Dough not coming out smooth after kneading](#)

5162

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

[Re: reducing carbs](#)

5163

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

[Re: Dough not coming out smooth after kneading](#)

5164

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 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

[Re: Tips for preventing the pizza to become too sour](#)

5165

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

[Re: Dough not coming out smooth after kneading](#)

5166

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

[Re: The art of pizzadough](#)

5167

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

[Re: reducing carbs](#)

5168

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

[Re: Deck oven teamperature](#)

5169

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

[Re: The Perfect Garlic Butter recipe](#)

5170

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

[Re: Marino's pizza](#)

5171

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

[Re: Tips for preventing the pizza to become too sour](#)

5172

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

[Re: Pizza Pans](#)

5173

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

[Re: The Perfect Garlic Butter recipe](#)

5174

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

[Re: The Perfect Garlic Butter recipe](#)

5175

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

[Re: Should I adjust yeast content?](#)

5176

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

[Re: The Perfect Garlic Butter recipe](#)

5177

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 is 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

[Re: Should I adjust yeast content?](#)

5178

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

[Re: Deck oven temperature](#)

5179

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, BE SURE 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

[Re: Pizza Pans](#)

5180

Lupin;

Are you making a Detroit style pizza?

If so, what color is your pan?

Tom Lehmann/The Dough Doctor

[Re: Deck oven temperature](#)

5181

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

[Re: Pizza Pans](#)

5182

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

[Re: garlic bread dough formula](#)

5183

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

[Re: Thoughts on Recent Pie?](#)

5184

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

[Re: Pizza Pans](#)

5185

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

[Re: Pizza Pans](#)



5186

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

[Re: Pizza Pans](#)

5187

What a buy!!!!

Tom Lehmann/The Dough Doctor

[Re: Pizza Pans](#)

5188

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

[Re: SF Liguria Bakery - Focaccia at 800 degrees?](#)

5189

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

[Re: Room temp vs dough temp](#)

5190

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

[Re: Firewood Jackpot](#)

5191

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

[Re: Leoparding, acrylamide, cancer](#)

5192

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

[Re: Just purchased a sheeter](#)

5193

Norma;

Now you're ready to begin making cracker type crusts.

Tom Lehmann/The Dough Doctor

[Re: Just purchased a sheeter](#)

5194

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

[Re: Sick of the Chains](#)

5195

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

[Re: Freshly Picked Apricots](#)

5196

Heijko;

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5197

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

[Re: Beginner recipe for hand kneaded, home oven pizza?](#)

5198

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

[Re: Anodized aluminum pans](#)

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

[Re: Whole grain flour adjustments](#)

5200

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

[Re: Electric deck oven temperatures](#)

5201

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

[Re: Electric deck oven temperatures](#)

5202

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5203

What kind of deck does the oven have?

Tom Lehmann/The Dough Doctor

[Re: Electric deck oven temperatures](#)

5204

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

[Re: 10 minute mix in a KA, dough ready for balling?](#)

5205

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

[Re: Heikjo's first attempt at NY style Lehmann \(12" on stone\)](#)

5206

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

[Re: Bloomberg Video: Pizza Making Robots Are Coming for Domino's](#)

5207

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

[Re: Garden 2016.](#)

5208

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

[Re: Can someone help me please?](#)

5209

Can you share your dough formula/recipe and dough making procedure?

Tom Lehmann/The Dough Doctor

[Re: Can someone help me please?](#)

5210

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

[Re: Why am I burning my pizza bottom?](#)

5211

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

[Re: Anyone tried deep frying a neo?](#)

5212

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

[Re: Bloomberg Video: Pizza Making Robots Are Coming for Domino's](#)

5213

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 nee 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

[Re: Dough ball storage in pizzeria](#)

5214

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

[Re: Low protein levels a concern for Kansas wheat crop](#)

5215

Thanks Carl, I look forward to reading/seeing your results.

Tom Lehmann/The Dough Doctor

[Re: 10 minute mix in a KA, dough ready for balling?](#)

5216

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

[Re: New Opening - Location question](#)

5217

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

[Re: Low protein levels a concern for Kansas wheat crop](#)

5218

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

[Re: 10 minute mix in a KA, dough ready for balling?](#)

5219

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

[Re: New Opening - Location question](#)

5220

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

[Re: Dough ball storage in pizzeria](#)

5221

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

[Re: Bagging dough balls](#)

5222

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

[Re: Dough ball storage in pizzeria](#)

5223

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

[Re: Bagging dough balls](#)

5224

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

[Re: Getting away from Frozen Dough balls and gonna make it fresh?](#)

5225

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

[Re: Soap in my starter!!!](#)

5226

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

[Re: Dough ball storage in pizzeria](#)

5227

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

[Re: Dough ball storage in pizzeria](#)

5228

"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

[Re: Food Quotes](#)

5229

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

[Re: Getting away from Frozen Dough balls and gonna make it fresh?](#)

5230

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

[Re: ADY instead of IDY for Lehmann NY Style Pizza?](#)

5231

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

[Re: Tossing dough and hydration levles](#)

5232

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

[Re: knead dough and stand mixer problem please help](#)

5233

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

[Re: Wood issues.](#)

5234

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

[Re: Soap in my starter!!!](#)

5235

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

[Re: Bagging dough balls](#)

5236

I totally agree with Craig, he is "spot-on".

Tom Lehmann/The Dough Doctor

[Re: \\$5 for a dough ball at a local pizza shop?](#)

5237

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

[Re: Indoor wood fired oven](#)

5238

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

[Re: First they came for the...](#)

5239

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/portion 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

[Re: Stupid flour question](#)

5240

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

[Re: Instructions for making dough using formulations](#)

5241

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

[Re: Greetings from Venezuela](#)

5242

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 time 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

[Re: Garden 2016.](#)

5243



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

[Re: Unchopped basil](#)

5244

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.

[Re: Type 1 hood?](#)

5245

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

[Re: How to make this pizza? | What kind of pizza?](#)

5246

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

[Re: PZ-44](#)

5247

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

[Re: PZ-44](#)

5248

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

[Re: Help with my dough](#)

5249

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 day 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

[Re: How to make this pizza? | What kind of pizza?](#)

5250

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

[Re: How to make this pizza? | What kind of pizza?](#)

5251

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

[Re: Dough too moist \(Lehmann\)](#)

5252

For most pizza doughs made at home 70 to 75F is a good target finished dough temperature.

Tom Lehmann/The Dough Doctor

[Re: Help with my dough](#)

5253

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

[Re: How to make this pizza? | What kind of pizza?](#)

5254

What was the finished dough temperature (temperature of the dough immediately after mixing.

Tom Lehmann/The Dough Doctor

[Re: Help with my dough](#)

5255

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

[Re: Problem with my Hobart A-200](#)

5256

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

[Re: Sugar Reduction](#)

5257

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

[Re: Sliding Pizza](#)

5258

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

[Re: What is full fermentation?](#)

5259

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

[Re: Hobart VCM FINALLY put to good use...](#)

5260

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

[Re: Using Bread Flour](#)

5261

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

[Re: Hobart VCM FINALLY put to good use...](#)

5262

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, 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

[Re: Dough maturation depending on temperature.](#)

5263

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

[Re: wangji's NY pizza with Tom Lehmann's NY Pizza Recipe](#)

5264

How is he presently managing the frozen dough that he uses?

Tom Lehmann/The Dough Doctor

[Re: Hobart VCM FINALLY put to good use...](#)

5265

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  
[Re: The Perfect Garlic Butter recipe](#)  
5266

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  
[Re: How to get the perfect hydration level?](#)  
5267

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  
[Re: Mobile operators storing dough](#)  
5268

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

[Re: Less salt for cold fermentation](#)

5269

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

[Re: Serving Peel to Table](#)

5270

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

[Re: General Mills Gold Medal Flour Recall](#)

5271

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

[Re: Ice vs. no ice experience](#)

5272

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

[Re: The Perfect Garlic Butter recipe](#)

5273

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

[Re: Serving Peel to Table](#)

5274

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

[Re: Ice vs. no ice experience](#)

5275

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



[Re: Ice vs. no ice experience](#)

5276

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

[Re: General Mills Gold Medal Flour Recall](#)

5277

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

[Re: Pizza Hut removes additives BHA and BHT](#)

5278

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

[Re: General Mills Gold Medal Flour Recall](#)

5279

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

[Re: Pizza Hut removes additives BHA and BHT](#)

5280

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

[Re: Where to buy conveyor pizza oven in China?](#)

5281

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

[Re: Best type of flour for NY style Pizzas?](#)

5282

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

[Re: Sauce](#)

5283

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

[Re: Best Stand Mixer Under \\$1K \(Whole Wheat Dough\)](#)

5284

How are you feeding it and how often?

Tom Lehmann/The Dough Doctor

[Re: Fed starter but no dough rise?](#)

5285

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?

[Re: Caputo gluten content](#)

5286

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 thing 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

[Re: Canned tomato common manufacturing?](#)

5287

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

[Re: Full Red Pizza Sauce](#)

5288

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

[Re: Whats the pizza's top and bottom when its a ball and is that a rule?](#)

5289

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

[Re: Whats the pizza's top and bottom when its a ball and is that a rule?](#)

5290

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

[Re: Wooden peels commonly used for neapolitan pizza](#)

5291

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

[Re: How to make stromboli/calzone?](#)

5292

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

[Re: Dough storage](#)

5293

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

[Re: Clams?](#)

5294

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

[Re: Pizza crust](#)

5295

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

[Re: Tom lehmann NY dough question?? help](#)

5296

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

[Re: Tom lehmann NY dough question?? help](#)

5297



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 that 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

Tom Lehmann/The Dough Doctor

[Re: Freezing scratch dough balls - process and flavor question](#)

5298

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

[Re: Freezing scratch dough balls - process and flavor question](#)

5299

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

[Re: Freezing scratch dough balls - process and flavor question](#)

5300

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

[Re: Dough Management](#)

5301

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

[Re: Where to buy conveyor pizza oven in China?](#)

5302

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

[Re: The secret to perfect pizza dough \(according to a certified pizzaiolo\)](#)

5303

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

[Re: starter + 00 flour, water, and salt = worst pizza I've ever made?](#)

5304

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

[Re: Hydration, how high is too high?](#)

5305

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

[Re: Our new pizza box, with anti soggy/sticking technology haha](#)

5306

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

[Re: Frozen Dough Balls](#)

5307

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

[Re: Frozen Dough Balls](#)

5308

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

[Re: Anyone know of High Protein Bread Flour with 14 per cent protein](#)

5309

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

[Re: Frozen Dough Balls](#)

5310

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

[Re: How to make stromboli/calzone?](#)

5311

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

[Re: Pizza hut regular pizza dough not pan pizza recipe.](#)

5312

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

[Re: Pizza hut regular pizza dough not pan pizza recipe.](#)

5313

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

[Re: Pizza hut regular pizza dough not pan pizza recipe.](#)

5314

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

[Re: Blisters](#)

5315

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

[Re: Whats the pizza's top and bottom when its a ball and is that a rule?](#)

5316

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

[Re: Blisters](#)

5317

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

[Re: Blisters](#)

5318

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

[Re: What affects hydration rates of flour?](#)

5319

To which P.H. crust are you referring to?

Tom Lehmann/The Dough Doctor

[Re: Crunchy Pizza Hut Crust](#)

5320

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-balling, 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

[Re: What affects hydration rates of flour?](#)

5321

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

[Re: Staging Topped pizzas for service](#)

5322

Absolutely right, there has been a lot of discussion on that holding method too.

Tom Lehmann/The Dough Doctor

[Re: Dough Trays](#)

5323

"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

[Re: Staging Topped pizzas for service](#)

5324

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

[Re: Dough Trays](#)

5325

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

[Re: where to get deep dish pizza pans in Germany or Austria?](#)

5326

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

[Re: Staging Topped pizzas for service](#)

5327

A lot of it might be where the dough was made (geographic location). For example where you had the lesson, if 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 in 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  
[Re: More crust than I bargained for](#)  
5328

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  
[Re: Crunchy / tough crust](#)  
5329

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  
[Re: Crunchy / tough crust](#)  
5330

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  
[Re: where to get deep dish pizza pans in Germany or Austria?](#)  
5331

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  
[Re: 00 Flour - I'm confused](#)  
5332

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 use 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

[Re: Recipe reads "cornmeal" - does that mean the flour?](#)

5333

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

[Re: Calculation to predict the effect of diastatic malt on the falling number?](#)

5334

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

[Re: Adding water to sauce mix](#)

5335

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

[Re: Il Fornino Ovens](#)

5336

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

[Re: How long leave in fridge](#)

5337

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

[Re: Moldy base?](#)

5338

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

[Re: Whole wheat](#)

5339

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

[Re: Overhauling a Hobart Mixer](#)

5340

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

[Re: Whole wheat](#)

5341

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

[Re: Changing type flour](#)

5342

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

[Re: Changing type flour](#)

5343

Thank you Craig.

I appreciate your digging that out.

Tom Lehmann/The Dough Doctor

[Re: Whole wheat](#)

5344

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

[Re: Whole wheat](#)

5345

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

[Re: Pizza Box vs Sheet Pans](#)

5346

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

[Re: Cheese "breaking"?](#)

5347

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

[Re: How long leave in fridge](#)

5348

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

[Re: All Trumps gluten development at home can't be done?](#)

5349

Normally an hour of rest after re-balling 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-balling 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

[Re: Minimum time for reballing?](#)

5350

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

[Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)

5351

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

[Re: All Trumps gluten development at home can't be done?](#)

5352

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

[Re: How long leave in fridge](#)

5353

I think you are over thinking your dough mixing. Just put the water in the mixing bowl first, then 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

[Re: All Trumps gluten development at home can't be done?](#)

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 palletted 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

[Re: Caputo 00 - Exposure to Humidity? What does a bag weigh?](#)

5355

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

[Re: Sprouted Spelt Flour Similar to Diastatic Malt?](#)

5356

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

[Re: All Trumps gluten delopment at home can't be done?](#)

5357

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

[Re: What exactly is a pizza pan separator and why would I need one?](#)

5358

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 anyplace 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 it's optimum before day five. It's all in the finished dough temperature.

Tom Lehmann/The Dough Doctor

[Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)

5359

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

[Re: What exactly is a pizza pan separator and why would I need one?](#)

5360

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

[Re: Making a fool proof pizza shop. How do I find good help?](#)

5361

Fermentation creates flavor and aroma in the finished crust, it is also responsibly to some extent for development of crispiness in the finished crust too. Try it, see what your customers thing about it.

Tom Lehmann/The Dough Dcotor

[Re: How long leave in fridge](#)

5362

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

[Re: All Trumps gluten development at home can't be done?](#)

5363

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

[Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)

5364

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

[Re: What exactly is a pizza pan separator and why would I need one?](#)

5365

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

[Re: All Trumps gluten development at home can't be done?](#)

5366

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

[Re: All Trumps gluten development at home can't be done?](#)

5367

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

[Re: What exactly is a pizza pan separator and why would I need one?](#)

5368

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

[Re: Hard to close dough ball after bulk CF?](#)

5369

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

[Re: Hard to close dough ball after bulk CF?](#)

5370

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

[Re: Thick dough](#)

5371

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

[Re: Carbs stink](#)

5372

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/deep-dish type of pizza.

Tom Lehmann/The Dough Doctor

[Re: Thick dough](#)

5373

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

[Re: Thick dough](#)

5374

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

[Re: 4day Cold Rise Question](#)

5375

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

[Re: Temperature for Reactivating a Culture](#)

5376

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

[Re: UK Pizza Flour.](#)

5377

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

[Re: UK Pizza Flour.](#)

5378

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

[Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)

5379

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 as "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

[Re: Hot kitchen, dough is too sticky, and rising too fast - help!](#)

5380

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-grams 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

[Re: Could you take a look at my dough/bake and give me some advices?](#)

5381

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

[Re: Could you take a look at my dough/bake and give me some advices?](#)

5382

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

[Re: How does dough strength factor into extended cold fermentation](#)

5383

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

[Re: Cold Proof to Freezer](#)

5384

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

[Re: How does dough strength factor into extended cold fermentation](#)

5385

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: There peels are identical to those sold at <mrpeel.com>

Tom Lehmann/The Dough Doctor

[Re: peels](#)

5386

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

[Re: How does oven temp and time affect the dough?](#)

5387

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

[Re: Extensibility tweak needed](#)

5388

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

[Re: How does oven temp and time affect the dough?](#)

5389

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

[Re: How does oven temp and time affect the dough?](#)

5390

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

[Re: Reviving a Sourdough Culture](#)

5391

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

[Re: Change in bread flour, why so different?](#)

5392

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

[Re: What makes dough very elastic?](#)

5393

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

[Re: Change in bread flour, why so different?](#)

5394

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 re-balling 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

[Re: What makes dough very elastic?](#)

5395

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

[Re: A question about dough formula and temperature range.](#)

5396

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 at <[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

[Re: how to store dough?](#)

5397

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

[Re: Papa John's, Dominos, and Pizza Hut make their dough in the morning](#)

5398

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

[Re: Serving Peel to Table](#)

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

[Re: The taste of the dough](#)

5400

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

[Re: First commercial operation in the world using soft durum for pizza](#)

5401

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

[Re: The taste of the dough](#)

5402

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

[Re: Is my understanding of this technique correct..or am I off?](#)

5403

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-balling 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

[Re: Is my understanding of this technique correct..or am I off?](#)

5404

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

[Re: Sicilian Pizza Pan Search - I have nearly given up - Can you help?](#)

5405

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

[Re: Selling Pizza](#)

5406

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

[Re: The taste of the dough](#)

5407

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

[Re: What to do about burning flour on the stone when making multiple pizzas.](#)

5408

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 led 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>). 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

[Re: First commercial operation in the world using soft durum for pizza](#)

5409

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

[Re: Question for store owners](#)

5410

You might also try <[www.mrpeel.com](http://www.mrpeel.com)>.

Tom Lehmann/The Dough Doctor

[Re: Where to buy Pizza Peel in Canada ?](#)

5411

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

[Re: Sicilian Pizza Pan Search - I have nearly given up - Can you help?](#)

5412

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

[Re: Fast Casual - Only 2 dough options?](#)

5413

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

[Re: Chicago deep dish dough gum line](#)

5414

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

[Re: Brie ideas?](#)

5415

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

[Re: Chicago deep dish dough gum line](#)

5416

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

[Re: Help preparing many pies in advance](#)

5417

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

[Re: Pizza Box vs Sheet Pans](#)

5418

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

[Re: Brie ideas?](#)

5419

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

[Re: Chicago deep dish dough gum line](#)

5420

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

[Re: Chicago Metallic deep dish pizza pans](#)

5421

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

[Re: inserts](#)

5422

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

[Re: first pizza failure, 2nd try same day eh hh u tell me](#)

5423

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

[Re: Help With Pizza Oven](#)

5424

Since the cost of gas varies across the country the easiest thing to do is to contact you local utility company and ask them what the cost is to operate a gas kitchen range is.

Tom Lehmann/The Dough Doctor

[Re: Costs to operate a typical home Gas oven](#)

5425

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

[Re: so the dough is made now what?](#)

5426

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

[Re: Blaze Pizza](#)

5427

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

[Re: so the dough is made now what?](#)

5428

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 kneed for about 5-minutes and you'll be good to go.

Tom Lehmann/The Dough Doctor

[Re: Warm rise dough going now](#)

5429

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

[Re: Dough is Too Elastic](#)

5430

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

[Re: Where were you in 1976?](#)

5431

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

[Re: pizza box](#)

5432

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

[Re: Gray/White Storage Spots on Pepperoni](#)

5433

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

[Re: How is my recipe??](#)

5434

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

[Re: How pizza IS NOT a junk food on Dr. Oz tomorrow](#)

5435

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

[Re: On Mixing](#)

5436

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

[Re: Cracker crusts with higher oil percentage](#)

5437

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 quality 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

[Re: Best electric oven for 900ï½ bakes in the US?](#)

5438

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

[Re: Trying to get the taste of 4-5 day dough into a 3 day cold ferment](#)

5439

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

[Re: How pizza IS NOT a junk food on Dr. Oz tomorrow](#)

5440

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

[Re: How pizza IS NOT a junk food on Dr. Oz tomorrow](#)

5441

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

[Re: How is my recipe??](#)

5442

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

[Re: How is my recipe??](#)

5443

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

[Re: On Mixing](#)

5444

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

[Re: Leathery!](#)

5445

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

[Re: Leathery!](#)

5446

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

[Re: So, rancid is a bad thing?](#)

5447

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

[Re: On Mixing](#)

5448

Roy;

The two main things responsible for forgetting 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

[Re: On Mixing](#)

5449

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

[Re: Pizza nirvana; trying to get closer to the crust at Sam's](#)

5450

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 Louis 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

[Re: no-yeast cold fermentation, possible?](#)

5451

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

[Re: Correct Use of Plastic Bags For Fermenting](#)

5452

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

[Re: Serving Peel to Table](#)

5453

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

[Re: Correct Use of Plastic Bags For Fermenting](#)

5454

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

[Re: help with "cure baking" steel pans please](#)

5455

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

[Re: no-yeast cold fermentation, possible?](#)

5456

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

[Re: Bottle fridge for proofing dough advice](#)

5457

What temperature is the fridge operating at? A good cold ferment environment is

between 36 and 40F.

Tom Lehmann/The Dough Doctor

[Re: Bottle fridge for proofing dough advice](#)

5458

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

[Re: Correct Use of Plastic Bags For Fermenting](#)

5459

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

[Re: Pizza nirvana; trying to get closer to the crust at Sam's](#)

5460

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 it's 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

[Re: When cold-fermenting dough, is there a difference in tanginess between cy & IDY?](#)

5461

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

[Re: Help identifying pizza oven. Guess that oven...](#)

5462

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 at 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

[Re: Which 14 inch American Metalcraft deep pizza pan?](#)

5463

It should work just fine.

Tom Lehmann/The Dough Doctor

[Re: Which 14 inch American Metalcraft deep pizza pan?](#)

5464

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

[Re: When cold-fermenting dough, is there a difference in tanginess between cy & IDY?](#)

5465

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

[Re: Which 14 inch American Metalcraft deep pizza pan?](#)

5466

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

[Re: Importing Grande cheese?](#)

5467

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

[Re: So, rancid is a bad thing?](#)

5468

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>

Tom Lehmann/The Dough Doctor

[Re: Importing Grande cheese?](#)

5469

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

[Re: What scale to weigh ingredients on?](#)

5470

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

[Re: Any Rules of Thumb](#)

5471

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

[Re: Unsatisfying crumb](#)

5472

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

[Re: Too delicate hand kneaded dough with Caputo pizzeria flour](#)

5473

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

[Re: Screen Test](#)

5474

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

[Re: Unsatisfying crumb](#)

5475

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 pay your money and take your pick.

Tom Lehmann/The Dough Doctor

[Re: Which 14 inch American Metalcraft deep pizza pan?](#)

5476

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

[Re: Take and bake fail](#)

5477

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

[Re: How long?](#)

5478

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

[Re: Proofing dough](#)

5479

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> 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

[Re: Take and bake fail](#)

5480

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

[Re: How to achieve a better spring/sponge in the pizza](#)

5481

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

[Re: Which 14 inch American Metalcraft deep pizza pan?](#)

5482

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

[Re: Should I heat up my pan/oil?](#)

5483

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

[Re: Take and bake fail](#)



5484

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

[Re: DIY PIZZA TRAILER](#)

5485

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

[Re: Is this what Normally the dough looks like at day 3?](#)

5486

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

[Re: Help: Conveyor Belt Oven Not Working!](#)

5487

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

[Re: Pizza Restaurant Opening Soon, Need your opinion of my dough recipe and more!](#)

5488

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

[Re: How to achieve a better spring/sponge in the pizza](#)

5489

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

[Re: How to achieve a better spring/sponge in the pizza](#)

5490

Using a lower protein content flour or fermenting the dough more will reduce dough memory/snap-back.

Tom Lehmann/The Dough Doctor

[Re: Is this what Normally the dough looks like at day 3?](#)

5491

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

[Re: How can I avoid the overly puffy crust?](#)

5492

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

[Re: My process to cook my pizzas. I am not getting the expected results. Help.](#)

5493

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

[Re: Is this what Normally the dough looks like at day 3?](#)

5494

How are you managing your dough? Dough formulation and dough management are tied in together to a great extent.

Tom Lehmann/The Dough Doctor

[Re: Pizza Restaurant Opening Soon, Need your opinion of my dough recipe and more!](#)

5495

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

[Re: How to achieve a better spring/sponge in the pizza](#)

5496

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

[Re: Pizza on steel](#)

5497

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

[Re: Caputo Cup 2016](#)

5498

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

[Re: need to be pointed in the right direction](#)

5499

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

[Re: Dough is to sticky](#)

5500

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 "breadly" 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.

[Re: Low hydration, high hydration. How does it effect finished pizza](#)

5501

AWESOME!!!! :) :) :)

Congratulations Norma!!!

WAY TO GO!!!

Tom Lehmann/The Dough Doctor

[Re: NORMA WON FIRST PLACE FOR CAPUTO CUP IN NYC!!!](#)

5502

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

[Re: Flavor Enhancing Flours](#)

5503

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

[Re: Scale that doesn't eat batteries?](#)

5504

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

[Re: Dough is too sticky](#)

5505

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>

[Re: The best tin/can opener in the world is?](#)

5506

I carry a P-51, it's bigger and easier on the thumb. :)

Tom Lehmann/The Dough Doctor

[Re: The best tin/can opener in the world is?](#)

5507

The last paragraph in #3 should be noted as we have said many times 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

[Re: Fermentation: a science-based look suggests RT is better for flavor](#)

5508

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

[Re: The best tin/can opener in the world is?](#)

5509

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

[Re: Baker's percentage for the flours](#)

5510

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

[Re: HELP! My pizzas are coming out the oven with heavy gum lines](#)

5511

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

[Re: Baker's percentage for the flours](#)

5512

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

[Re: First time making focaccia](#)

5513

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

[Re: Baker's percentage for the flours](#)

5514

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 by the total flour weight (sum of all three flours) this will be your dough absorption.

Tom Lehmann/The Dough Doctor

[Re: Baker's percentage for the flours](#)

5515

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

[Re: calzone cook temp and time?](#)

5516

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

[Re: calzone cook temp and time?](#)

5517

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 filing weight.

Tom Lehmann/The Dough Doctor

[Re: calzone cook temp and time?](#)

5518

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

[Re: Improving the crust color?](#)

5519

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

[Re: Cold ferment duration](#)

5520

Lookin' good.

Tom Lehmann/The Dough Doctor

[Re: Pizza Pocket Dough Formula?](#)

5521

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

[Re: Dough Hydration](#)

5522

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 outside but still raw on the inside. 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

[Re: How to achieve more browning and softness in my pizza dough](#)

5523

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

[Re: How to achieve more browning and softness in my pizza dough](#)

5524

Bake at a higher temperature?

Tom Lehmann/The Dough Doctor

[Re: How to achieve more browning and softness in my pizza dough](#)

5525

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

[Re: Pizza Pocket Dough Formula?](#)

5526

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 not 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

[Re: I need a method to be able to make pan style pizzas straight from the cooler](#)  
5527

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

[Re: Pizza Pocket Dough Formula?](#)

5528

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

[Re: I need a method to be able to make pan style pizzas straight from the cooler](#)

5529

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

[Re: Minimum capital required to set up a pizzeria in Canada](#)

5530

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

[Re: Peeled tomatoes or pre made pizza sauce](#)

5531

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

[Re: A question about storing dough](#)

5532

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

[Re: Making pizza dough for my pizza shop, debugging](#)

5533

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

[Re: ice cold water to make dough](#)

5534

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 in 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

[Re: A question about storing dough](#)

5535

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

[Re: A question about storing dough](#)

5536

G.R.;

What?

You don't measure the temperature of each dough before you take it off the mixer?  
:)

Tom Lehmann/The Dough Doctor

[Re: ice cold water to make dough](#)

5537

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

[Re: Electric pizza oven](#)

5538

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

[Re: Electric pizza oven](#)

5539

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 it one or two reductions.

Tom Lehmann/The Dough Doctor

[Re: Flouring dough balls before rolling them out for pan style pizza's](#)

5540

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 one's 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

[Re: Dough Improver? Does it make a difference](#)

5541

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

[Re: Flouring dough balls before rolling them out for pan style pizza's](#)

5542

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

[Re: Having trouble stretching dough for Artichoke Basile's Margherita recipe.](#)

5543

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

[Re: Making pizza dough for my pizza shop, debugging](#)

5544

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

[Re: Baking temp and time for conveyer ovens](#)

5545

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

[Re: Pizza Pocket Dough Formula?](#)

5546

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

[Re: Crispy Chewy](#)

5547

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 everywhere 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. Guinness, 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

[Re: The type of water and oil used in dough mixing](#)

5548

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

[Re: The type of water and oil used in dough mixing](#)

5549

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

[Re: Dough Improver? Does it make a difference](#)

5550

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

[Re: Making pizza dough for my pizza shop, debugging](#)

5551

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

[Re: Baking temp and time for conveyer ovens](#)

5552

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

[Re: Making pizza dough for my pizza shop, debugging](#)

5553

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 (

[Re: Making pizza dough for my pizza shop, debugging](#)

5554

"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

[Re: Having trouble stretching dough for Artichoke Basile's Margherita recipe.](#)

5555

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

[Re: Pizza Pocket Dough Formula?](#)

5556

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

[Re: Commercial Proofer/Retarder Recommendation](#)

5557

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

[Re: What sort of oven is this I spotted it on Pinterest wood fire or gas or both?](#)  
5558

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

[Re: Commercial Proofer/Retarder Recommendation](#)  
5559

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

[Re: Need Instruction and Help](#)

5560

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

[Re: Deck oven baking](#)

5561

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

[Re: Is polished concrete a suitable surface for opening dough?](#)

5562

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

[Re: Deck oven baking](#)

5563

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

[Re: Beer Pies \(pies that make you want to drink beer - a.k.a. bar pies revisited\)](#)

5564

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

[Re: Mobile Pizzeria](#)

5565

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 on 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

[Re: Pizza Dough in the danger zone.](#)

5566

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 hydrolize 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

[Re: A little extra time..no problem?](#)

5567

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 all 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 it 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

[Re: Pizza Dough in the danger zone.](#)

5568

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

[Re: Hobart Cutter Mixer and Good Recipes](#)

5569

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

[Re: Storing already panned dough](#)

5570

If you will e-mail me directly at <thedoughdoctor@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

[Re: Hobart Cutter Mixer and Good Recipes](#)

5571

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 notice 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

[Re: Hobart Cutter Mixer and Good Recipes](#)

5572

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

[Re: dough additive](#)

5573

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

[Re: How do I make my pizza dough crust lighter/whiter without sacrificing sweetness?](#)

5574

It sounds as if your dough management may not be 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

[Re: Storing already panned dough](#)

5575

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

[Re: How do I make my pizza dough crust lighter/whiter without sacrificing sweetness?](#)

5576

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

[Re: Pans Ruined in Dishwasher - You'd think I'd Know Better](#)

5577

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

[Re: Home Run Inn frozen pizza?](#)

5578

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

[Re: Pans Ruined in Dishwasher - You'd think I'd Know Better](#)

5579

Trinity;

Those Totino's crusts, like the Jeni's crusts are submersion fried. Pillsbury (Totino's) and Jeni'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 Jeni Palucci (not sure



about the spelling) sold out to Pillsbury a number of years ago.

Tom Lehmann/The Dough Doctor

[Re: Home Run Inn frozen pizza?](#)

5580

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

[Re: Pans Ruined in Dishwasher - You'd think I'd Know Better](#)

5581

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

[Re: Explanation of MegaRims?](#)

5582

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 bough 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

[Re: Home Run Inn frozen pizza?](#)

5583

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

[Re: PIZZA FLOUR BLENDS??](#)

5584

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  $7.5 + 8.25 = 15.5$  pounds of water will need to be added to make your multi-grain dough (15.5 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

[Re: PIZZA FLOUR BLENDS??](#)

5585

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

[Re: Wooden Peel care](#)

5586

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> or contact Paul Tiffany at Lloyd Pans <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

[Re: LEOPARD SPOTTING CHAR WITH CONVEYOR OVEN?](#)

5587

They don't get any better!

Tom Lehmann/The Dough Doctor

[Re: Pease Porridge Hot, Pease Porridge Cold...](#)

5588

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

[Re: How to get deep dish out of pan](#)

5589

That's the best part, we get to eat our mistakes!

Tom Lehmann/The Dough Doctor

[Re: Pease Porridge Hot, Pease Porridge Cold...](#)

5590

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

[Re: Cooling the dough](#)

5591

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

[Re: Pease Porridge Hot, Pease Porridge Cold...](#)

5592

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

[Re: Another Green Egg guy with a dough problem](#)

5593

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

[Re: Another Green Egg guy with a dough problem](#)

5594

TDO;

Increasing the dough absorption by roughly 5% and allowing more time between re-balling 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

[Re: The secret of big bubbles in a crust.](#)

5595

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

[Re: Flat dough balls - too extensible](#)

5596

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 X 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

[Re: I need help with MATH to correct a dough formula](#)

5597

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 X 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

[Re: I need help with MATH to correct a dough formula](#)

5598

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

[Re: Stevia in the dough?](#)

5599

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  
[Re: Deep Dish Dough in Slow Cooker](#)  
5600

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  
[Re: Flour](#)  
5601

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  
[Re: Flour](#)  
5602

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  
[Re: Airy, puffy rim](#)  
5603

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

[Re: Deep Dish Dough in Slow Cooker](#)

5604

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 soggy issue, unless of course the soggy issue 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

[Re: Amazed by this pizza crust:](#)

5605

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

[Re: dough mixer good or bad quality?](#)

5606

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

[Re: First time Electric proofer buying. Help!](#)

5607

That is a "sweet" oven! The dough formula I provided should work well in the oven.

Tom Lehmann/The Dough Doctor

[Re: Dough](#)

5608

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

[Re: First time Electric proofer buying. Help!](#)

5609

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

[Re: Dough](#)

5610

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

[Re: Flour](#)

5611

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

[Re: Sue's Pizza Dough](#)

5612

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

[Re: Sue's Pizza Dough](#)

5613

Not really, there might be miniscule 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

[Re: Flour](#)

5614

JPB;

I normally consider them as part of the mixing process as they do aide in gluten development.

Tom Lehmann/The Dough Doctor

[Re: Bench rest too long !!](#)

5615

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

[Re: Bench rest too long !!](#)

5616

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

[Re: Bench rest too long !!](#)

5617

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

[Re: Is there anything wrong with this mixing and resting procedure](#)

5618

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

[Re: Bench rest too long !!](#)

5619

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

[Re: I need a good dough recipe ASAP!!!!](#)

5620

That reach in looks pretty tight with those dough boxes which probably makes off-setting 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

[Re: Consistency problems](#)

5621

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

[Re: Please help](#)

5622

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

[Re: Consistency problems](#)

5623

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

[Re: Consistency problems](#)

5624

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

[Re: Barometric Pressure HELP -- What's my boiling point?](#)

5625

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 hydrolizes 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

[Re: Barometric Pressure HELP -- What's my boiling point?](#)

5626

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

[Re: Help in the Hot and Humid days!](#)

5627

Carl;

No, it's not the same as re-balling the dough piece. By re-balling 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

[Re: Bench rest too long !!](#)

5628

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

[Re: Bench rest too long !!](#)

5629

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

[Re: Help in the Hot and Humid days!](#)

5630

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

[Re: Help in the Hot and Humid days!](#)

5631

Pizza Boy;

I concur with Got Rocks. I like to go for consistency whenever I can.

Tom Lehmann/The Dough Doctor

[Re: When making 4 dough balls.](#)

5632

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

[Re: Best way 2 prepare & slide pizza onto a pizza peel \( paddle \) ?](#)

5633

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

[Re: Blue Steel plus Lard](#)

5634

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

[Re: Lighter airier crust](#)

5635

If they are both the same weight they should perform similarly.

Tom Lehmann/The Dough Doctor

[Re: Steel vs Aluminium \(Aluminum\)](#)

5636

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

[Re: Freezing dough balls](#)

5637

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. I 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

[Re: Problem with Bottom Layer of Crust](#)

5638

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

[Re: Saf Pizza yeast](#)

5639

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

[Re: Freezing yeast](#)

5640

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

[Re: Saf Pizza yeast](#)

5641

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

[Re: Freezing yeast](#)

5642

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

[Re: Slowing down fermentation](#)

5643

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 un-



lidded 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

[Re: Slowing down fermentation](#)

5644

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> 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

[Re: What kind of pan is it and how is it used?](#)

5645

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

[Re: salt level](#)

5646

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)

[Re: best way to use fresh tomatoes](#)

5647

Essen 1;

My comments were referencing the Montague deck ovens.

Tom Lehmann/The Dough Doctor

[Re: Montague Hearthbake ovens](#)

5648

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

[Re: best way to use fresh tomatoes](#)

5649

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

[Re: PAPROD no longer carrying blue steel pans](#)

5650

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

[Re: Montague Hearthbake ovens](#)

5651

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

[Re: Organic Pizza in NYC](#)

5652

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

[Re: Dough tears when stretching](#)

5653

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

[Re: Tough Dough](#)

5654

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

[Re: Marsal Wooden Dough Boxes](#)

5655

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

[Re: Dough does not rise after freezing](#)

5656

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

[Re: Tough Dough](#)

5657

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

[Re: Crispy crust](#)

5658

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

[Re: Explosive dough at 48 hrs and tame at 72 hrs. Any Ideas?](#)

5659

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

[Re: Pizza Dough balls not maintaining shape](#)

5660

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

[Re: Welbilt 20 Qt Mixer](#)

5661

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

[Re: Small One Man Wife Operation Question: Can I pre-stretch the dough?](#)

5662

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

[Re: cheese floats on top vs being fused](#)

5663

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

[Re: Help with pizza pricing](#)

5664

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

[Re: Welbilt 20 Qt Mixer](#)

5665

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 lever 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

[Re: Welbilt 20 Qt Mixer](#)

5666

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

[Re: Explosive dough at 48 hrs and tame at 72 hrs. Any Ideas?](#)

5667

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

[Re: cheese floats on top vs being fused](#)

5668

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

[Re: Bacteria fermentation](#)

5669

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

[Re: Whats better ?? Hand stretched dough or rolled dough](#)

5670

Looks great! :)

Tom Lehmann/The Dough Doctor

[Re: Thanks Tom!](#)

5671

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

[Re: Crust too thick and dry but rich in flavour](#)

5672

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

[Re: \[HELP\] Pizza dough doesn't rise](#)

5673

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

[Re: Whats better ?? Hand stretched dough or rolled dough](#)

5674

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

[Re: How to store dough balls on food truck](#)

5675

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

[Re: Bacteria fermentation](#)

5676

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

[Re: freezing question](#)

5677

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

[Re: Flour water salt yeast book issue](#)

5678

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

[Re: Complete newbie...dough like rubber, shall i bake or start over](#)

5679

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. What 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

[Re: Effect of docking on the cornicione](#)

5680

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

[Re: Having trouble with dough?!?](#)

5681

Which "00" flour are you planning to use?

Tom Lehmann/The Dough Doctor

[Re: Flour substitution](#)

5682

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

[Re: Dough Storage - Dough tray vs sheet pans](#)

5683

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

[Re: Room for improvement?](#)

5684

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

[Re: Room for improvement?](#)

5685

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

[Re: Pizza boxes](#)

5686

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

[Re: Chew](#)

5687

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

[Re: Chew](#)

5688

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

[Re: Vital Wheat Gluten - Storage](#)

5689

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

[Re: Safety of sourdough starter in vicinity of baby feeding equipment?](#)

5690

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

[Re: I'd need a commercial grade heavy duty small dough mixer \(about 10qt\).](#)

5691

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

[Re: need help](#)

5692

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

[Re: Dessert Dough how do I make it less chewy.](#)

5693

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

[Re: Need the Dough Doctor God again](#)

5694

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

[Re: Cracker crust help](#)

5695

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 it 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

[Re: key to soft pizza crust--soak in oil?](#)

5696

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

[Re: Question on what to do with overblown dough](#)

5697

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

[Re: over night warm rise recipe](#)

5698

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

[Re: I built a manual dough sheeter](#)

5699

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

[Re: Dough divider and rounder](#)

5700

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

[Re: Dough Management](#)

5701

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 got 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

[Re: Sauce is red..Crust is Gray](#)

5702

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

[Re: Help with dough! Too sticky too elastic](#)

5703

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

[Re: Sauce is red..Crust is Gray](#)

5704

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

[Re: Help with dough! Too sticky too elastic](#)

5705

I have two possible solutions;

1) After re-balling 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-balling 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

[Re: Help with dough! Too sticky too elastic](#)

5706

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

[Re: Help with dough! Too sticky too elastic](#)

5707

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

[Re: High Altitude Concerns?](#)

5708

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

[Re: Need the Dough Doctor God again](#)

5709

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

[Re: Vital Wheat Gluten - Storage](#)

5710

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

[Re: suggestions for making pizza dough](#)

5711

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

[Re: What is the ideal temp for opening up dough?](#)

5712

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 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/texture 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

[Re: I hate freezing my left over pizza sauce!](#)

5713

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

[Re: What is the best Active Dry Yeast to use](#)

5714

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

[Re: Can't get good crust out of WFO. What are we doing wrong?](#)

5715

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

[Re: Final Dough Temperature impact on dough fermentation](#)

5716

It would also help to know what the finished dough temperature is (dough

temperature immediately after mixing).

Tom Lehmann/The Dough Doctor

[Re: cold fermenting fridge temperature](#)

5717

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

[Re: Hearth Bake Disks...](#)

5718

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

[Re: Would be great to see someone develop a pizza dough App](#)

5719

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 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

[Re: Hearth Bake Disks...](#)

5720

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

[Re: proofing time for deep-dish, sicilian, al taglio pizza](#)

5721

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

[Re: proofing time for deep-dish, sicilian, al taglio pizza](#)

5722

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

[Re: IDY to fresh yeast conversion](#)

5723

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

[Re: ratio of flour to water](#)

5724

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

[Re: Highest Bromated flour](#)

5725

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

[Re: Pizza screen](#)

5726

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 by increasing or decreasing the absorption to get the dough/crust characteristics you're looking for.

Tom Lehmann/The Dough Doctor

[Re: ratio of flour to water](#)

5727

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

[Re: Cornmeal question](#)

5728

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

[Re: Highest Bromated flour](#)

5729

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



[Re: Converting from a same day dough to a 3 day cold ferment - questions...](#)

5730

It should work just fine for you.

Tom Lehmann/The Dough Doctor

[Re: Mixers](#)

5731

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

[Re: Need some advice](#)

5732

Ralphy;

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

[Re: steam for small deck pizza oven](#)

5733

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

[Re: Help from Mięxico „I'm new help me with my dough please](#)

5734

TRB;

I'm not a medical doctor, but I've stayed at Holiday Inns, so here goes, Since fermentation hydrolizes 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

[Re: The human hand VS technology.](#)

5735

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

[Re: Storing dough in the fridge](#)

5736

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

[Re: Oil or sugar???](#)

5737

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

[Re: The human hand VS technology.](#)

5738

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

[Re: Oil or sugar???](#)

5739

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

[Re: Storing dough in the fridge](#)

5740

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@lloydpan.com](mailto:ptiffany@lloydpan.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

[Re: The human hand VS technology.](#)

5741

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

[Re: I need help to make some killer pizza..](#)

5742

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

[Re: IDY distribution problem i;½.](#)

5743

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

[Re: IDY distribution problem i;½.](#)

5744

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

[Re: Help from Mi;½xico „I'm new help me with my dough please](#)

5745

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

[Re: Chicago Deep Dish Pan: Anodized\(dark\) vs. Aluminum\(silver\)](#)

5746

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

[Re: Ball to Bench Process](#)

5747

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

[Re: Mr Dough Doctor](#)

5748

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

[Re: How long does it take you to cut and ball dough](#)

5749

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

[Re: Total dough ball weight](#)

5750

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

[Re: Total dough ball weight](#)

5751

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

[Re: Beginner dough questions!](#)

5752

That's a great lookin' pizza! :)

Can you share the details of how you made it?

Tom Lehmann/The dough Doctor

[Re: Cold fermented dough for the first time \(pepperoni and shrooms\)](#)

5753

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

[Re: Pizza Crust Questions](#)

5754

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

[Re: An experiment that failed impressively](#)

5755

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

[Re: Beginner dough questions!](#)

5756

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

[Re: Pizza Crust Questions](#)

5757

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

[Re: Cutter Pan Size](#)

5758

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

[Re: pizza with fruit \(grapes, apples, etc.\)](#)

5759

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

[Re: Would a Marble board work better than a peel?](#)

5760

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

[Re: Ginger Ale in Dough?](#)

5761

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

[Re: metal chimney decaying / fragmenting on the inside](#)

5762

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

[Re: Does some cheese burn more easily than others?](#)

5763

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  $12\text{-ounces} \times 28.4 = 340\text{-ml/grams}$  (close enough for making dough). Since we know the sugar content is 33-grams we divide 33 by  $340 \times 100 = 9.7\%$ , 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 ( $22.72 \text{ divided by } 9.7 = 2.342 \times 100 = 234.22$ ). To test that answer (I'm old school) simply find 9.7% of 234.22 ( $234.22 \times 9.7$  (press the percent key) and read 22.719 (the amount of sugar we want to add to the dough)

Tom Lehmann/The Dough Doctor

[Re: Ginger Ale in Dough?](#)

5764

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

[Re: dough issue](#)

5765

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

[Re: metal chimney decaying / fragmenting on the inside](#)

5766

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

[Re: Pizza = healthy Food?](#)

5767

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/peeled like an orange). For additional toppings we were working with some vegan meats (Tim Smith at <[tsmith@beyondmeat.com](mailto: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

[Re: Pizza = healthy Food?](#)

5768

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

[Re: Ingredients](#)

5769

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

[Re: Problem with pie \(flour, oven?\)](#)

5770

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

[Re: Ingredients](#)

5771

It would help if you had your dough recipe given in 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

[Re: Dough is too dense and chewy.](#)

5772

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

[Re: Problems with Toms PMQ NP dough](#)

5773

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

[Re: My dough balls overflow so much in the refrigerator](#)

5774

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

[Re: First attempt at focaccia - no knead recipe](#)

5775

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

[Re: Pan dough extremely light and puffy after cooling then baking](#)

5776

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 hydrolized 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

[Re: Gluten question](#)

5777



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

[Re: Pan dough extremely light and puffy after cooling then baking](#)

5778

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 an oblong. For a true novelty approach check out Lloyd Pans <[www.lloydpan.com](http://www.lloydpan.com)> as they have a bunch of different shaped pizza cutters (like giant cookie cutters) like footballs, states, etc.

Tom Lehmann/The Dough Doctor

[Re: Question on shaping "stylish" Pizza](#)

5779

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

[Re: Pan dough extremely light and puffy after cooling then baking](#)

5780

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

[Re: Is there any difference in taste between bromated/unbromated flour?](#)

5781

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

[Re: enhance flavor, crumb, and crust](#)

5782

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

[Re: Oven Lamps for up to 500i½C / 930i½F in Europe?](#)

5783

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

[Re: enhance flavor, crumb, and crust](#)

5784

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

[Re: HG vs BF Question](#)

5785

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

[Re: Pizza Pockets](#)

5786

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

[Re: HG vs BF Question](#)

5787

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

[Re: Newbie looking for some help with a dough problem.](#)

5788

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

[Re: Hopefully you can help. Need a Dough Angel](#)

5789

And I bet if you follow Mitch's advice the dough will stretch out ohhhhhh soooooo 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

[Re: Pizza Dough Snapping / Retracting Back.](#)

5790

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

[Re: Dough is great...but lacks an aftertaste.](#)

5791

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

[Re: Pizza dough seems heavy and tough.](#)

5792

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 and 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

[Re: Caputo Blue Bag - Shelf Life?](#)

5793

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

[Re: Tom Lehmann \(The Dough Doctor\) featured in PMQ Pizza Magazine](#)

5794

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

[Re: Pizza dough seems heavy and tough.](#)

5795

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

[Re: Pizza dough seems heavy and tough.](#)

5796

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 hydrolize 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

[Re: Diastatic Malt--The Pizza Bible](#)

5797

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

[Re: Newby.....](#)

5798

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

[Re: Is adding olive oil to a recipe a good thing?](#)

5799

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

[Re: What are we doing wrong?](#)

5800

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

[Re: Can a short rise be a long rise?](#)

5801

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 time 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

[Re: What are we doing wrong?](#)

5802

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

[Re: Dough Flavor and Proof Technique](#)

5803

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

[Re: Dough too extensible after the mix - I feel like I know less today than ever!](#)

5804

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

[Re: What are we doing wrong?](#)

5805

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

[Re: what does a dough ball supposed to look like.](#)

5806

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

[Re: What if a pizza isn't gluten?](#)

5807

Yep, a whole lot more top heat.

Tom Lehmann/The Dough Doctor

[Re: pizza crust](#)

5808

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

[Re: Gluten free in a cutter pan - your thoughts on how to cook it](#)

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

[Re: Extra puffy cornicione](#)

5810

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

[Re: Making Pies](#)

5811

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

[Re: My dough less extensible more elastic over time](#)

5812

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  
[Re: Extra puffy cornicione](#)  
5813

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  
[Re: Getting a crispier crust?](#)  
5814

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  
[Re: Extra puffy cornicione](#)  
5815

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  
[Re: Getting a crispier crust?](#)  
5816

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  
[Re: PIZZA DOUGH ROLLER](#)  
5817

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

[Re: tips to avoid GUMLINE w/ neapolitan dough?](#)

5818

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 affect 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

[Re: Hydration levels impact on rise rate](#)

5819

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 in 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

[Re: tips to avoid GUMLINE w/ neapolitan dough?](#)

5820

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

[Re: My soggy dough](#)

5821

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

[Re: Deep frying: oil use, storage & disposal](#)

5822

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

[Re: Taking over a pizza place](#)

5823

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

[Re: How long out of the fridge before you bake?](#)

5824

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 slacking out. No in that it probably isn't necessary if we're only looking at 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

[Re: How long to bulk ferment](#)

5825

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

[Re: How long out of the fridge before you bake?](#)

5826

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

[Re: Hi! What is a W Rating for Flour?](#)

5827

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

[Re: How long out of the fridge before you bake?](#)

5828

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

[Re: How long to bulk ferment](#)

5829

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

[Re: Grande Whole Milk Mozzarella loaf really salty](#)

5830

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

[Re: Grande Whole Milk Mozzarella loaf really salty](#)

5831

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

[Re: Flour Question](#)

5832

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 that 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

[Re: Dough machine All Trumps](#)

5833

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

[Re: How important is a smooth skin?](#)

5834

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

[Re: Cooked vs Uncooked pizza sauce....](#)

5835

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

[Re: New Kitchen Aid Pro mixer](#)

5836

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

[Re: new to using a mixer](#)

5837

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 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

[Re: \(re-post from wrong category\) Extreme Inconsistent Levain Results](#)

5838

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 time 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 polish 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

[Re: Dough acting strange.](#)

5839

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

[Re: new to using a mixer](#)

5840

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 (commisary 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 make 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

[Re: new to using a mixer](#)

5841

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

[Re: new to using a mixer](#)

5842

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

[Re: new to using a mixer](#)

5843

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

[Re: Ideal water temp for making pizza dough](#)

5844

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

[Re: Looking for Training to be Pizza maker](#)

5845

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

[Re: Dough won't open after fermenting](#)

5846

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

[Re: new to using a mixer](#)

5847

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, of 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

[Re: Dough won't open after fermenting](#)

5848

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

[Re: Pizza boxes, tupperware, or transporting ideas?](#)

5849

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

[Re: Dough won't open after fermenting](#)

5850

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

[Re: Tom, Does my mixer compare to yours](#)

5851

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

[Re: Tom, Does my mixer compare to yours](#)

5852

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

[Re: Dough Crisis... Someone please help!!!](#)

5853

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

[Re: Why two rises?](#)

5854

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

[Re: Deep frying: oil use, storage & disposal](#)

5855

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

[Re: Why two rises?](#)

5856

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

[Re: Need a No-Knead Dough Recipe for Half-Baked Pizzas](#)

5857

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

[Re: Dough won't open after fermenting](#)

5858

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

[Re: new to using a mixer](#)

5859

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

[Re: Need a No-Knead Dough Recipe for Half-Baked Pizzas](#)

5860

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

[Re: Flour](#)

5861

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

[Re: QUIZ: How Well Do You Know Pizza?](#)

5862

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

[Re: HELP](#)

5863

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

[Re: Too much yeast???](#)

5864

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

[Re: In search of the perfect chewy crust](#)

5865

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

[Re: The blob...](#)

5866

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

[Re: In search of the perfect chewy crust](#)

5867

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

[Re: The blob...](#)

5868

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

[Re: Dough slightly bland, advice please](#)

5869

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

[Re: I'm cooking 24 pizzas Saturday in my Blackstone Patio Oven](#)

5870

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

[Re: cooking on lloyds pans](#)

5871

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,  $8 \text{ divided by } 10 \times 100 = 80\%$ . 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

[Re: Any good whole wheat pizza dough recipes?](#)

5872

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 responsibly 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

[Re: In search of the perfect thin crust pizza that is both crisp and chewy](#)

5873

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

[Re: Getting Dough Ball Out Of Container - Comparison of Release Agents](#)

5874

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

[Re: Getting Dough Ball Out Of Container - Comparison of Release Agents](#)

5875

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

[Re: Pizza in St. Louis?](#)

5876

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](mailto: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

[Re: For those who run a pizza business. How do you manage your inventory of dough? +](#)

5877

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

[Re: Inexpensive, but delicious pizza](#)

5878

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

[Re: Kneading All Trumps Flour](#)

5879

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

[Re: Kneading All Trumps Flour](#)

5880

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

[Re: fresh yeast](#)

5881

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

[Re: The crust is always tough, no chars - I think pizza stone never works](#)

5882

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

[Re: Softer than usual crust...why?](#)

5883

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



[Re: Softer than usual crust...why?](#)

5884

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

[Re: Cold ferment and water temp](#)

5885

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

[Re: Recipe using 00 flour](#)

5886

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

[Re: Looking for advice in moving to bulk fermenting](#)

5887

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

[Re: Is air under the crust causing my bottom to cook uneven?](#)

5888

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 the 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

[Re: How do certain dough ingredients affect the dough and crust?](#)

5889

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 p\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

[Re: How to cook the perfect pizza in an oven at home](#)

5890

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

[Re: Cold vs. Room Temp Dough](#)

5891

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

[Re: I took a picture of my dough today](#)

5892

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

[Re: Dough Balll not holding its shape](#)

5893

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

[Re: dough kneading](#)

5894

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

[Re: Cheese Choices for First Blackstone cook!](#)

5895

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 too 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

[Re: Soggy Crust](#)

5896

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

[Re: Tonight's Lou. Butter flavored crisco in the pan is night and day vs oil](#)

5897

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 throw/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

[Re: Next up: Silicone Dough](#)

5898

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

[Re: Made my first Sicilian type Pizza. Middle was a little doughy. How do I fix that](#)  
5899

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

[Re: dough kneading](#)  
5900

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

[Re: Made my first Sicilian type Pizza. Middle was a little doughy. How do I fix that](#)  
5901

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

[Re: A few questions](#)

5902

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

[Re: Looking for an 18" pizza slice/topping outline](#)

5903

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

[Re: Corn tortilla recipe - please share](#)

5904

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

[Re: A few questions](#)

5905

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

[Re: Why use a pizza screen?](#)

5906

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

[Re: "Dough ball" loses shape during fermentation?](#)

5907

The trans-fat thing is still with use 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

[Re: A few questions](#)

5908

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

[Re: Pizza Flour](#)

5909

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 advisable 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.lloydpan.com](http://www.lloydpan.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 then 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

[Re: Why use a pizza screen?](#)

5910

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

[Re: A few questions](#)

5911

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

[Re: A few questions](#)

5912

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

[Re: Corn tortilla recipe - please share](#)

5913

KD;

Do you mean the Picard ovens?

Tom Lehmann/The Dough Doctor

[Re: rotating oven vs stone tunnel oven](#)

5914

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

[Re: A few questions](#)

5915

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

[Re: I just can't make good dough... It's been like 10 years.](#)

5916

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

[Re: sbarro](#)

5917

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?) where as 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 the the dough by mixed 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

[Re: A few questions](#)

5918

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

[Re: Am I Over Fermenting?](#)

5919

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

[Re: Blah Blah Blah pizza dough and crust](#)

5920

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

[Re: Sodium in dough](#)

5921

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 mad 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

[Re: Pizza Peel Failure](#)

5922

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

[Re: Corn tortilla recipe - please share](#)

5923

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

[Re: is this a good dough](#)

5924

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

[Re: Tom Lehmann's Retirement from the AIB](#)

5925

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

[Re: pros and cons of a dough with higher hydration](#)

5926

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

[Re: pros and cons of a dough with higher hydration](#)

5927

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

[Re: Corn tortilla recipe - please share](#)

5928

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  
[Re: vera napoletana %'s](#)  
5929

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 :)  
[Re: pros and cons of a dough with higher hydration](#)  
5930

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 it then contributes 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  
[Re: pros and cons of a dough with higher hydration](#)  
5931

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  
[Re: Corn tortilla recipe - please share](#)  
5932

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

[Re: Malnatis \(Ghee vs. Corn Oil\)](#)

5933

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 is 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

[Re: Bulk Fermenting vs. Individual Balls](#)

5934

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

[Re: Bulk Fermenting vs. Individual Balls](#)

5935

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% ( $5 \times 0.6 = 3$ ). 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

[Re: KAAP VS KABF](#)

5936

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

[Re: Need help restoring an old mixer.](#)

5937

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, ind 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

[Re: White kamut flour formulation](#)

5938

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

[Re: KAAP VS KABF](#)

5939

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

[Re: KAAP VS KABF](#)

5940

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

[Re: My thoughts on 6 in 1 Tomatoes](#)

5941

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

[Re: Pizza Hut RGM willing to answer questions](#)

5942

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

[Re: Boston Pizza's "Pizza Cake" - How would you make it? Will it work?](#)

5943

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 removeable 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 removeable 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

[Re: Boston Pizza's "Pizza Cake" - How would you make it? Will it work?](#)

5944

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

[Re: For those who use full strength..](#)

5945

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

[Re: selling pizza from home kitchen](#)

5946

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 how things normally work.

Tom Lehmann/The Dough Doctor

[Re: baking pizza and breads](#)

5947

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

[Re: baking pizza and breads](#)

5948

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.

Yow will need to make at least 60 X 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%  $147 \times 2$  (press the "%" key) read 2.94 (call it 3-ounces of salt)

Sugar: 1%  $147 \times 1$  (press the "%" key) read 1.47 (call it 1.5-ounces of sugar)

Olive oil: 2%  $147 \times 2$  (press the "%" key) read 2.94 (call it 3-ounces of oil)

IDY: 0.75%  $147 \times 0.75$  (press the "%" key) and read 1.10 (call it 1-ounce of IDY)

Water: 58%  $147 \times 58$  (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

[Re: Need Dough Recipe for an Event](#)

5949

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

[Re: baking pizza and breads](#)

5950

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

[Re: Super low carb NY style pizza???](#)

5951

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 cakes 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

[Re: baking pizza and breads](#)

5952

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

[Re: How would you bake a frozen Chicago thin pizza?](#)

5953

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

[Re: Malnatis \(Ghee vs. Corn Oil\)](#)

5954

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

[Re: My SD starter is totally breaking down my dough!](#)

5955

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

[Re: how to make pizza hut pan pizza](#)

5956

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

[Re: My SD starter is totally breaking down my dough!](#)

5957

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

[Re: dough failure in the cooler.](#)

5958

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@lloydpan.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

[Re: anyone ever heard of "cure baking" steel pans?](#)

5959

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

[Re: Which Yeast?](#)

5960

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 upwards 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 known 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 from 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

[Re: Which Yeast?](#)

5961

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

[Re: Gluten Free](#)

5962

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 conducting 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

[Re: Which Yeast?](#)

5963

Peter;

You're "spot on"! :)

Tom Lehmann/The Dough Doctor

[Re: Help](#)

5964

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

[Re: Which Yeast?](#)

5965

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.

[Re: Help](#)

5966

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

[Re: Producers Brand ???](#)

5967

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

[Re: here i go!](#)

5968

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

[Re: Costco Pizza Sauce](#)

5969

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

[Re: sauce recipe](#)

5970

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

[Re: bagels](#)

5971

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-prepare or if you are making take and bake pizzas.

Tom Lehmann/The Dough Doctor

[Re: sauce recipe](#)

5972

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

[Re: bagels](#)

5973

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

[Re: latest pizza - its been a while](#)

5974

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

[Re: sauce recipe](#)

5975

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

[Re: sauce recipe](#)

5976

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

[Re: How do certain dough ingredients affect the dough and crust?](#)

5977

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

[Re: keeping a big order of pizzas from getting soggy for delivery](#)

5978

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



[Re: Running a failing business](#)

5979

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

[Re: Repurposed McDonalds \\$1 Sausage Biscuit](#)

5980

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

[Re: kiln shelves](#)

5981

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

[Re: What kind of flour to develop and feed a Sourdough starter](#)

5982

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

[Re: Hard water/soft water](#)

5983

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

[Re: Hard water/soft water](#)

5984

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

[Re: How to make a hi gluten pizza](#)

5985

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

[Re: How to make a hi gluten pizza](#)

5986

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

[Re: Another newbie to this great site... From USA, opening in Philippines Islands](#)  
5987

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

[Re: good news keeps coming](#)

5988

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

[Re: Abject Alchemist](#)

5989

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

[Re: good news keeps coming](#)

5990

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

[Re: good news keeps coming](#)

5991

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

[Re: good news keeps coming](#)

5992

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

## [Re: How Domino's Makes Its Dough Balls](#)

5993

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

## [Re: Less Than \\_% Statements](#)

5994

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

[Re: Freezing Sheeted Dough](#)

5995

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 use 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

[Re: Pizza post bake](#)

5996

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. Your 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

[Re: Pizza post bake](#)

5997

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, in fact, 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 nutritional 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 nutritional 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

[Re: Less Than \\_ % Statements](#)

5998

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

[Re: Less Than \\_ % Statements](#)

5999

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

[Re: how to make puffy crust??](#)

6000