

# The Complete Book of **BREADS**

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# Ingredients, Techniques, and Equipment



Gardening Tools  
Venice, 1593

## About the Ingredients

### FLOUR

Every flour milled from a basic grain—barley, buckwheat, corn, oat, rye, white, whole wheat—has its own collection of recipes in this book. There is one exception—rice—and it is in only one recipe.

While each flour is described in the introduction to its chapter, there are certain things common to working with them all.

Unless the recipe specifies otherwise, flour is *not* sifted. The amount of flour for dough that is to be kneaded is approximate because flour varies greatly in its power to absorb moisture. For instance, bread flour absorbs more moisture than all-purpose flour. Flour stored during the humid summer months will absorb less of the mixing liquid than the same flour that has been kept in a dry house in wintertime.

In those recipes that specify an exact amount of flour, principally those for batter breads, this is done only for convenience, not precision. The batter is stirred or beaten, not kneaded by hand, and a little more time in the oven will compensate for the slight difference in the moisture content of the batter because of different flours.

Self-rising flour may be used interchangeably with all-purpose flour by omitting the baking powder and salt in the recipe.

### LEAVENING

Air, steam, and carbon dioxide are all involved in varying degrees in the leavening action of all baked goods. Even with minimum mixing, it is

impossible to combine ingredients without incorporating some air. The gas—carbon dioxide—is produced either by the fermentation of the yeast, by baking powder activated by heat and moisture, or by baking soda reacting with an acid such as buttermilk or orange juice. A loaf would be solid as a brick were it not for the action of one of these leavening agents.

## YEAST

There are about 130 billion living cells in one package of active dry yeast and these will double in number in a warm dough mixture in about 2 hours. Feasting on the sugars in the flour, the yeast will send out carbon dioxide gas to make the bread rise.

When yeast is called for in this book, it is active dry yeast. Compressed yeast is not mentioned simply because the packets of dry yeast are so readily available, are easy to use, and they keep for months without refrigeration. The compressed cakes may be substituted, of course. (One yeast cake is equivalent to one packet dry yeast.)

The term "to proof" originally meant to test the yeast to prove that it was alive and ready to work. Since World War II there have been remarkable improvements in yeasts and there is little reason to question the reliability of a package of yeast used within the time period stamped on the envelope.

Both Fleischmann's and Red Star active dry yeast are of this new breed—finely ground yeast granules that tolerate much higher temperatures ( $120^{\circ}$ – $130^{\circ}$ ) than the old. They can be added directly to the dry ingredients without first being dissolved. When recipes in this book call for the yeast to be dissolved beforehand, this is because doing so makes it easier to follow the recipe's original sequence.

Brewer's yeast, on the other hand, is not a leavening agent. Known also as nutritional or primary yeast, it is an excellent source of biologically complete and digestible protein and is sometimes used as an added ingredient in bread-making but never as a substitute for regular yeast.

Salt inhibits and can regulate the growth of yeast. Sugar is food for it. Too much heat will kill it ( $140^{\circ}$ ), while too little warmth (below  $80^{\circ}$ ) will delay its growth and limit its leavening power.

## BAKING SODA AND BAKING POWDER

Baking soda, which was the first chemical leavener, reacts with acids such as sour cream or buttermilk to produce carbon dioxide. The reaction is almost instantaneous, requiring fast assembly of ingredients and immediate baking.

Double-acting baking powder, on the other hand, has a multiple action which releases a small amount of gas while the ingredients are put together. The main thrust comes from the heat of the oven.

Self-rising flour and cornmeal contain a leavener and salt added at the mill.

### STARTERS

See the chapters on Starters and Sour Dough Breads, pages 281 and 287.

### MILK

A loaf made with milk has a velvety grain, a browner crust and a creamy white crumb. It is softer and stays that way longer than bread made without milk.

The majority of the recipes in the book specify non-fat dry milk, which is much easier to use in bread-making than liquid milk. The milk granules are usually added to the mixture along with the other dry ingredients. Liquid milk always presents the danger of scorching while being heated.

### SHORTENING

Shortening makes bread rich, tender, and flaky. Not only does it improve the texture, it also contributes to the flavor, especially if the shortening is butter or lard. Shortening can be animal (butter or lard) or vegetable (cottonseed, peanut, soybean or coconut oil, cocoa butter, etcetera). The choice is dictated primarily by flavor, cost, availability, and personal preference.

Salad and cooking oils may be substituted in recipes when melted shortening is specified.

## An Explanation of Techniques

### MIXING AND KNEADING

In the normal preparation of bread dough, liquid and yeast are added to the flour, which swells and forms a rough mass. When this mass is mixed and kneaded, the gluten in the flour is developed and forms an elastic mesh throughout the dough. Gluten, a plant protein found in wheat flour, has great elasticity which allows the dough to rise as carbon dioxide is produced by the yeast.

In yeast-leavened breads, the gluten must be developed to give volume to the loaf. In other breads—those leavened by baking powder, baking soda or other means—the concern is to prevent the gluten from developing and making them tough. Biscuit dough, for example, is mixed very little to avoid developing the gluten. In batters, the gluten is dis-

persed, so they can be mixed thoroughly without concern for making the product tough.

Gluten is found only in wheat flour. Since there is no gluten in cornmeal, corn bread batter may be beaten until smooth without danger of toughening it. This is true of several of the other flours, such as rye, barley, and buckwheat, but these are usually combined with wheat flour in bread and cake recipes to achieve sufficient volume.

### How to KNEAD

The ideal place for kneading is a counter top or table at a height that will allow the arms to be fully extended, with the hands resting palms down on the work surface. (When the table is too high, there is a considerable loss of power in pushing against the dough; when it is too low, you are likely to wind up with a tired back.)

The kneading process may be started in the bowl as the dough is worked with the fingers and thumbs until it has absorbed most of its quota of flour, forming a ragged, shaggy mass.

Turn the shaggy mass onto the floured work surface. Fold the dough roughly in half, pushing down with both hands. As you draw back, give the dough a turn on the board. Fold the dough and repeat the sequence—push-turn-fold. Do this over and over again. The outside surface of the dough will be less sticky than the inside, and frequently some of the moist dough from inside will break through to the surface. Sprinkle it with flour and fold it in.

This rhythmic pattern of push-turn-fold should be broken occasionally by lifting the dough head-high and crashing it down against the work surface. Don't be gentle with the dough in this first stage—pummel it and punch it.

In a French bakery in Bayeux, I watched fascinated as an electrically driven trip-hammer beat a fast bang-bang-bang on a big lump of dough turning beneath it. It would become a solid, fine-textured specialty bread called "brie."

Suddenly you discover the dough is no longer an unresponsive blob in your hands but something soft and smooth. It is warm, springy, and alive, and small air bubbles may push their way up to the surface of the dough.

becomes "light") as the expanding ball of dough rises to about twice its original size.

The Wheat Flour Institute suggests using a warm place between 79° and 90°, but I like 80° to 85° because the lower temperatures produce a more flavorful bread. The high temperatures will, of course, increase the rate of fermentation and reduce the time of rising. All of the recipes in this book call for the lower range, although it is not a critical factor.

To test the dough, press it with two fingers near the edge of the bowl. If the indentations remain, the dough has risen enough.

A yeast batter cannot be tested by denting. When it has doubled, it will appear bubbly rather than smooth.

There is no rising for breads made with chemical leaveners, although a few will be allowed to rest for a short period of time to condition the ingredients before going into the oven.

### PUNCHING, SHAPING, AND PANNING

After it has risen to twice its size, yeast dough is punched down by jabbing it with the fingers and fist and pulling the sides into the middle—actually turning the dough inside out. To achieve a uniform grain, the bubbles are worked out of the dough by kneading for about 30 seconds. If a particularly fine texture is desired, the dough may be left in the bowl for a second rising. Otherwise the dough is shaped and placed in pans or, for hearth loaves, on baking sheets or in cloth-lined baskets. Dough will double in volume the second time in about two-thirds of the time necessary for the first rising.

Batter breads are baked in a variety of pans to give them different personalities and characteristics.

### DOUGH VOLUME CHART

Fitting dough into a loaf pan of the right size is an important part of the art of bread-making. While it will not alter the taste, too little or too much in a pan can spoil the visual effect of something that should be attractive.

Determine the total volume (in number of cups) or the total weight of the dough. (I use a 5-pound postal scale for this.) Then check the dough volume chart. The choice is yours as to how many loaves of what size you wish to bake.

PAN SIZE	VOLUME	WEIGHT
Large	9 x 5	3 cups
Medium	8½ x 4½	2½ cups
Small	7½ x 3½	1½ cups
Miniature	5½ x 3	¾ cup
Sub-mini	4½ x 2½	½ cup

## REFRIGERATING THE DOUGH

Placing dough in the refrigerator substantially slows down the yeast action. If you double the amount of yeast specified in a recipe, you can refrigerate almost all yeast doughs and batters.

If the dough is shaped and placed in pans before it is refrigerated, it can go into the oven 10 minutes after it comes out of the cold. If the unshaped ball of dough has been refrigerated, it must wait two to three hours at room temperature before it can be shaped and put in pans.

## BAKING

One of the minor miracles of baking is "oven-spring"—the quick rising of the dough during the first 10 to 15 minutes in a hot oven. The hot gases literally spring the dough into shape, with the crust lifting above the edge of the pan and exposing the "shred" along one side.

Too hot an oven will form a crust too quickly and set the gluten before the loaf is fully developed. Not enough heat will create a thin crust and a loaf of poor quality. Doughs made with sugar or milk brown more rapidly than the leaner doughs and are baked at somewhat lower temperatures.

A reminder to home bakers who live in the Rocky Mountains and other high places: baking times or temperatures must be increased. For the statistical minded this means 2° for each 1,000 feet above sea level.

## OVEN TEMPERATURES

TEMPERATURE	DESCRIPTION
250° to 275°	Very slow
300° to 325°	Slow
350° to 375°	Moderate
400° to 425°	Hot
450° to 475°	Very hot

## WHEN IS IT DONE?

A hearth loaf on a baking sheet in the oven is the easiest of all breads to test for doneness. Pull the oven shelf out a bit, and with a potholder in each hand turn the loaf on its side. Tap the bottom crust with an index finger. If the loaf has a hard, hollow sound, it is done. If it is soft and unresponsive, return the bread to the oven for an additional five or ten minutes. Test again.

A yeast loaf may be slipped from its baking pan and tested in the

same manner. Also at this point if the crust is not brown enough to please, it can be left out of the pan and returned to the oven to produce a richer color.

A classic way to test many baked products is to insert a wooden toothpick, a slender metal probe, or even a broom straw into the heart of the loaf. If moist particles cling to the probe, return the loaf to the oven.

Quick breads, which are soft and fragile even when done, should be tested only with a probe. A metal one costs a dime at a variety store.

### WHEN BREAD IS NOT DONE

When bread is not done, return it to the pan or the baking sheet, and if a slice has been cut off, simply replace it. Slip the pan into the oven for an additional 15 minutes at the recommended oven heat. Test it again. If it needs more oven time, send it back once more.

### FREEZING

The freshness of a baked loaf can best be preserved by freezing. Bread should first be cooled to room temperature, slipped into a bag or wrapped in plastic, and then sealed. It will freeze more quickly, too, if it is placed directly against the sides or back of the freezer.

Thaw bread at room temperature and then reheat, if you wish, for 15 minutes in a 350° oven. A solidly frozen loaf can be thawed by placing it in a 300° oven for 25 to 40 minutes.

### STALING

Staling is the baker's no-nonsense word to describe what begins to happen to any loaf the moment it comes from the oven. When bread stales, there is a subtle change in flavor and aroma. While the inside of the bread begins to dry out, the crust absorbs the moisture and becomes soft and leathery.

But stale bread is not lost bread. Reheating greatly freshens it, and so does toasting.

In several studies by the flour companies, the most surprising finding was that bread stored in the refrigerator stakes faster than bread at room temperature.

Ideally, bread should be stored in a clean, dry place at room temperature. There is nothing better than the traditional bread box or bread drawer. Bread in a plastic bag will be equally fresh but moist. Bread stored in the box (without a wrapping) will better retain its crispness. Nevertheless, a loaf to be held for a long period should go into the refrigerator to prevent mold from forming.