

Traditional Whole Grain Sourdough Bread A Labor of Love



Our Purpose



- To pass on three years of research on old German, French, and Russian sourdough techniques.
- To translate authentic methods into recipes that can be reproduced in your kitchen.
- To make bread that is faithful to sourdough traditions and is delicious, healthful and satisfying to make and eat!

Why are we fascinated with baking bread?

Chögyam Trungpa, comparing meditation to bread baking in *Glimpses of Abhidharma*:

“It is like a good baker handing down his knowledge of bakery. The knowledge is old, but each time the bread is baked, it is hot and fresh...There is that knowledge of bakery which is very established, even though the bread is baked on the spot...Once one is committed to the teachings, this living and inspiring quality is there continuously.”

And this fascination is a projection of something deeper: the everlasting joy of Divinity.

Tools and materials

Home baker's wooden dough bowl



Why do we use a wooden bowl...and why do we never wash it?

Although you may use ceramic, glass or even stainless steel for your bread making bowl, wooden bowls or troughs were traditionally used as vessels for fermenting sourdough. Over time, the wood supports your sourdough culture, as the culture penetrates into the porous structure. It is not necessary to wash the bowl—ever! Just scrape off pieces of dough clinging to it, drape with a clean kitchen towel and store it in a cool, dry place until the next time you bake.



We use a hand-powered grain mill as we want the advantage of a slow grinding speed which generates less heat than electric grain mills. Less heat means the fragile oils in the grains will not be damaged. There are some electric mills that keep this principle in mind, however, and may be totally satisfactory. And there are several choices of hand mills out there—take the time to do the research so that you and the mill are a good match! Good mills are fairly expensive, and you want to make a wise investment.



The dough spatulas are homemade (and never washed) just for fun. You can of course use any sort of wooden spoon to help stir the dough. The room thermometer helps you keep track of the ambient temperature (most sourdough cultures prefer cool weather and rooms—approximately 55°-70°F) and the candy thermometer is for checking the internal temperature of your finished loaf. Properly baked, it should be from 195°-205°F inside.



Resting on the cotton oven mitt is a sharp, curved blade for slashing the loaves before baking, called a lame. Slashing the loaves is essential to help the crust open evenly during the rapid expansion it will undergo in the hot oven. This bloom of the loaf is called “oven spring.” Curved blades, like this lame, are usually used with baguette-type loaves. A straight-edged blade is commonly used on round loaves, such as we are baking in this demonstration.



This kitchen scale is calibrated in ounces and grams. Our recipe is measured in metric weight, rather than volume, as weight provides greatest accuracy (your cup of flour might not weigh the same as my cup of flour). Also, metric measurement (because it's based on parts of 10) is easy to calculate when you want to multiply or divide to increase or decrease a recipe.



Next to the oven mitts is our baking vessel—called “la cloche.” (“Bell” in French.) This ceramic baker (produced after a design made by the renowned English food writer Elizabeth David in the 1960s) produces a moist crumb, and beautiful, crackly crust in your gas or electric oven. It comes very close to producing the sort of loaf a wood-fired masonry oven would. Sourdough breads were made to be baked in hot masonry, and this is our home compromise—a very successful one! Other options to la cloche baker would be Römertopf or other clay bakers of sufficient accommodation.



This is a look at the mix of four types of grains used in our recipe—measured before grinding into flour. Let's talk about what they are.

The image features three stalks of grain, likely wheat or barley, positioned vertically in the center. Each stalk has a small, golden-brown grain head at the base and a long, feathery awn extending upwards. The background is a soft, warm, golden-brown color with a subtle, wavy texture, suggesting a field of grain under a bright sky. The overall mood is serene and natural.

The Qualities of Grains

Organic grains used in our recipe

- **Hard red winter wheat:** Moderate protein content, red pigment in bran makes it slightly bitter, higher in minerals
- **Hard red spring wheat:** Highest protein bread flour (more gluten), lower in minerals
- **Hard white winter wheat:** Similar to hard red winter wheat but with no pigment, sweeter flavor
- **Rye:** Low in gluten, high in pentosans (polysaccharides) which attract water and help keep bread moist and fresh longer

Our bread is fermented using a 3-stage leavening process

- Long, slow fermentation neutralizes phytates in grains, releases endogenous enzymes
- The full nutritional content of grains is made available in the finished loaf
- Flavor and aroma are developed to the full complexity potential of the grains—developing a pleasing sour taste
- Keeping qualities of the bread are enhanced

What are natural leavens?

They are stable combinations of native yeast and one or more strains of beneficial bacteria. In other words, they are mixed ferments cultured from the environment (yours or mine) and sustained with repeated inoculations. Keep in mind that the culture has a perfect memory, even if you don't! Therefore, all changes made to the dough or starter will be revealed in the next bread. For this reason, recordkeeping serves to keep you in charge of the results, not the reverse. Do keep notes of times, temperatures, and other observations that will help your experience and knowledge grow.

The Recipe



Three-stage leaven sourdough ingredients:

- Hard white winter wheat—240 grams
- Hard red spring wheat—340 grams
- Hard red winter wheat—500 grams
- Rye—320 grams

(Total grains--all organic: 1400 grams)

- Spring water—900 grams
- Celtic sea salt—20 grams
- Coriander seed—2 teaspoons

Recipe requirements and yield

- Final dough: 5 pounds, or 2300 grams, producing a baked loaf weighing about 4.5 pounds
- Optimal kitchen temperature: 65-72 F°
- Hydration of final dough: 64%. This means the percentage of all liquid (in grams) in relation to all the flour (in grams) in which the total weight of the flour is calculated as 100%. This is also known as the “baker’s percentage.” Knowing this will help you calculate other recipes if you know the required hydration of the dough.

LEAVEN STAGE 1

In this stage we will start the process of reviving our starter, or chef. “Chef” is a term borrowed from French bakers and refers to a piece of dough separated from the fully-fermented dough before it is shaped and baked. The chef may be kept refrigerated for up to 2 weeks before being used to start a new batch of bread, although it behaves better if used at least once a week. The main purpose of this first stage is to provide nutrients and hydration to promote a rapid increase in the culture’s organisms.

Reviving the chef: Stage 1, early morning, first day





There it is, just a cold lump of dough in suspended animation. But there is plenty of life in that lump, just waiting for the right conditions to start multiplying!

Adding 200 grams water



All life needs water, and so starts the rejuvenation of our chef. With a wooden spoon or spatula, gently break apart the stiff starter until it is completely dissolved in the water. You can let the chef sit and soak for a half hour or an hour and come back to it if you want; it will be easier to work.





Chef completely dissolved



The dissolved chef has the consistency of cream. Now we add the nutrients.

Adding 100 grams of flour







Mix until completely smooth. Dust on a little flour over the surface of the mixture, cover with plastic and a kitchen towel, and leave to ferment for 8-12 hours.

Stage 1 complete—ready for 8-12 hours of fermentation



Covered for fermentation



Fully fermented 1st leaven, evening,
first day



The previous photo shows what you'll see when you uncover your bowl at the end of the 8-12 hours. The starter culture is awakened and starting to reproduce. You'll find it has produced a spongy mass with gas bubbles.

Gassiness of fermented 1st leaven



LEAVEN STAGE 2

During this second stage, you'll notice that we'll be adding only flour—no water. The primary purpose of this drier stage is to encourage the lactobacilli to produce the acetic acid which gives the bread its characteristic sour taste. Yeast will still be reproducing during this 24-hour fermentation phase stage, too, of course.

Adding 240 grams flour: stage 2,
evening of first day



All 240 grams in bowl





Kneading in the bowl



2nd leaven ready for 24 hours of fermentation



Completing this stage will only take a few minutes. After you have incorporated all the flour and shaped the dough into a ball, dust with flour, cover with plastic and a kitchen towel, and leave for 24 hours.

Covered for fermentation



Here we are 24 hours later, on the evening of the next day. When you uncover your bowl you'll see a dense mass that exhibits both gluten development and a fruity, winery fragrance that lets you know it has been fermenting nicely. You are ready to move to the third stage of leavening.

Fully fermented 2nd leaven, evening
of 2nd day



Showing 2nd leaven fermented texture



LEAVEN STAGE 3

During this stage we'll add both flour and water, along with salt and ground coriander, to produce a fairly wet dough. This will boost the production of both yeast and bacteria, with a resulting rise in lactic acid.

Adding 580 grams of water and 20 grams of salt: 3rd stage



Be sure to dissolve completely the Celtic sea salt in the water before adding to the dough.

Pounding coriander



Why do we add coriander?

Savory seeds like coriander and caraway seem to have an affinity for lactic-acid fermentations and encourage their success. (Caraway is often added to sauerkraut, for example.) The amount we add is very small—yet it adds something very subtle to the overall flavor that we enjoy. But this step is optional—you can simply ignore it if you prefer.

Adding the ground coriander
and continuing to mix



Liquid fully incorporated



Adding 420 grams of flour



Incorporating flour



3rd leaven taking shape; sticky & resistant



More & more smooth texture



3rd leaven ready for 12 hours of fermentation (overnight)



At the completion of this stage you see the dough is quite sticky and cannot be kneaded. Dust lightly with flour, cover as usual, and leave for 12 hours. Can you guess what might await you next morning?

Dusting 3rd leaven...





Morning, 3rd day, fermented 3rd
leaven—ready to prepare dough



Wow...the bowl is filling up now! Our leaven culture has hit its stride and is now multiplying exponentially. This means that the next phases will need to be watched carefully as changes will happen quite fast now. Our aim is to keep abreast of the culture and prevent it from over-souring.

Showing texture of ripe 3rd leaven



THE DOUGH STAGE

Adding last 120 grams of water



Smooth consistency of all water incorporated...



Adding final 640 grams of flour (dough stage)



...all flour added



Mixing in the bowl



Now you will see the dough come together in a mass that can be kneaded by hand. The next two photos show how the dough is losing its stickiness.





The dough can be turned out onto a surface for hand kneading and comes together very nicely into a cohesive mass. Knead for approximately 10 minutes until the dough becomes smooth and satiny and no breaks show on its surface.











Looks great! Now let the dough rest where it is, covered, for 30 minutes. This allows the gluten strands to keep stretching.

Initial kneading finished; rest for 30 min.



Covered by plastic & kitchen towel



After resting



It doesn't look much different, does it? But during the rest the gluten has continued to develop and become stretchy. We will now knead the dough briefly and gently for just a few minutes and set it to rise for an hour and a half. The sourdough culture is reproducing very rapidly now.

Brief kneading, dusting, placing in bowl for rising 1.5 hrs



Always cover the dough whenever it is resting or rising.

End of rising period (1.5 hr)



The mass of dough looks a lot different now!
Look at how vigorously it has increased its volume. This is the stage when we take our chef for the next baking. The culture is strong and full of life.

Don't forget! Taking the chef.



The next slide shows a close-up of the chef and is a great demonstration of how the gluten strands have developed during fermentation. You see all the thousands of little strings comprising the dough structure. The glossy tan and golden bits are pieces of bran. They have microscopically small sharp edges, and that is why we'll repeat that kneading from now on needs to be fairly gentle. We want to preserve the gluten strands so the crumb of our finished loaf is open and fine.



150 grams of chef



Storing chef and turning out dough for kneading and shaping



Let's take a moment to talk about storing the chef properly. After you have cut off the chef, roll it into a ball, dust well with flour, and then cover with parchment or heavy plastic and place in a small container in the refrigerator. It's best to use your chef within a week; this can be pushed to 2 weeks if necessary. We have read accounts of successfully freezing chef for longer periods (up to 6 months) but be aware that you may need 2 or 3 baking periods to fully rejuvenate your culture after thawing, since the ratio of yeast to bacteria will have changed over long storage as well as weakened.

But for now, back to the dough!

Gently kneading dough



Shape into ball, rest for 10 minutes.
Dough very active at this stage.



Final shaping



Shaping and dusting.



It is not strictly necessary to dust your dough when setting it into the baking vessel. Try it both ways—the crust will just look a little different and you may prefer one way more than the other.

Preparing the cloche



Coarsely ground wheat spread on bottom of cloche.



Loading loaf into cloche and slashing the loaf.



Slashing the surface of the loaf is done to help the crust accommodate rapid expansion (called oven spring) in the high heat of the oven. The slashes open better if made shallowly, so use a light hand. Only a few strokes are needed.

Into the cold oven; now start to heat



Baking procedure

- Load cloche into cold oven
- Heat oven to 500 F°
- After 500 F° reached, bake for 6 minutes
- Lower oven temp to 450 F°
- Bake for one hour
- Remove cover of cloche—use oven mitts!
- Lower oven temp to 420 F° and bake 18 minutes longer

Removing cover of cloche during
baking.



Baked loaf (18 minutes after cover off)



Testing for doneness



Here are the classic ways of testing that your loaf is baked through: internal temperature should register between 195° to 205° F and tapping the bottom of the loaf should elicit a hollow sound.

Cooling the bread and showing crumb of cut loaf



The best way to cool your loaf in order to keep precious moisture inside is to place the baked loaf on a rack that has been covered with a kitchen towel. Next cover the loaf with a large sheet of parchment paper, and finally with 2 or 3 heavy kitchen towels. You can either leave the loaf like this until completely cool, or uncover after about an hour to sample your warm bread with a crackly crust and lots of butter! It will be hard to resist doing this, as your house will smell so delicious! Recover the bread and allow to cool completely.

From then on the bread can be stored in parchment and plastic on the counter or in a bread box, but not the refrigerator!

The next several photos show various loaves baked in warmer or cooler weather throughout the year, and how the culture responds to these variables and expresses them in the baked loaf. Some are more sour than others (especially when the weather starts to warm up) and the crumb of the loaf is denser and heavier. We show you these variants to reassure you that because the culture is a living thing, your results will vary from baking to baking. Experience with the culture in your home environment will help you become familiar with its possibilities.

Happy baking!















Resources: Books

- ***The Bread Builders*** Alan Scott and Daniel Wing
- ***The Village Baker*** Joe Ortiz
- ***Crust and Crumb*** Peter Reinhart
- ***Bread: A Baker's Book of Techniques and Recipes*** Jeffrey Hamelman



Resources: La Cloche

- Sassafras Company,
La Cloche Baking
Oven (many sources
and many price
ranges can be found
at www.google.com)
- Williams-Sonoma
(877)812- 6235
[www.williams-
sonoma.com](http://www.williams-sonoma.com)

All material copyright 2006

by Garrick Ginzburg-Voskov and
Katherine Czapp

Contact us:
garrickvoskov@yahoo.com