



Discovering Sourdough

By Teresa L. Hosier Greenway

PROFESSIONAL SOURDOUGH BREADS BAKED AT HOME

USING ONLY THE WILD YEAST

Part I

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Credits

Dedicated to:
The Holy Spirit

My parents Richard and Martha Hosier, Warren and Ruth Greenway
My family, Warren D, Rochelle, Westley, Wyatt, Natalie, Wiley, Wyllis, Stephen,
Whitley and Tyra - whose appetites helped me along my journey.
A special thank you to my daughter Rochelle Nelson who challenged me to bake...
“real sourdough”

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Thank you Peter Reinhart for encouraging me along the way and changing the way
I see the world

“AS A RESULT OF A GOOGLE SEARCH, I MADE MY FIRST VISIT TO THE NORTHWEST SOURDOUGH SITE. I CAME ARMED ONLY WITH A STRONG DESIRE TO BAKE SOURDOUGH GOODS. THAT DESIRE WAS BALANCED WITH ABSOLUTELY ZERO KNOWLEDGE ABOUT THE PROCESS. I WAS FURTHER HANDICAPPED AS NOT ONLY DID I NOT SPEAK “SOURDOUGH”, I ALSO DID NOT SPEAK BASIC “BAKING.” THROUGH E-MAIL I MET TERESA. SHE IMMEDIATELY LABELED ME A “NEWBIE” AND BEGAN THE PROCESS OF EDUCATION. THEN A VERY WONDERFUL THING HAPPENED. SHE ASKED ME TO REVIEW, FROM A “NEWBIE’S PERSPECTIVE, A BOOK SHE WAS WRITING ON SOURDOUGH. NOT ONLY DID I LEARN A TREMENDOUS AMOUNT ABOUT SOURDOUGH BAKING IN THE REVIEW PROCESS, I ALSO WITNESSED TERESA’S UNBRIDLED PASSION FOR SOURDOUGH BAKING. HOWEVER, PROBABLY THE BIGGEST IMPRESSION WASN’T MADE IN MY MIND BUT RATHER IN MY HEART. TERESA TRULY HAS BEEN BLESSED WITH A SERVANT’S HEART. SHE CARES ABOUT TEACHING AND PASSING ON THE ART OF SOURDOUGH BAKING AS MUCH AS SHE DOES ABOUT PRACTICING AND PERFECTING IT. I HIGHLY, HIGHLY RECOMMEND THIS BOOK TO ALL.”

RANDY LONGACRE

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CONTENTS

(of all three parts)

Contents Part 1

Credits

Discovering Sourdough

My sourdough Journey.....9

Beginning Sourdough

The Sourdough Starter - What is Sourdough?.....19
All about the care and feeding of sourdough starters

Home Baking of Sourdough Breads - Roasting Pan Method of Baking...45

What You Need to Know About Measuring..... 54

Beginning Dough Handling..... 58

First Loaf: Bake your first loaf –
An easy way of baking a loaf of sourdough6

The Beginning Recipes:

Batter and Easy Breads:

Ableskivers.....	69
Honey Butter Cornbread.....	72
Cranberry Applesauce Muffins.....	75
Danish Rye Pumpkin Muffins.....	77
Pumpkin Cranberry Quick Bread.....	79
Old Fashioned Flapjacks.....	82
Overnight Jacks.....	84
Sourdough Pancakes.....	86
Pumpkin Pancakes.....	88
Sourdough Waffles.....	90
Killer Sourcream Waffles.....	92
Easy Sourdough Biscuits.....	94
Fluffy Sourdough Biscuits.....	96
Rustic Biscuits.....	98
Sourdough Scones.....	100
Onion Cheese Batter Bread.....	102
Soft White Pan Bread.....	104
Oat and Honey Soft Bread.....	107
Sourdough Tortillas.....	110

Syrian Flatbread.....	113
Walnut Raisin Surprise.....	115

Contents Part 2

Intermediate Sourdough

Intermediate Dough Handling

Ingredients and Techniques.....	5
Mixing, Folding and Handling Dough.....	23
Basic White Loaf.....	29

The Intermediate Recipes:

Extra Sour Sourdough.....	38
Wheat Potato Loaf.....	41
Western Wheat Sourdough.....	44
Sour Rye.....	47
Dark Beer Rye.....	49
Sesame Honey Wheat.....	51
Molasses Wheat Sourdough.....	54
Italian Sourdough.....	56
Danish Rye Pumpernickel.....	58
Cracked Wheat San Francisco Sourdough.....	60
Cracked Grain Mill Loaf.....	63
Spicy Jalepeno Loaf.....	67
Garlic Onion Rye Sourdough.....	70
Desem Rye Malted Sourdough.....	73
Saltzburg Sourdough.....	76
Two Night Sourdough.....	79
Honey Sunflower Loaf.....	82
San Francisco Sunrise.....	85
Buckwheat Sourdough.....	88
Austrian Farm Bread.....	91

Contents Part 3

Advanced Sourdough

Advanced Dough Handling and Techniques.....	6
Motherdough Starters – What is Motherdough?.....	20
Salt Controlled Fermentation.....	26
Morphing Sourdough Starters.....	33

Advanced Recipes:

Alaskan Sourdough.....	37
Ciabatta.....	39
Dill Rye.....	41
Griffin’s Bread.....	43
Hearth Flaxseed Loaf.....	49
Light Onion Rye.....	52
100% Wholegrain Miche.....	54
Flemish Desem.....	57
Pumpkin Sourdough.....	61
Spelt Sourdough.....	65
San Francisco Sharp.....	68
Sour Malt.....	71
Salt Fermented Sourdough.....	75

Morphed Recipes:

Kalamata Asiago Loaf	81
Desem Morph.....	84
Northwest Morph Sourdough.....	87
Pane Pearl.....	90
Rye Morph Pan Loaf.....	92
Rosemary Potato Sourdough.....	94

Motherdough Recipes:

Baguettes.....	98
Seaside Sourdough.....	100
Pane Picante.....	103
Pane Teresa.....	106
Asiago Cracked Pepper Bread.....	110
Country Kitchen Sourdough.....	112
Coastal Loaf.....	114
Vienna White.....	117
Sourdough Millet Loaf.....	119
Onion Focaccia.....	121
Pizza Motherdough.....	123
Bay Bread.....	125
Motherdough White Loaf.....	128
Ciabatta Loaf.....	131
One Night Sponge Sour.....	134
Sourdough Fat Pretzels.....	137
Pretzel Sourdough Bread.....	140

Specialty Recipes:

Sweet Dough: Cinnamon Rolls and Hawaiian Coffee Ring...	146
Teresa's Sourdough Doughnuts.....	151
Egg Bagels.....	155
Onion Bagels.....	158
Sourdough English Muffins.....	161
Focaccia 166.....	165
French Grilled Sourdough Bread.....	168
Hawaiian Loaf.....	171
Jerky Rolls.....	174
Kaiser Rolls.....	176
Pistou Rolls.....	179
Bleu Cheese Pull-Apart Loaf.....	181
Walnut Fig Bread.....	184
Raisin Walnut Cranberry Loaf.....	187

(a)Glossary Sourdough Terms

About the Author

Discovering Sourdough



My Sourdough Journey

In the summer of 2004, my 22 year old daughter decided to try her hand at baking up a loaf of “real” sourdough. She found advice on the internet on how to make “real” San Francisco Sourdough, so she began several weeks of baking experiments...and failures. After a month, she gave up, saying, “No way can anyone make real sourdough, I bet you can’t either mom!”

That was my challenge. I tried baking “real” sourdough before, but not seriously. I have over 40 years of baking experience and my large family provides me with plenty of reasons to bake. I started out at the age of ten, baking and selling cupcakes to the neighbors. Later, while living in a mountainous area of Idaho, I kept a sourdough “pot.” This sourdough was based on the Alaskan style of sourdough

where you were supposed to feed the starter whenever and whatever you felt like. This included feeding it flour, water, dough scraps, biscuits, leftover pancake batter... whatever! Besides the flavor, this style of sourdough is used more for its acidity (needed to activate baking soda and baking powder), than for baking artisan style sourdough breads. It usually doesn't live long because of neglect and the unusual "leftover" feedings. I did try to bake sourdough bread at that time, but only managed to come up with "soured" dough, with a dense crumbly crumb (the crumb is the interior of the bread). It was basically regular bread left to ferment too long.

I wasn't aware that there was a completely different way of fermenting dough to produce wonderful sourdough bread. I grew up in California where we bought real sourdough from San Francisco & San Luis Obispo. In some secret way, they were able to produce bread that was leagues out of the ordinary... chewy, holey, tangy, crusty, and delicious! I wondered if they boiled the dough before baking it, because the crust was reminiscent of chewy bagels, but not exactly the same. I just

couldn't imagine how they could get those large holes and great chewy texture, not to mention the flavor! Could a home baker bake up such a crackly crust bursting with tiny bubbles all over the surface, with such rich color and wonderful smell?

Anyone should be able to bake such wonderful bread at home... was it possible? I researched what I could on the internet, and was a bit confused by the conflicting information. Several sites claimed to show how to bake "real" San Francisco Sourdough. However, I had to admit, the sparse pictures of their finished bread didn't exactly remind me of the "real" thing. So I started researching everything I could find, not only on the internet, but in books, or wherever I could find information. I decided to buy Nancy Silverton's book Breads from the La Brea Bakery. Nancy had won the award for the best tasting sourdough, a contest put on by the San Francisco Chronicle. I figured if she won out against breads made right in San Francisco, I could learn something from her. After all, the San Francisco bakeries weren't sharing any information. So I purchased her book and my "real" sourdough journey began. With Nancy's

book, along with many others, plus some of the information I had gleaned on the internet, I began to understand that “real” sourdough cookery was... “a whole new world.” It was as different, or more so, than quick bread baking was from yeast bread baking. With quick breads (breads leavened with chemicals like baking soda), the dough is handled quickly and gently, there is no fermentation and if you handle the dough too much, your baked item ends up tough. With yeasted breads (breads leavened with commercial yeast), time is allowed for fermentation and the dough is not handled gently and quickly.

If you used quick bread techniques to bake yeast bread, your loaf would end up like a brick. This was the same thing my daughter, I, and many others, were trying to accomplish with sourdough baking (and turning out bricks too). The techniques for sourdough baking are different than those used for commercial yeasted breads. Sourdough is all about fermentation and time. Fermentation is what happens when yeasts, bacteria and enzymes go to work producing by-products which end up as gasses, alcohol and acids. These by-products fill the dough with bubbles, alter

the structure of the dough, and contribute to the flavor of the finished bread. Fermentation takes time. The more patience you have, the better your chances are that your bread will turn out great.

The key to great sourdough bread is a vigorous, stable, great tasting, sourdough starter. Nancy Silverton’s book goes to great lengths to teach you how to make a sourdough starter. After reading through the directions and explanation, I realized that when the stage came for the sourdough starter to smell terrible, that it was still okay and I did not throw it out, as many people do. I learned to feed the mature starter on a daily basis, instead of feeding it once a week or even every two weeks when it was virtually dead and ready to throw away (you can feed your starter once a week if kept in the refrigerator, but there are drawbacks to keeping a starter in a refrigerator - more on this later). I found out that you don’t feed starters leftover dough, uneaten biscuits, or anything other than clean, fresh water and good fresh flour. The first starter I made using the directions in her book did not fare too well. I think it got contaminated with bad bacteria. So I threw it out and

started again. I kept my new starter on top of a freezer on a covered porch by the back door. I knew the right thing was brewing when family members would walk in exclaiming “Whew! What is that smell?” The starter really turned out terrific, it now smells yeasty and tangy and is still one of my favorite starters. I call it Northwest Sourdough Starter.



I live along the coastal region of Western Washington with Willapa Bay outside my backyard. The air is humid most of the time and it is cool year round, the perfect climate for culturing a great sourdough starter. When I tried out my new starter for the first time, I made up a batch of sourdough pancakes; they came out pretty good, so I thought I would try basic white sourdough bread. The first sourdough bread I made was using the Basic White sourdough recipe in Nancy’s book. I followed her directions as closely as I could and ended up making some interesting bricks.



Here are some of my first tries and failures:

I did not yet understand bulk fermentation (bulk fermentation means the first raising of the dough after mixing) and proofing (proofing means the raising of the dough after it is shaped). The dough for this bread was over fermented during bulk fermentation. The tendency to over ferment is strong when first attempting to bake sourdough because of the mistaken idea that more fermentation will produce a stronger sour flavor(which is avidly sought after). Well, the right amount of fermentation does help develop the sour flavor, but there is a fine line, because when

fermentation goes on for too long, the gluten (protein strands that make up the support structure of bread) begins to break down so that the dough doesn't rise very well, and the dough gets very sticky. Also the sugars in the dough become used up so that the crust doesn't brown correctly. The crust in the pictures has a white porcelain look to it, indicating that the sugars were used up and the bread had poor oven spring (oven spring is what happens when the dough is hit by intense heat during the first minutes of baking and it springs up high in the oven). The poor oven spring is shown by the dense look to the loaf and the dense crumb (crumb - the interior of the loaf of bread) of the sliced bread. However, this bread was actually sour, which was one thing I was trying for.

I wasn't about to be defeated by my first failure because it was at least sour, so I persevered. What I am about to tell you next might seem somewhat strange, but it helped me to figure out what was going on with sourdough organisms.

I have always enjoyed having aquariums with freshwater fish. When I set up my first aquarium, I did not understand the microorganism environment necessary to

keep an aquarium healthy. I did not even know microorganisms were necessary to keep fish healthy and alive. Fish died and my aquariums were not too healthy. When I researched aquarium culture and found out about the symbiotic relationship necessary between the fish, plants and microorganisms, I began to care for the microorganisms in the tank, and the fish and plants thrived. In my opinion, this applies to sourdough organisms as well. During my research on sourdough culture, I learned about the symbiotic relationship between the yeasts necessary to raise the bread, the bacteria which help flavor the bread, and the enzymes which give character to the bread. The yeasts and bacteria work together to form a stable culture. I realized that this symbiotic relationship in the sourdough culture, and its care, was very important to making great bread. I also thought that if you studied your starter to see what it could do, you would be able to work with it better and coax it to do what you wanted. I wish I could say that after my thinking and research, I made the best bread ever, but it wasn't so! I now had to learn the "feel" of the dough. I needed to know what it felt and looked like during its different stages,

like when it was done mixing, the development of dough during final proofing or was ready to bake. I found out that sourdough doesn't like to be handled in the same way that I was used to when I had baked commercial yeasted breads. The dough is often stickier when working with sourdough. If I mixed it as long as commercial yeasted dough, then bulk proof it for four to six hours, the gluten was broken down and the dough was just like glue. At that point, if I tried to shape the dough, it just oozed into a puddle. I didn't have all of the puzzle pieces yet.

Here is another early try at baking a sourdough:



These loaves were underproofed (which means they were not allowed to raise long enough before baking) so the crust split apart as the dough tried to push through the crust during baking. Learning by my

mistakes, I forged ahead and tried baking some sour rye. It was also a flop. I was getting a little frustrated. Why wouldn't the bread just turn out as I envisioned it would?

Here are some Rye loaves that also turned out dense:



I was over proofing again. I did not know that Rye dough proofs more quickly than white dough and is easy to over-proof because of its quicker fermentation.

Again I baked up some Basic White Sourdough. I was taking good care of my starter and still doing a lot of reading. I decided to proof less time and I finally came up with a loaf of sourdough that was actually promising. The crust crackled all over when it was cooling, had the most

glorious smell and tasted great. The crumb was also promising. It didn't have the large holes I was aiming for, but it was lighter and soft with a good texture.

First Passable Loaf and crumb:



Sourdough baking would be addicting for me from this point on. It wasn't easy to come up with a perfect loaf however, the challenge really made it all worthwhile. I

didn't have anyone to ask simple questions, such as, "How can you tell if the dough is ready to bake?" "How long do you wait before using a new starter?" or, "How long should you mix the dough in a mixer?" I had to find out most of the answers myself as none of the sourdough books seemed to have all of the answers a newbie wants to ask! I wonder if that is even possible?

I kept working at it. I am lucky to have many growing children who are more than happy to gobble up mistakes. The birds got their fair share too. The trash got a couple of real disasters. No one knew about those. I remember once being so disappointed because, as I grabbed my spray bottle and misted the loaf to provide humidity, there was suddenly an awful smell. I had inadvertently grabbed a different spray bottle which was marked, Bleach Water. The disappointment was great. That loaf was mixed, bulk fermented, shaped, refrigerated and proofed. There was a lot of toil in that loaf just to spray it with bleach water and dump it in the trash!

In between getting some good loaves, I still got my share of flops. As I was putting together the puzzle pieces, I wasn't willing to stay with the same recipe or method (it

would have been better if I had stayed with one recipe until I got it perfected). I kept experimenting, trying different techniques, like changing the length of timing while mixing the dough or proofing, adding the salt at different times as the dough developed, freezing dough or the starter, adjusting baking temperatures, using different methods of getting a humid oven (one of the difficulties for the home baker is getting the oven to have a humid environment during the first 10 - 20 minutes of baking), etc. I found a method that works very well for getting a humid baking environment, and will share that later.

After a while of experimenting, I baked my break-through sourdough loaf. It was just the thing to keep me addicted to baking great sourdough. I was so hooked that I couldn't keep from thinking about sourdough baking, techniques, and methods even while sleeping. My breakthrough sourdough loaf was baked using adjusted mixing, proofing and spraying. I put together what was working for me so far and I made an astonishing loaf of sourdough. I remember we all gathered around and listened to it crackle

as it cooled. The crust was so crispy that it shattered pieces of crust on the table as we cut into it.

Here is my breakthrough loaf of sourdough:



This loaf had a million blisters on the crust and had a pretty good crumb. I still didn't know how to get a consistent holey crumb, but I was determined to work on it. After this loaf, I was caught completely, hook, line and sinker, as they say. If I could do this, I might be able to bake "real" sourdough!

Here is a close up of the crust on the breakthrough sourdough loaf. Notice the incredible blisters:



Here is a picture of the crumb from the breakthrough loaf:



The texture was somewhat open, there were holes! It was chewy and tangy. I cannot begin to tell you how proud I was of

this loaf. I learned later that in other parts of the world, blisters on the crust and a real sour flavor are considered flaws in bread baking. In the USA, we love those blisters, large holes, and extraordinary sours!

After this loaf, I began to keep a photo journal of the bread I baked and I also began a journal of recipes, proofing times, mixing times, etc. When I make a mistake, I can go back and see what I might have done differently. If the bread bakes up really great, I can repeat it again. Keeping a journal really helps me in my sourdough experimenting.

After several years of experimenting and baking, I finally arrived at being able to bake bread like they do in San Francisco and San Luis Obispo. I will share how in this book....so yes, you can bake great sourdough at home in your own oven!

I now know that, yes, you can bake great sourdough and Artisan breads right out of your own oven, in your own home.



These kinds of loaves can be baked in your own oven.



THE SOURDOUGH STARTER

WHAT IS SOURDOUGH?



Sourdough is what happens when you leave a mixture of water and flour out in the open for a while. Organisms present in the air and flour go to work feeding on starches and sugars, they begin multiplying and produce gas as a by product of their fermentation. This gas is what raises the dough. Sourdough is an ancient method of raising dough and was thought to have occurred as far back as ancient Egyptian times. However, any human civilization which had wheat or other whole grains as part of their diet, most likely also had sourdough. Fresh

grain is to bread as grapes are to wine. Try telling setting grapes not to ferment! Producing your own sourdough culture (starter) is easy...mix up some wet dough and let it set, lightly covered, at room temperature. In a couple of days you will see bubbles in the flour/water mixture. A stable sourdough starter is a medium (flour and water) cultured with yeasts and bacteria which have a symbiotic relationship. The bacteria and the yeast become mutually beneficial to each other, helping each other to thrive. You can easily make your own sourdough starter right at home.

MAKING YOUR OWN SOURDOUGH STARTER

You can try your hand at making your own sourdough starter. You will need a clean 32-48 oz non-metallic container, pineapple juice or apple cider, good water and flour. To optimize your chances of activating a vigorous starter, use either part freshly ground whole grain flour or rye flour in your mixture. Whole grains have 200 times the amount of organisms as white flours*(According to Debra Wink).

After the mixture has started to ferment, begin to feed the mixture water and white flour (either All Purpose or Bread flour), if you desire a white sourdough starter. Or keep feeding the mixture with whole grain flours to have a wholegrain starter. You might try something like this

Day One:

Add:

- ¼ cup organic rye or wheat flour (freshly ground works best)
- ¼ cup bread flour
- ½ cup pineapple or apple cider (you can use pure water, but it takes a few days longer to get going)

Stir well to incorporate plenty of oxygen and let the container of the flour/juice mixture set, lightly covered, at room temperature. There is a tendency in those just starting out in sourdough baking to keep their starters and doughs at very warm temperatures to hurry things up. This is not always desirable, especially for a sourdough starter. Try to keep the new starter in a place that is between **68-80F** (20-26C) degrees. A higher temperature

encourages undesirable bacteria in a new starter that isn't yet stable enough to fend off invaders. Organic flours produced without chemicals are more likely to get a good sourdough starter going.

The pineapple or apple cider is used for the acid conditions they provide which encourage the desired bacteria and yeasts and discourage the undesired bacteria/yeasts. This was researched by Debra Wink and written about in her article "The Pineapple Juice Solution". This article is available at BBGA.org for registered members. This starter procedure was developed in collaboration with Debra Wink and I am grateful for her expertise.

Day Two: Stir, nothing else is needed on day two.

Day Three:

Whether you see bubbles or not, pour out half of your starter mixture and feed the starter with:

- **½ cup of pineapple juice or apple cider (or water)**
- **¼ cup of rye or whole wheat flour**

- **1/4 cup of bread flour**

Pouring out half of the starter will give any yeasts or bacteria that are present, a larger ratio of food and will dilute of any undesirable bacteria.

Day Three and Four:

Follow the same feeding as in Day One and Day Three.

Day Five through day Fourteen:

Now each day for the next ten days, pour off half of your starter mixture and feed with 1/2 cup water (juice is no longer necessary after day four) and 1/2 cup flour mix. If you wish to have a white flour starter, now is the time to begin feeding the starter white flour instead of rye or whole wheat flours (using more white flour at each feeding and less wholegrain flour is easier on the starter, as you are switching flours, after a couple of days, use only white flour).

If you wish to have a rye or whole wheat starter, instead of feeding by volume (using cup measures), weigh the water and rye or whole wheat flour and use equal weights of each ingredient to produce a 100% hydration starter. An

example would be to possibly feed the starter with 2 oz of water and 2 oz of rye flour (or wheat flour if you desire a whole wheat starter). It takes about two weeks for your new sourdough starter to become stable and have the power necessary to bake up good bread. During these two weeks, you will be working towards a stable starter and encouraging the establishment of a symbiotic relationship between desirable bacteria (Lactobacilli) and yeasts. Some of the things that can cause problems when trying to culture a new starter are:

Old Flour - obtain high quality, unbleached flours which are not too old or rancid, preferably organic.

Water - the chemicals in city water can be a problem for starters, use fresh, filtered water or good well water.

Time and Temperature - be patient; do not try to hurry the process by keeping the starter in a very warm place (over 80 F) because a culture which is too warm can encourage bad bacteria to take over.

Contamination- Be careful about using a clean spoon and a starting with a clean

container to avoid bad bacteria contamination or cross contamination with another starter.

A word about hydration:

In bread baking, hydration means the ratio of water to flour. More water means a higher hydration or wetter dough. Less water means a lower hydration or drier, stiffer dough. Understanding hydration allows a baker to know exactly how wet or dry the dough will be. A very wet starter is around 166% hydration. A thicker starter is 100% hydration (which means that the water is 100% the weight of the flour). An average dough ready for baking might be at 62% hydration. Wet Ciabatta dough might be around 70 % hydration. There will be more about hydration later in this chapter.

You can try making some pancakes or waffles with your new starter before the two weeks are up and you might even be able to try some bread after ten days. If you wish to try baking with the starter, feed it with a larger amount of food the night before you are planning to use it. An example might be to use one cup (5

oz) of flour and one cup (8.3 oz) water to feed one cup of (166% hydration) starter. Or another example for a thicker starter would be to add 5 oz of flour and 5 oz of water (for a starter that is 100% hydration). Make sure you have enough starter for your recipe and enough leftover to keep the starter going. If you want to mix up a large batch of dough make sure you feed your starter more flour and water. A good ratio of feed to starter might be 1:1:1 or .5: 1: 1 with the first number being the starter, the second, the water and the third the flour.

The new sourdough starter will go through a range of smells as it becomes mature. Don't be alarmed if it smells like wet cardboard, dirty socks, rotting cheese, vinegar or other strange smells. By the time it reaches two weeks of age, it should start smelling wonderful with a yeasty, tangy aroma. If a starter smells vinegary it means it needs to be fed. Sometimes the starter will not work and you have to throw it out and start again. It can be infected by bad bacteria while it is maturing. It might be slimy, get covered with mold, have a bad color (orangey or pink), or not ever produce

any fermentation. If the hooch goes to the middle or bottom of the container and the top is evil smelling foam, you can bet your starter got infected with a bad bacteria. This can occur for several reasons. You might be using water that contains chemicals or bacteria (like from a home well) or has other properties that the sourdough microorganisms don't like. Your flour might have a residue of pesticides that affect the microorganisms, or the flour might be old or rancid. The starter might have gotten too warm or you might not have started with a really clean container. Maybe you even forgot to feed it for a day or two and because it was not mature enough to take the neglect, the good microorganisms might have died. So make sure to get good pure water, fresh flour and use a very clean non metallic container. Metals can react with the acids in the starter and kill the starter or create bad flavors. You can use stainless bowls and spoons for mixing dough etc, but don't use a metal container for storing your sourdough starter. Plastic, glass and ceramics are good to use with sourdough. Wood may hold the microorganisms in the fiber and

possibly cross contaminate if you use more than one starter.

If you don't want to wait two weeks to see if you have a good starter or you have already tried and cannot seem to get a good sourdough starter going, obtain an established, stable sourdough starter from a neighbor or a sourdough starter through the internet and reactivate it.

Water and Flour:

Use the best water and flour you can get. There is no substitute for pure water and organic flour. Use filtered water if you don't have a source of good water otherwise. Tap water filtered with a good filter or reverse osmosis filtering is great. Tap water alone is not good and can kill the starter outright or over time. The wild yeasts and bacteria are sensitive to chemicals. Don't use bleach or soap to clean a sourdough starter container, use only hot water. Freshly ground flours are great for feeding a starter, but age the flour for one to two weeks before making the dough if you grind it yourself. Freshly ground, organic flours have more enzyme activity and will make an active starter. Poor quality, stale, or rancid flours will not make a good starter or bake up great bread.

CARE OF AN ESTABLISHED SOURDOUGH STARTER

A feeding or refreshing schedule for an established starter might be as follows:

After using your starter, or in the evening (if you haven't used the starter, pour maybe half of the starter out) then feed:

For a 166% hydration starter:

- 1 cup of white flour - 5 oz/141g
- 1 cup of tepid water - 8.3 oz/235g

For a 100 % hydration starter:

- 3/4 cup tepid water- 6 oz/170g
- 1&1/3 cup (approximately) flour- 6 oz /170g

Half the amounts of flour and water can be used if you are just maintaining your starter and don't plan to bake the next day. Don't worry if you notice that all of the flour hasn't been stirred in well and there are lumps floating on top of the

starter, that is okay. Always stir well to incorporate plenty of oxygen. Sourdough starters need to be fed on a regular basis. Some bakers like to refresh their starters several times a day. Others refrigerate their starters either as a dough or slurry and don't feed as often, maybe once or twice a week. You will find out how well your starter works by observing it's ability to perform, based on the feeding schedule you have. I like to feed my starters that are kept at room temperature everyday, at least once a day, usually in the evening. That is what I consider an optimum time for the starter to be ready for mixing dough by the next day in the morning or afternoon. This is really just a suggestion because starters have a lot of play when it comes to timing. I have found that the ratio of food to starter amount can be a factor in how sour the bread turns out and how vigorous the final dough is. A smaller, but still regular feeding, will turn out bread that has a good sour tang. I believe that may be because the yeast is then kept in check and the bacteria that causes the flavor has more of a chance to multiply in the higher acid environment. It also allows more bacteria to be present because you

have a higher ratio of older starter to the feed mixture. Yeasts multiply faster than the bacteria, so if you wish milder flavored bread with a faster rise, pour out most of your starter and feed it a larger ratio of flour/water mixture the night before mixing your dough. If you want to use a starter for quick or one day breads, like for a Vienna White Loaf or bagels, English Muffins, etc, then pour out most of the starter and feed it a larger quantity of food in the evening and use it for mixing dough early in the morning of the next day.

A Whole Wheat Starter and a Rye



starter: kept at 100% hydration

I like to keep my starters that are not in use, in a dedicated refrigerator which is kept at a higher than normal temperature for refrigeration, around 44 - 46 degrees. I take the starters out and feed them once or twice a week. A starter that is fed a large ratio of water/flour mixture will last a long time in the refrigerator, even if neglected. A vigorous, strong, healthy starter will resist being taken over by the local bacteria and yeasts. A culture that is strong has its own method of fighting off invading yeasts and bacteria. Some people think that any starter you buy or get from somewhere else will end up becoming a "local" starter (becoming a local starter means the starter which was obtained from another area ends up being the same as the starter yeasts/bacteria indigenous to the region). There is still much controversy over whether a foreign starter can turn into a local starter. This may happen if you don't take care of the starter with regular feeding, if you keep it someplace too warm or your local bacteria (bacteria in your area) are more vigorous than the starter bacteria you obtained. It may be that the bacteria in your starter which made it so flavorful disappeared after prolonged refrigeration

at or below 40F. Just like a yogurt, kefir, or cheese culture, the sourdough starters should stay true to form, if taken care of properly and kept healthy. I have read that tests have been done to see if sourdough starters changed over to the indigenous microflora after being in a different place for a while. The tests concluded that the yeasts were the same as the indigenous yeast. Although there are many different kinds of yeast, sourdough starters around the world are known to contain similar yeasts. However, the bacteria were not tested and they also contribute much to the flavor of the bread. Perhaps certain combinations of yeasts and bacteria are necessary for a stable starter to resist being taken over by local yeast and bacteria.

It would be interesting to have the same experiments done with the bacteria present in the sourdough cultures. Also the tests may have been performed on starters which were kept at refrigerator temperatures for a while, in which case, the starters may have lost their original bacteria and tasted or reacted the same as the rest of the tester's refrigerated

starters. Long term refrigerated storage of sourdough starters will be discussed later in this chapter.

In tests done with my starters, the various fermentation times have stayed the same, which seems to indicate that many of the original yeasts/bacteria must still be present.



A white starter which is ready to be fed, with a layer of hooch (starter liquid) on the top.

HYDRATION

Hydration, in bread baking terms, means how much water or liquid there is in a given amount of flour. Hydration is figured out by the weight of the water as a percentage of the weight of the flour. Both ingredients are weighed and then

the total amount of water by weight is divided by the total amount of flour by weight. So if you have 4 oz of water and 5 oz of flour you divide 4/5 and get 80 % hydration. 80% hydration is a very thick batter, like what might be mixed up if you make muffins or cornbread.

The lower hydration doughs are firmer and drier in the 50 - 63 % range of hydration. The higher hydration doughs are stickier and wetter at around 64 % to 70% hydration and the very high hydration doughs are more like a batter and are extremely wet and sticky at 71% and up. 100% hydration does not mean 100% water with no flour. It does mean 100% of the weight of the flour is also the same weight of the water. So for instance, 8 oz of water and 8 oz of flour mixed together would make a 100% hydration mixture. You can have batters at more than 100% hydration by having more water by weight than flour. Many starters are kept at a very wet 166% hydration which is 8.3 oz of water (usually one measuring cup) and 5 oz of flour (also an average measuring cupful) The percentage of hydration is based on the flour being 100% flour weight as a

constant and the water being the changeable percentage of the flour weight.

I like to keep my white starters at around 166% hydration. That is, a one to one ratio, by volume, like one cup (8.3 oz) of water to one cup (5 oz) of flour. Another popular hydration for starters is 100% hydration, which is a one to one ratio, by weight, of water to flour, like 5 ounces of water to 5 ounces of flour. This hydration will make a much thicker batter. I like to keep my whole grain starters at 100% hydration, because they tend to ferment faster and can be slowed down somewhat when they are kept thicker (a wetter batter ferments more quickly). I keep my white starters at the more liquid batter of 166% hydration for a couple of reasons. In a more liquid state the gluten does not form binding strands which are harder to incorporate into the final dough during mixing. It ferments faster but the bubbles escape so that you do not have to worry about the mixture crawling out of its container, it is easier to measure if you use a measuring cup, and I believe it helps make the dough more extensible

and produces dough with an open crumb.

Getting a good tangy sour flavor depends upon many factors, like your technique, timing, temperature, starter, recipe etc. A wetter liquid batter favors lactic acid, which is where much of the complex flavor is obtained. Drier dough favors acetic acid which contributes to the souring of the dough, however it takes longer to ferment. So timing and temperature play an important factor in obtaining a sour flavor. An interesting combination is to use a wet starter and drier starter in making the dough. This should contribute both a great flavor and sourness to the finished loaf. Making up a batch of 60 - 80 % hydration dough using a whole grain starter, and allowing it to age for several days at cool temperatures (this would be called a Motherdough, which is covered further on), then adding it to your final dough, would be another way of adding more flavor to your bread. Using a mature lower hydration Motherdough and then bulk fermenting (bulk fermentation is the first ferment after mixing the dough) at a warm temperature is another way to get a

tangy bread. Since living in Hawaii and baking in a warm, humid environment, I have found it much easier to get consistently sour bread, so temperature seems to be important in obtaining a sour flavor. There are as many techniques for obtaining a great sour flavor as there are bakers.

I find that working with sourdough is an evolving process and what I prefer now, often changes as my interests change. It is also a learning process and what I understand and like to do now, changes as time and experience shows me new or better techniques. I have always liked working with stickier, wetter dough, but have found a recent interest in working with the lower hydration, drier dough which when baked, can be surprisingly airy, light and full of holes. So now I am experimenting with drier dough which I bulk ferment at warm temperatures. I have also been working with white starters kept at 50 -60% hydration (a stiff Biga-like dough) and have found a whole new range of possibilities. I have worked with refrigerated "Motherdoughs" at 50 - 80% hydration and find them different to work with than either the 166% white

starter or the 100% whole grain starters. I will cover this in the chapter on “Motherdough”.

KEEPING A STARTER HEALTHY

The older sourdough books which instruct you to add ingredients to your starter, like leftover dough, old biscuits, milk, honey, etc, are out of date. If you add anything besides water and flour to your starter, you are asking for trouble. Who knows what bacteria, yeasts or other microorganisms from such additions will do to the good starter you already have. If you feed your starter with flour and water each time, it will be consistent in its output and fermenting times. You will not be introducing an unknown element to the starter which could potentially kill or contaminate it with something that will slow it down or make it sick. If you want to experiment with adding other things to your starter, just remove some starter and put it into another container to experiment with. I have read of experimenters adding sugar, fruit or feeding their starters with different kinds of flours or ingredients. Experimentation can be fun, just make sure to remove the starter you are experimenting with from

the original starter and leave your original starter alone. I personally prefer starters fed with only flours and water (juice can be used the first few days to get a starter going). The starters made with fruits, yogurts, kefir, etc seem to me to be already cultured with milk or fruit bacteria and not the grain bacteria that we are trying to encourage. I like to bring out the taste of wheat, rye and whole grains.

Not feeding the sourdough starter frequently or using the starter when it isn't adequately refreshed/fed is a very common problem especially for those new to sourdough baking. I have tried several times to use a starter that smelled too vinegary and/or was too far past its prime. I thought that adding flour and water during mixing should be similar to feeding the starter. In every case the dough failed to rise properly and sometimes fell apart when I would add the salt. I think the acid content is just too great and may not only affect the gluten but may also affect the yeast's ability to multiply etc. Also you would be incorporating a large ratio of a mixture in which the gluten was broken down

encouraging the dough to be weak. Feed your sourdough starter everyday if it is at room temperature. If you have kept it in the refrigerator, refresh it a few times before using it to mix up dough. If the starter smells very acidic, pour most of it out and build it back up by feeding it a larger ratio of flour/water before using it to make dough.

A starter that is 166% hydration and fed with a lower ratio of feed to starter will not always look bubbly when it is ready to use, sometimes it can look quite dead. By a lower ratio of feed to starter, I mean that the volume of the starter batter is greater than the amount of feed it gets. For instance, if you have 2 cups of ripe starter, and you feed it with one cup of water/flour mixture, it will not show as much activity as if you had one cup of ripe starter and you feed it with two cups of water/flour mixture. It will amaze you at how vigorous it actually is, even when it looks inactive. A very liquid starter fed with a large amount of feed may show a nice layer of thin bubbles the morning after feeding, while the starter with a lower amount of feed may not show any activity. When you feed it too

low of an amount for too long of time, it will eventually not be as active or healthy.

Starters can be affected by poor water quality. The bakery across the bay from me had problems for years with not being able to use the wild yeasts because of poor water quality. I sent them some of my Northwest starter and the first batch died. I asked them some questions about the starter care and found out they were using city tap water to feed the starter and make dough. City water has chlorine and other chemicals in it that can be fatal to sourdough yeasts. The bakery has been successfully baking great sourdough since filtering their water.

Besides chlorine, there may be other chemicals in city tap water that can harm sourdough yeasts. Find the best water you can and use it for both feeding the starter and for making up the dough. Filtered water is usually good. Water which has been distilled isn't the best for sourdough baking as the salts and minerals have been removed and they not only help to feed the yeasts and microorganisms, but also affect the flavor of the water (and the bread). However,

distilled water is still preferable to unfiltered tap water. If tap water is all that is easily available to you, boil the water, cool it, and then pour it into a container that you can keep loosely covered. This way some of the volatile gasses have a chance to dissipate. Leave the container, loosely covered for 24 - 48 hours, then cover and store it for use in feeding your starter and the mixing of your dough. The use of boiled tap water has been successful for those who only have tap water available to them or if they don't know what might be in the water, as in small or private well water sources. I have heard that some people have had no problems using their tap water with sourdough baking. Try a test using your tap water and feeding a small amount of sourdough starter which you have set aside and monitor the results. The latest starter I have worked with in Hawaii would not thrive even after trying for two weeks. I was using city water. I finally threw it out and started another culture using filtered catchment water (rainwater), the starter is doing very well and will make a great addition to my collection of sourdough starters from around the world.

Your sourdough starter can sometimes smell "bad". Dirty rotten feet, vomit, bad cheese are some of the descriptions I have heard to describe a starter with a foul odor. This can happen especially in warmer weather as the starter needs to be fed more frequently and often is not. A bad odor can also happen when the ratio of feed to starter is too low (like not pouring out or using any starter and feeding just a small amount of water/flour). Neglect, as well as poor water or flour quality can also cause an unpleasant odor. Contamination by unfavorable bacteria or mold can also be a cause. When reactivating a dry starter, there can be a "bad" odor for a few days as it gets started, the odor should disappear, replaced by a wonderful yeasty smell by day five or six with a reactivated starter.

To recover a starter that looks or smells suspicious, remove about $\frac{1}{4}$ cup of the starter and set it aside in a clean bowl. Discard the rest of the starter and clean the starter container really well, scraping down the sides and washing with hot water. Don't use bleach or soap, just hot water. Then add back the $\frac{1}{4}$ cup of

reserved starter and start feeding again. Once you have the starter going well, keep it in the refrigerator (a dedicated small dorm refrigerator kept between 42 - 48 degrees is best) if the room temperatures are too warm, then you won't have to feed it as often, especially if you don't bake very often.

If a starter is a terrible color like pink, orange or something really strange, you should pour it all out and not take chances. Most neglected starters, or a starter that has been contaminated can be recovered using the method above.

Don't use a starter that is past its prime and desperately needs a feeding. Always use a vigorous starter which has been fed properly. During warmer weather feed your starter more often if it is kept out at room temperature. You can also refresh the starter twice a day, once in the morning and once at night, if you will be mixing up a milder flavored batch of dough the following day. That way there is plenty of active yeasts available for the dough. When you feed your starter, make sure to mix vigorously to help incorporate plenty of oxygen, which is

very helpful in getting your starter going and keeping it healthy.

Note: It is not optimum to keep sourdough starters in a refrigerator environment. Later in this chapter the drawbacks of refrigerator storage, where the temperature is kept at or below 40 degrees Fahrenheit, are discussed.

KNOWING YOUR STARTER'S CAPABILITIES

If you know how long it takes your starter to proof (to reach its optimum level before falling back or collapsing), it will go a long way in helping you make better bread. In my sourdough starter experiments, I mixed up batches of starter at 100% hydration and then marked the levels on the side of the jar each hour as they rose. Starters are very variable as to how long they take to reach maximum potential. An average starter's first rising is around six hours. I have a starter that takes 3.5 hours and a starter that takes 10 hours at a room temperature of between 68-70 degrees.

I also have a starter from New Zealand which proofs in only 2.5 hours! I even have one starter that took 21 hours but I

dried it and put it away as it was too long for what I wanted at the time. A longer proofing starter is used differently than a shorter proofing starter. The San Francisco starters are some of the longest proofing starters. A very long bulk ferment or proof is possible with them, which contributes towards the tangy sour flavor that they are famous for. Because they have long staying power, longer proofing starters are not depleted right when you need them to be the most vigorous, during a long ferment.

If you do a shorter bulk ferment(first raising) and proof(second raising) with a longer lasting starter, you won't get the full potential sour, flavor, or oven spring. A typical home method for San Francisco style bread would be mixing, a 6 - 8 hour bulk ferment, then scaling(weighing), shaping and retarding(chilling the dough) overnight in a refrigerator for another 12 - 24 hours, then a final proof for 1 - 2 hours at room temperature before baking. Another technique for a long proofing starter would be to bulk ferment a shorter time and then do a very long second proof. A smaller ratio of starter to the recipe ingredients will also

help a long starter be able to make a really long proof, if that is what you want. A regular six hour starter won't be able to hold up under that kind of timing and a short 3.5 hour starter will bite the dust by then.

You might use a shorter proofing starter for the recipes that require faster bulk ferments and proofing, like a Shepherd's bread, Vienna White Loaf, Alaskan Bread or the many quick recipes for waffles, pancakes, muffins etc. Most recipes for sourdough are for the typical six hour starters. However, if you know what your starter can do, you can change any recipe to suit your starter.

I have found that in areas that are very warm and humid, cutting fermentation time in half and chilling the dough right away is beneficial. After chilling the dough overnight, warm the dough at room temperature for an hour and then shape the loaves before the final proofing. Using a smaller amount of sourdough culture in the dough can also keep the dough from over-fermenting in hot weather as can using a thicker, lower hydration starter.

Motherdough starters are gaining in popularity. A Motherdough starter resembles a dough or very thick batter; it is always refrigerated and kept cool to ripen. A ripe Motherdough will bring a new dimension of flavor to your sourdough baking. I like to keep a refrigerated Motherdough starter at anywhere from 50 - 80 % hydration. A Motherdough at 80% hydration will be a ratio of 5 oz of flour to 4 oz of water (this is approximately 2:1 ratio volume measurement of flour to water or about 1 cup of flour to ½ cup water). A Motherdough starter is usually kept in addition to your regular starter and is made using a regular starter.

A Motherdough starter kept at 80 % hydration:



Motherdough starters will be explained later in the chapter on Motherdough.

LEAVEN & PRE-FERMENTS

Leaven is something used to raise dough. A Pre-ferment is a way of handling a leaven mixture.

There are many different words used to describe the different leavenings available for raising dough. Leavening can include commercial yeast, wild yeast or chemical leavening like baking soda/powder. We will leave out the chemical leavening in these descriptions. Confusion often happens when describing commercial and wild yeast leavens because of the similarities between them.

The names of some of the popular commercial baker's yeasts are:

- Cake yeast – fresh yeast pressed into a small cake.
- Quick yeast – a yeast that was formulated to be twice as fast as fresh cake yeast
- Instant yeast – yeast formulated to be even faster than quick yeast and

have the ability to activate directly in the dough.

The types of some of the popular natural or wild leavenings are:

- Sourdough Starter or culture - A stable water/flour mixture cultured with wild yeast and lactobacilli.
- Levain - a French word for leaven, usually a build in the mixing process.
- Desem - a Flemish starter made with whole wheat flour.
- Barm - a starter made from the foam from fermenting liquor.
- Natural Leaven - this sometimes means wild yeast culture or can mean old dough.
- Chef is a French word used to mean a piece of old dough or starter used as a culture for building the next batch of dough or Levain.
- Sauerteig - German for sourdough starter.

A pre-ferment is a mixture of flour and water, and sometimes cracked grains or other ingredients that are mixed with a sourdough starter or commercial yeast, and left to ferment for several hours or overnight, usually at room temperature.

When the pre-ferment is done fermenting, it is incorporated into the final dough.

Pre-ferments are called by different names and have different properties.

Some of the names for pre-ferments are:

- Sponge - a mixture of flour and water and/or other ingredients, which can have a hydration of 70 - 100 % and is made using only a portion of the recipe's ingredients. It is allowed to ferment overnight, with the rest of the ingredients being incorporated the next day, into the final dough.
- Poolish - A preferment using flour and water, it usually does not contain salt and uses a small amount of commercial yeast. It is often around 100% hydration
- Biga, which is an Italian type of preferment, uses commercial yeast and is thick dough of around 50 - 60 % hydration, it also usually uses a small amount of commercial yeast.
- "Old Dough" also called Pate Fermente, is another kind of preferment and is a piece of

dough from a former batch of dough saved and used for subsequent batches of dough, it usually contains salt and the hydration is whatever the original dough was. It will contain either commercial yeast or wild yeast.

- “Motherdough” meaning the original cultured dough which is used to produce all subsequent dough. I use it to mean a cold fermented starter at 50 - 80 % hydration and optimally kept refrigerated at around 42 - 48 degrees for several days before use. It contains wild yeast. I took the word “Motherdough” from a San Francisco bakery’s use of the term “Mother Dough,” describing their starter which is a cold ferment.

- Levain is a French word for a leaven or as a stage or build of dough. It is sometimes made from wild yeast and sometimes commercial yeast, it can be any hydration.

With the renewed interest and experimentation in Sourdough and Artisan breads, I hope that preferment names will come to include both wild yeasts and commercial yeasts interchangeably. So a Biga may just mean a low hydration preferment with either commercial yeast or wild yeast used as the culture and a Poolish might be the higher hydration preferment using either commercial yeast or wild yeast. It is already common for the terms to be used interchangeably and can cause confusion when done so. It seems to make more sense to call preferments by their hydration level or intended use and have their meanings more universal.



SALT

For overnight preferments, sponges or doughs, a small amount of salt can keep the sponge from over fermenting, especially in a preferment containing rye or whole grains. Using salt in a sponge fermented overnight, slows down the fermentation and keeps the sponge from collapsing or over souring, killing off the yeasts and bacteria you are trying to encourage.

Experiments with starters:



Salt also inhibits Protease, which is an enzyme, present in flour that breaks

down gluten. A small amount of protease activity can help dough be extensible (stretchy and workable). That is why salt is often added after the dough is mixed and allowed to rest for a time. This resting period of the dough after mixing, is called Autolyse and was pioneered by Professor Raymond Calvel in his experiments with bread baking. He found that using an autolyse period during mixing of the dough, and adding the salt after the autolyse period, helped to develop superior dough with greater extensibility.

Salt slows down fermentation, strengthens the gluten of the dough, not to mention contributing to the flavor and longevity of the baked bread. Salt, like sugar, is hygroscopic - it binds with water. This helps dough hold moisture so it will not stale as quickly. Breads made without salt

stale more quickly. Salt also contributes to the color of the crust through its influence on the fermentation of the dough. I did some experiments on the effects of salt and sugar on the sourdough starter(see picture at the beginning of the chapter). In the experiment, each of the jars were filled with 8 oz of the same active starter at 118% hydration. The first jar had .5 oz of Non Iodized salt added to it, the second one had .5 oz of Iodized salt added, the third had Sea salt added at .5 oz, the fourth jar had .5 oz of sugar added, and the last jar on the right had nothing added to it. The jars of starter were at room temperature. After eight hours you can see the difference the salt and sugar had on the starters. You can see that the salt had a controlling effect on the fermentation. With sourdough baking, you want to prolong the dough's ability to ferment, because long fermentation is what makes sourdough so great tasting. Salt helps this process. Experimenting with

adding salt at different stages of the dough fermentation can be interesting. If you wait until after bulk fermentation to add the salt, you might allow the Protease enzyme in the dough to break down the gluten too much and your dough might get sticky and lose elasticity. If however, you have a flour that is too high in gluten and your dough is not stretchy enough (like a tight rubber band) you can add salt later in the fermentation process to allow the Protease time to break down the gluten and help the dough be more manageable.

REACTIVATING A DRIED STARTER

To reactivate a dry starter, mix the dried flakes/powder into 8 oz (approximately one cup) tepid water (or pineapple juice or a mixture of juice and water) and stir. Then add 5 oz of either all purpose flour or bread flour (approximately one cup).

If you are reactivating a wholegrain starter like a rye or whole wheat starter,

use 6 oz of water and 6 oz of the wholegrain flour.

Allow the mixture to set at room temperature. The next day and each day for the next five days, pour off and discard half of your starter mixture and then refresh or feed it again with half of the original amounts - 4 oz of water and 2.5 oz of flour. Discarding might seem wasteful, but you need to reduce the amount of starter so the feed ratio is enough to keep the starter healthy. After five days, instead of discarding the starter, you can use it for making waffles, pancakes or biscuits etc. If you wish to cook pancakes or waffles, remember to feed your starter more water/flour mixture the night before. You need to have enough starter to use in your recipe, with some left over to continue your starter. Always think ahead and feed your starter adequate amounts, so that when you are done using it, there is still enough left over to propagate your starter.

As in making your own starter from scratch, you can use the pineapple juice instead of water for the first four days of feeding, to help fight off bad

bacteria when reactivating a dried starter. After four days, the acid level will be high enough in the starter so that you will only need to use water instead of the juice. It is also a good idea to keep the starter at room temperature and not try to hurry it along by keeping it too warm. The temperature should be below 80 degrees and is ideal in the 68 - 78 degree range. Higher temperatures encourage invasion by bad bacteria. A reconstituted dry starter will build in strength and taste for the first two weeks, after which time it should be stable. It is still necessary to use only pure water and good fresh flour for feeding the starter. Don't worry if it takes several days for the starter to show some activity and smell yeasty. Remember that starters kept at 166% hydration often look inactive. About a week after reconstituting the starter, you should be able to bake some bread. However the full flavor won't be apparent until about two weeks, as it takes longer for the Lactobacilli to recover than the yeasts, and the Lactobacilli are a crucial element in flavor development. A dried starter can take as long as a home made starter to stabilize. The advantage is that you have a known, tried culture that has

already shown itself to be successful as a leavening for sourdough baking and you know its properties.

REACTIVATING A FROZEN STARTER

To reactivate a frozen starter, take the starter out of the freezer and thaw it at room temperature. Make a mixture of water and flour at whatever hydration you are planning to keep your starter. For instance maybe you might use a cup of water and a cup of flour. Stir the water and flour together and then drop in the thawed ball of starter dough. Let the dough set for ten minutes or so and then take your fingers and break the dough ball into smaller pieces and then stir the mixture. Stir it a couple more times during the day to distribute the starter dough. Next day continue feeding the starter as you usually would. You could also take the thawed starter dough and soak it in a cup of tepid water for ten minutes, then break up the starter dough with your fingers and add a cup of flour and stir.

STORING THE STARTER

To store your starter for long time like a month or two, feed the starter and make sure it is vigorous. Then about 8-12 hours after feeding, remove about 1/3 cup of your starter. Discard the rest. Stir flour into the 1/3 cup of starter and thicken it so it is like a piece of soft, thick dough. Then knead it with some more flour until it is smooth and not too sticky. It should be like a thick piece of dough. Place the dough piece in a plastic zip bag and let it set out at room temperature for about four hours. Expel any gas in the bag and then place it in another freezer bag, mark the date and contents on the bag and freeze it (using a frost free freezer will shorten the life of a frozen starter, as the alternate warming and freezing cycles is harsh on the frozen culture). When you get back from vacation, thaw it out, break it apart into tepid water and begin to feed it again. If you want to put your starter away for a very long time, take 1/4 - 1/2 cup of your 166% hydration starter which has been fed and is vigorous, and spread it out thinly with a pastry brush on a piece of plastic wrap which has been spread over a baking sheet. Dry this overnight or

until it is completely dry. Then crush the dried starter into flakes and store in a zip bag which is then placed into a sealed container, like a mason jar, an old mayonnaise jar or a plastic storage container. The container will protect the dried starter from rodents and insects. Then store the container in a cool dark place, like a pantry or dresser drawer. Don't store dried sourdough starter in the refrigerator or freezer, as your dried starter might absorb moisture, mold or go bad, unless it is vacuum sealed.

You can also store your well fed wet starter for a few days in the refrigerator and expect it to be fine once you return and start feeding it again. Any more than a few days and you risk the lactobacilli dying off and a bland starter might be the result (Read further on about long term refrigerator storage of sourdough starters).



This is a stable 166 % hydration starter which has been refreshed with a large ratio of feed to starter, it has been 12 hours since feeding.

Long Term cold Storage of Sourdough Starters

A problem for many people who keep their sourdough starter in the refrigerator over a period of time is that they find their starter doesn't seem to have the unique flavor it started out with or the ability to produce good tangy sourdough bread, like it did at first.

One reason may be that according to Professor Raymond Calvel, in his book, "The Taste of Bread" says, "To maintain the viability of the culture, it is necessary

to ensure that the temperature of the refrigeration chamber stays between 8 - 10C (46.4 - 50 F) whenever the chef (starter) is retarded for periods of 48 hours or more. At lower temperatures, part of the flora of the culture may be destroyed, and consequently the taste of the bread produced from this culture may be spoiled." "Thus, bread made from a levain frequently no longer has the dominant, lightly acidic taste that is the basis of its originality."

Therefore, over time, starters kept at average refrigerator temperatures may have their flavor producing bacteria die off. Keeping a starter at room temperature until you are done using it and then drying it and putting it away or freezing it for short periods of time (weeks or months, not years) might be some ways of preserving the bacteria. If you wish to use another starter, these are better ways of storing your older starter. Freezing for short periods of time may help keep the bacteria from dying off completely compared to long term refrigeration, but there is still a significant die off of the bacteria and the starter may

need some time to regenerate the bacteria, once thawed.

For those that don't bake often, not being able to use a refrigerator can be a disadvantage. Keeping smaller quantities of starter at room temperature and feeding it smaller amounts might be the answer to this problem. Having a dedicated refrigerator kept at a warmer than usual temperature would be the ideal way to keep several starters. If you can keep your dedicated refrigerator at or around 44 - 48F degrees, that would be ideal. A dedicated refrigerator used only for sourdough is best as it would be dangerous to keep other foods at such high temperatures. The dedicated refrigerator would also be ideal as a retarding environment for proofing your sourdough loaves. You could have a dual purpose environment, a starter keeper and a dough retarder (retarding dough means to slow it down with cool temperatures). If you could have a temperature controller to control the temperature accurately on your dedicated refrigerator, you would have an ideal setup for your sourdough baking. Perhaps a small camper refrigerator or a

dorm fridge, would work for this purpose. This of course, would be for those who are serious sourdough bakers. The drying of the starter or freezing would be better for those who don't bake often. Refrigerating your starter for a while and reverting to some saved dried starter after you notice a loss in flavor or vigor would also be an alternative.



Starters kept in a dedicated refrigerator.



HOME BAKING OF SOURDOUGH BREADS



Baking Sourdough Breads at home is easy and fun. To bake a crusty, shiny fully bloomed loaf of sourdough, you will need a plain electric/gas oven that heats to at least 500F/260C degrees, a good baking stone, a water spray bottle and a common turkey roasting pan lid (or bottom). This is the basic equipment you will need. You will also find it helpful to have other equipment like cooling racks, a timer, thermometer, heavy oven mitts, lame or sharp knife and some sort of peel or baking sheet for moving your dough around. I do not have experience with gas ovens, but if that is what you have, use the instructions here and see if they work for your gas oven as well.

Before you start, get a good oven thermometer and check your oven for accuracy. Then obtain a good baking stone. Get one as large as will accommodate your oven size, but that will still allow at least 2 inches all around for hot air flow. Try to get one that is at least ½ " thick, if possible. A thicker one might work better, but it will take longer to heat the stone all the way through. Measure the inside of your oven and the stone, don't guess. It is necessary to find a large enough stone to accommodate the roasting pan lid method of baking which is explained here. Some home bakers use a large tile of Travertine cut to size or fire bricks pushed together. Use the middle shelf of your oven or whichever shelf ends up working best to allow the bread to bake without burning the bottom of the loaf.

When baking sourdough bread, steam is necessary to produce a great crust. For the home baker this can present problems. Some of the methods used to create steam are to spray the loaf or oven sides with a water spray bottle several times during the beginning of the baking period. The drawbacks to this method are

that the oven loses heat quickly each time you open the oven, and there really isn't much steam produced, the spray evaporates almost immediately.

Also, if the loaf is sprayed too heavily, it will produce an unsightly whitish cast to the crust.



Another method is to use a clay baking pot with a clay lid. The pot with lid is preheated and then the dough is slipped into the hot pot. The dough is either sprayed with a mist of water once and the lid placed on, or it isn't sprayed at all. The hot, heavy lid must be removed during the baking to dry out the crust. This actually works pretty well and turns out a nice loaf with a shiny developed crust. The disadvantages of this method are that the pot is very hot and moving the lid is dangerous and difficult. It can be hard to get the dough into the pot just right. Then removing the loaf and trying to reheat the pot to bake another loaf is also difficult and time consuming.

Other methods are to keep a small pan or heavy skillet on the bottom of the oven and add ice cubes or hot water for steam. One ingenious baker, that I know, even

came up with a way of running a copper tube into his oven to drip hot water into a pan and produce steam. I have tried many of these methods and was always dissatisfied for one reason or another. I was dissatisfied until I came up with a method of using a roasting pan lid to hold the steam next to the loaf, during the beginning part of the baking period. The roasting pan lid which is used is just a lid from the common turkey roasting pan. The lid works to hold steam right next to the dough so it can have the benefit of steam during the baking. When you hold the steam right next to the loaf, the outside layer of the crust gelatinizes and the starches turn to sugar. This effect helps the crust to have a shiny finish with great color. Steam also allows the dough to expand to its fullest because it keeps the outer skin moist while the dough is expanding. Without adequate steam, the dough will quickly form a crust because of the high oven heat. This crust formed too soon will keep the dough from expanding, resulting in a denser loaf.

Only steam can produce a superior loaf with a crust that can be compared to a wood fired bread oven or a bakery oven

with steam injection. To get this effect you need to hold steam around the dough during the beginning of the baking period. The roasting pan lid is lightweight, easy to use and produces great results every time.

THE ROASTING PAN METHOD OF BAKING WITH STEAM

To use the Roasting Pan Method of steaming, you will need a roasting pan lid which is at least 4 - 4.5 inches high and the length should fit on your baking stone without hanging over the edge. The bottom part of the roaster pan will also work, if it has handles on the sides. For boules or round loaves, you can use a deep stainless steel bowl (attach a heat proof handle to the outside bottom) for a lid. In a pinch you can even use an aluminum foil turkey pan turned upside down or make your own temporary lid by shaping heavy aluminum foil into a lid shape and using as a sort of tent over the dough while steaming.

When your dough is proofing and you think it might have another hour to go before being ready to bake, put your baking stone on a rack in the middle of the oven and turn your oven to **400-475F** (204.4C-246C) degrees (depending on the recipe).

The oven should be really hot and the stone should be heated all the way through. Your oven might indicate after 20 - 30 minutes that it is heated, but the stone takes longer to heat through to the center.

While preheating the oven to **450F/232.2C** degrees (or however hot the recipe indicates) place the roasting lid into the hot oven on top of the baking stone and allow it to preheat with the oven. It is best to put the lid into the oven towards the end of the preheating period so that the lid does not shield the baking stone from the heat. I like to put it in about five minutes before baking the first loaf.

When the first loaf is done proofing and is ready to go into the hot oven, place the

dough onto your peel or baking sheet, making sure to use plenty of semolina flour or cornmeal to keep the dough from sticking, slash the dough, open the oven with a good thick oven mitt, slide out the oven rack, take the lid out and place it on the oven door which is open. Next, slide your dough quickly onto the hot baking stone. Then using a water spray bottle, spritz the entire loaf with a mist of water. You want to cover the dough with a nice mist of water but not have so much water on the dough that it is running down the dough and puddling on the stone. I spray my two pound batard (a batard is a loaf shaped like a regular French bread loaf) loaves about 6 - 8 sprays with the bottle set to "medium mist". Then quickly cover the dough with the hot roasting lid, slide the oven rack back into the oven and close the door.

Set your timer for 20 minutes. Don't open the oven or take off the lid to check on your loaf until the first 20 minutes is up (do 15 minutes for a crisper loaf with a dried out crust and add the extra five minutes to the rest of the baking time). After 20 minutes has passed, open the oven door and using good, thick oven

mitts, take off the roasting lid and place it on top of your oven to have handy for the next loaf. Keeping the lid on top of the oven will keep the lid warm for the next bake and keep it out of the way of children who might touch it while it is still hot. Close the oven door quickly and turn the oven down to **425F/218.3C**, **400F/204.4C** or even **375F/190.6C** depending upon the recipe you are following (I often turn the oven down after the first 20 minutes of baking). Bake the loaf another 15 minutes or more, turning the loaf at least once to promote even browning.

I wait until there are about 5 - 8 minutes left in the bake to turn the loaf. If you have a convection oven, this might not be necessary because you won't have hot spots in your oven. Take out the loaf when it is done. It should look nicely browned, sound hollow when you knock it on the bottom with your knuckles, or the internal temperature measures between **200-205F (93.3-96.1C)** with your bread thermometer (sweet dough can be done when **180-200F/82.2-93.3C**). Place the hot bread on a baking rack and cool.

To get the oven ready for the next loaf, turn the oven back up to the first temperature of **450 - 475F (232.2-246.1C)** put the lid back into the oven on top of the stone, and reheat the oven for 5 - 10 minutes before putting in the next loaf. Then follow the instructions all over from the beginning.

Lean dough (dough without sugars, milk and oils) can be baked at higher temperatures in the beginning of the baking period. **450F/232.2C** degrees would be a good temperature to start baking with. After the first 20 minutes, remove the roasting lid and turn down the oven to **425F/218.3C** or even **400F/204.4C** if the loaf is already very browned, to finish off the bake. Some loaves need a lower temperature because of milk or sugars/malts in the dough.

If you would like a thicker crust in your lean dough breads, start your oven temperature at **400F/204.4C** degrees and leave it at that temperature throughout the whole baking period. Bake the loaf longer. Start by baking 18 minutes with the roasting lid then take off the lid and bake 20 - 27 more minutes turning the loaf a few times for even browning. You

can experiment with leaving the roasting lid on for less time, so that the crust is more crispy.

Rye and whole grain breads often need the lower temperatures for longer periods of baking time. The timing and temperature for a whole wheat or rye loaf might be to bake at **425F-450F** (218.3-232.2C) degrees for the first 15 minutes with a roasting lid, then take off the lid and turn down the oven to **400F/204.4C** degrees for another 20 - 25 minutes. Check the loaf to see if it is done. If it isn't bake it a little longer. Then increase or decrease the temperature or timing for the next loaf.

If you have dough that has sugar, milk, malt, syrup, or fats as part of the recipe, a suggested baking temperature is **400F/204.4C** degrees for the whole baking period. Or start out at **425F/218.3C** and turn down to **400F/204.4C** halfway through the baking period. Oven doughnuts and Rolls will need less time. It might take 20-25 minutes total for a pan of rolls to bake. Cinnamon rolls, cakes, and muffins all do well at around **375-400F** (190.6-204.4C) degrees since they are sourdough batters

consisting of soft, rich dough. The oven baking times and temperatures are variable and depend on your oven, altitude, amount of steam, condition and/or ingredients of the dough etc.

When the loaf is finished, take it out using thick oven mitts, and place the finished loaf on a cooling rack. Allow the bread to cool for at least an hour. Bread should be completely cooled before slicing. The flavor continues to develop during cooling as the volatile gasses escape. The sour flavor in sourdough bread takes a few hours to be pronounced and will increase until the following day. You might notice the next morning after baking, that the sour flavor in your bread is more pronounced than on the day it was baked. However, the crust and crumb are at their best 2 - 6 hours after baking and then decline after that.

Some types of bread last a long time before they stale. Whole grain breads and breads with fats stay fresh longer. Lean dough made with white flour and no fats or oils will become stale much more quickly. Enjoy lean dough loaves on the first and second day, which is about their limit. These lean breads will still make

great toast for a couple of days after they turn stale. Bread made with quicker proofing starters also tend to stale much more quickly than the longer proofing starters. The quicker the dough technique the faster the staling sets in (usually). A very long fermented bread like the salt fermented dough, discussed later in this book, can keep its freshness for several days.

Here is the Roasting Pan method in short:

- **Preheat oven with baking stone to 450-475F (232.2-246.1C)-for about 1 hour (for a stone ½ "thick or more) or heat for ½ hour (for a stone which is 3/8" thick or less).**
- **5 minutes before baking put the roasting lid in to heat.**
- **Turn out proofed dough onto semolina sprinkled peel, slash dough.**
- **Take out the hot lid and slide the dough onto the hot stone.**
- **Spritz the dough all over with water.**
- **Place hot lid over dough and close oven door.**
- **Bake for 20 minutes.**
- **Use hot mitts. Open your oven and take the roasting lid off of the loaf. Put roasting lid on top of oven. Close oven door.**
- **Turn oven down to 425/218.3C degrees and bake another 10-15 minutes, turning the dough once during this time to promote even browning of the crust.**
- **When bread is finished baking or has an internal temperature of 200 - 205F (93.3-96.1C) degrees take out the loaf and cool on a rack.**
- **Place roasting lid back into oven and turn oven back up to 450 - 475(232.2-246.1C for 5 - 10 minutes to reheat.**
- **Bake next loaf.**
- **These temperatures and times are variable for different styles of loaves.**

A problem I had early on was not baking at a high enough temperature, or the stone getting too hot because it was too low in the oven and burning the bottom of the loaf. I also couldn't get enough steam to envelope the dough as it was baking with the water spritzing method. I tried many different things. I used a shelf from a kiln to start with, it was a ceramic stone that was about 1/2 inch thick and shaped like a crescent. I sprayed the dough a lot in the first five - ten minutes of baking, or sprayed around the dough. I got some firebrick, built up sides and put another kiln shelf on top of the brick sides. The extra heat from the top, bottom and sides worked really nice to help obtain a good crisp crust on the loaf. I still wasn't satisfied though, so I tried baking



in a cast iron pot with a heavy lid. The crust came out terrific with only one

spray of water before putting the hot lid over the hot pot. I let it bake halfway before removing the lid so the crust could brown. I still liked baking on a stone better and wished I could have a lid over the stone instead of a lid over a pot.

Then I obtained a large roaster lid and after spraying the dough directly, I put the preheated lid over the dough. The lid was left on for a little over half of the baking time and then removed. A shockingly beautiful crust with a fully developed "grigne" (the name for the slashes in the dough), was the result. The dough just needed to brown after that. The color was always amazing when the bread was done.

I also ended up putting two layers of stone down so the bottom of the loaf didn't get too dark, but was able to use just one stone once I moved the stone up one notch in my oven. After much experimenting, I haven't found any other method that produces a better loaf for the home baker with a standard oven, than the roasting pan method. Of course that

isn't counting a real masonry oven, or an oven with steam injection, which I have yet to try! Because of the trouble early on that I had with the concrete stone getting too hot, or transferring the heat too quickly, I experimented with different stones. I used a large ceramic tile and a porcelain tile. The tiles worked really well, however they both broke with the heat and humidity from the roasting lid. They were the thinner ½ inch tiles. I also broke my mom's pizza baking stone (another ½ inch thick tile) by using a heavy ceramic bowl for a lid. I now use the concrete stone with good results because I finally placed it on the right rack in the oven! I have also recently started using a Travertine tile and have had excellent results. More experimentation is needed to see what kinds of stone can take the high heat and humidity under the roasting lid.

Another kind of "home made" roasting lid for boules (round loaves), a stainless steel bowl with a handle screwed to the bottom of it:



WHAT YOU NEED TO KNOW ABOUT MEASURING



Measuring can be a problem with baking if you use volume measurements. In this book volume measurements are provided for convenience, however, they can cause trouble and are not accurate. For accuracy and consistency weigh your ingredients.

Volume measurements are the use of cups, $\frac{1}{2}$ cups, teaspoons, tablespoons, etc. When using a cup to measure a liquid ingredient, like water, you may

get an actual weight of 8.3 oz which is what a regular cup of liquid measures. A cup that is calibrated to measure liquid would give you 8 oz. So if you check your cup measures, some may give you 8 oz and other may give you 8.3 oz. I have one cup that will hold 8.7 oz of water!

Measuring flour using a US standard measuring cup has its own set of problems. Since all flours weigh slightly different, and everyone has a different method of measuring their flour, you can be off quite a bit when using volume measurements.

If you fluff up the flour or sift it and spoon it into the cup and then level it off, you may get 4.5 oz for a cup of bread flour. If you don't fluff the flour and just scoop it up and then level it off, it tends to compact into the cup and you may get 5.5 oz or more bread flour per cup. Whole wheat flour, rye flour and all other flours have different weights per cup. Medium rye flour has a different weight per cup than dark rye flour. To confuse things even more, there are also metric cup measures, and they have different volume

measurements than US standard cup measures. So you see, if you mix up a batch of dough using volumetric measurements, you could end up with different dough each time, or a different dough than the recipe is calling for.

A batch of dough weighing around 4 pounds (used for baking two loaves of bread, at two pounds each), may have approximately 7.5 cups of flour in it. By using volume measurements, you could use as little as 30 oz of flour or maybe as much as 37 oz of flour, you never really know and the dough will be different each time and the resulting bread will also be different. The difference in using 30 oz of flour or 37 oz of flour can be as much as 1.5 whole cups (or more) of flour! That might make up a very dense loaf of bread if you are using 1.5 cups too much. If you use less flour than the stated amount, you could end up with very wet dough. In either case you wouldn't really know if that was supposed to be the outcome, because you might not have worked with that particular dough or recipe before.

The same is true with measuring water. If you use a measuring cup which measures 8.3 oz of water and the recipe was calling for measurements which should have been 8 oz cups and you use two or three cups of water in the dough, you could have added $\frac{1}{2}$ to 1 ounce of extra liquid, which may not seem like much, but it can change the wetness (hydration) of your dough enough to cause problems, especially in high hydration dough, like Ciabatta.

Volume measurements are included in the recipes in this book. However, they are only approximate measurements for the reasons stated above, they are not accurate.

For accuracy in baking, purchase a kitchen scale. If you wish to pursue serious baking, you will advance more quickly in your ability to produce great sourdough breads, if you weigh your ingredients accurately. The outcome of your bread will also be more consistent.

Get a Good Kitchen Scale

A good kitchen scale should be able to weigh in standard units – pounds and

ounces as well as metric – grams and kilograms. It should be able to weigh at least 8 lbs of dough (less if you always bake smaller batches). A tare function is included with most kitchen scales. It will allow you to put a mixing bowl on the scale and then bring the scale back to zero before adding any other ingredients. That way you are not weighing the bowl as well as the ingredients. You can also add each ingredient one by one and then use the tare function to bring the scale back to zero each time so that you can weigh a new ingredient in the same bowl even with all of the former ingredients left in the bowl. Try to get a scale without an auto power turnoff or at least get one with a programmable turn off. You can be really disappointed if you go to weigh the final ingredients, and find the scale has shut down. You have to pour out what you weighed and tared, and then start all over again. It is also a big help to have an AC adaptor so you don't have to replace batteries or worry about the scale suddenly dying on you. I have a Taylor brand scale which has a built in rechargeable battery along with an AC adapter so you have the luxury of both power sources while the AC adapter also

charges the battery. I also have a “My Weigh” Bakers scale which has a programmable off function and weighs metric or standard plus it will scale (ratio measurement) using the bakers percentage function. Get a scale with a large enough platform so that it can hold a large bowl without completely covering the display.

Desirable functions in a Kitchen Scale:

- Weigh using both Standard and Metric
- Programmable Auto Off function
- Will weigh up to 6 - 8 lbs
- Accuracy to 1g/0.1 oz
- AC adapter plus batteries
- Large Platform
- Tare function

If however, you are placing an order for a scale and it hasn't arrived yet, here are some things that could help your baking efforts.

To measure out flour, either sift, or fluff up the flour and spoon it into the cup. Then level it off. That will give you a more accurate measurement than scooping. For measuring water, see if you can find a liquid measuring cup or ask a friend who has a scale if you could weigh one cup of water, to see if

it weighs exactly 8 oz or if it weighs 8.3 oz. If your cup of water does weigh 8.3 oz, take out 2 teaspoons of water from each cup while measuring. You can see what a hassle this would be if you baked often. I hope that scale arrives soon!



BEGINNING DOUGH HANDLING



When baking, use the best ingredients you can find. Bread flour is my preferred flour for bread, but All Purpose flour can be used as well. Very often combining the two flours works well for bread baking, especially for rolls, very holey bread, English muffins etc. All Purpose flour is also used for quick breads, batters and soft sweet dough. Poor quality flour can give you much grief when it produces poor quality bread.

Especially when you are new at baking and you aren't sure why your bread won't turn out great. Try to get a good brand name bread flour like King Arthur, Gold Medal Better for Bread, Stone Buhr, Morbread etc (there are many other good brands of bread flour). Try to get unbleached flour and if you can find organic flour, that would be an added plus.

Sourdough Starter: Keep your starter fed regularly to keep it healthy and vigorous. Make sure it is fed and at room temperature within 6 - 18 hours before mixing dough. Avoid over mixing and rough handling when working with sourdoughs. The longer fermenting time, combined with rough handling, may over develop or break down the gluten. For the Beginning Sourdough chapter, the emphasis is on batter breads. Batter bread is made from a mixture of flour and water, which can be around 70% hydration or higher. That just means that for every 100 parts flour, there will be 70 parts water. Pancake batters are usually over 100% hydration. So if you had a

pancake batter that was 119 % hydration, it just means that for every 100 parts of flour you would have 119 parts of water. Hydration helps us to understand what the ratio of water to flour is.

There are also some easy one day breads as well as “First Loaf” to try out. Bake “First Loaf” and some of the beginning sourdough recipes several times, until they become easy, before going on to the Intermediate Sourdough chapter. Keep in mind that baking with sourdough isn’t the same as baking with commercial yeast.

Sourdough Quick Breads: A quick bread is a batter or dough leavened with a chemical leavening like baking soda or baking powder. With sourdough quick breads, baking powder and soda are used for leavening and the starter is used, not only for flavor, but to provide the acids necessary which react with the soda to produce gas bubbles for leavening. Quick breads are easy to mix and bake. Once the wet ingredients are incorporated into the

dry ingredients, they should be handled gently without vigorous mixing or kneading.

Sourdough Bread: The beginning recipes will help you understand how to handle sourdough. Sourdoughs needs many hours for fermentation. During these hours, a protein called gluten (comprised of Gluetenine and Gliadine) develops into strong bonds which make a support structure that holds up the dough as the trapped gas bubbles expand and grow. Yeasts, bacteria and enzymes go to work to break down starches into sugars and create gasses, alcohols, and acids while doing so. These by products are what give flavor and character to sourdough bread. Sourdough yeasts and bacteria take a longer time to ferment than do the commercial yeasts.

With commercial yeasted dough the process is much quicker and the gluten in the dough is developed during the initial mixing. When the dough is done mixing and the gluten has proper development, a test called “the windowpane test” is used to see

the gluten development. A piece of dough is taken in the hands and stretched four ways at once, if the dough can stretch into a thin membrane that light can shine through without tearing, it means the gluten is developed and the dough is done mixing.

However in sourdough baking, the gluten will continue to develop during the long fermentation. If the gluten was brought to complete development during mixing, it would begin to break down during the long fermentation period. The gluten would be overdeveloped, broken down and the dough would be sticky and unmanageable. So a windowpane test shouldn't be used after mixing sourdough but after the bulk fermentation is done

Sourdough Method: In sourdough baking the following process is one that is generally followed: The ingredients are weighed and then mixed together using a low speed dough mixer or hand mixing. Mixing should continue just until the starter, water and flour are completely mixed

together, or incorporated. At this point the dough is a ragged lump. It is then allowed to rest for about 20 minutes or more. This is called Autolyse and was pioneered by Professor Raymond Calvel. Autolysis is explained in his book, "The Taste of Bread." During the Autolyse period, the gluten and starches begin to form bonds and absorb the water. An enzyme called Protease is activated and it helps the dough to relax and become more manageable. The enzyme action during autolysis helps to produce superior dough. After the Autolyse period, salt and any other ingredients are added. (In many recipes other ingredients are mixed with the flour and water, the main ingredient that affects Protease and other enzymes is the salt). Salt slows down the action of Protease, which if allowed to continue unchecked, would eventually liquefy the gluten. The dough is then allowed to ferment during the first period of fermentation which is called the bulk ferment. During bulk fermentation, enzymes are activated, acids and gasses (CO₂) are produced by the

yeasts and bacteria, which are reproducing rapidly as they feed on sugars, and the dough becomes mature. Once mature, the dough becomes stretchy, soft and has great flavor potential. After bulk fermentation, the next step is the shaping of the loaves. Shaping helps to form a skin of dough around the outside of the loaf which then holds the loaf together as it proofs and goes through oven spring. Oven spring happens in the first few minutes of baking when the dough reacts to the extreme heat and springs up in the oven. Without proper shaping, the dough tends to spread and the loaves turn out flat. Once the dough is shaped, it is allowed to rise again one last time before being baked. This final raising is called proofing. Once proofing is finished, the dough is baked and you have produced a great loaf of sourdough bread!

Batter Breads

Batter breads made with sourdough are mixed longer than bread dough (and often fermented less time). This is to develop the gluten which won't

have as long to develop in batter bread and is harder to develop in a wet batter. In Intermediate Sourdough you will learn how to do a "Double Hydration" technique to develop gluten in very wet bread dough.

Summary:

For sourdough quickbreads using chemical leavenings, handle the dough gently without vigorous mixing or kneading once the wet and dry ingredients are mixed together. For batter breads, use a longer mixing time.



For breads using a sourdough starter you need to: weigh the ingredients, use gentle mixing, Autolyse, bulk ferment, shape your loaves and have a final proofing before baking the dough.

FIRST LOAF

AN EASY WAY OF BAKING YOUR FIRST SOURDOUGH LOAF



This will be a step by step pictorial on how to make an easy first loaf of sourdough bread. Make sure your sourdough starter is vigorous and has been fed using 1 part water to 1 part flour (by volume). If your starter is refrigerated, take it out, feed it then cover and let it set overnight until the next morning. If your starter is already at room temperature feed it the night before baking. For feeding use one part water to one part flour, for instance: 1 cup water and 1 cup flour or 1½ cups flour and 1½ cups water [your starter will be at 166% hydration. Hydration means how much water is in a dough or batter]. Also, to measure more correctly, fluff up your flour, spoon flour

into the cup instead of using the cup as a scoop, and then level off your flour with a straight edge. If you use the cup as a scoop and do not fluff your flour, your dough will most likely be too dense because the flour will compact into the cup and there will end up being too much flour in your dough. Weighing the flour is the most accurate, use 2.5 oz of flour and 4 oz of water for ½ cup measurements or 5 oz of flour and 8.3 oz of water for 1 cup measurements.

For your first loaf of sourdough bread the objective is to get a nice loaf of bread. On later loaves we will try to get the blistered crust and the sour flavor. This will be a same day mix and bake bread. So starting early in the morning, mix together in your dough mixer or in a bowl, if you will be kneading by hand:

- 1 cup of vigorous starter at 166% hydration (fed at 1 part flour to 1 part water) - 9 oz
- 1 cup of tepid water - 8 oz
- 2 teaspoons oil - .3 oz
- 2 level teaspoons salt - .4 oz (**this will be added after mixing the dough**)
- 4 cups of bread flour - 18 oz

If mixing by hand, mix just until ingredients are well incorporated. If mixing by dough mixer, mix ingredients just until they are incorporated, on low





or medium speed. This will take about two or three minutes. (Notice in the picture how undeveloped the gluten is at this point, it is tacky and clumped). Our next step is to let the dough rest for twenty minutes. This is called Autolyse. This resting gives the gluten strands time to absorb the water and start to bond together. It is a very important step for the right consistency of your dough.

After the twenty minutes is up, it is time to sprinkle in the salt. The salt is added after autolyse because salt toughens the gluten and makes it harder for the water to be absorbed. So sprinkle in your salt and then turn on your mixer and mix for two more minutes on low speed. If mixing by hand, stir the dough with a wooden spoon for a couple of minutes, or get



your hands in the bowl and mix.

After mixing, you can see that the gluten is smoother and more developed; the gluten will continue to develop through the first stage of rising which is called bulk fermentation. Leave the dough in the bread machine (or mixing bowl if doing by hand) and put a cover over it. Let the dough set in the bowl for 5 hours at room temperature which should be around 70 -75 degrees.





Pour the dough out onto a lightly floured surface.

After five hours the dough has about doubled and is wet and sticky. Stir the dough down with a couple of turns of



Fold the edges to the middle all around. This helps get the dough into a rough shape of a ball.



your mixer, or if mixing by hand stir the dough down with your heavy spoon. The gluten is pretty well developed now and the dough is stretchy.

Dust the dough with flour and using the fingertips of both hands, start folding the outer parts of the dough to the middle. Turn the dough around and do this all around the piece of dough until you get it into a ball shape. Don't use large amounts of flour to do this but keep enough flour on the dough to prevent it from sticking to your hands.



Then turn your loaf over and place it on the surface without any flour under it. We need it to slightly stick to the surface so it can be shaped once more. Let the dough ball rest for ten minutes. This will relax the gluten and allow you to give the ball (called a boule) it's final shaping. The boule is sort of flattish at this point.



To mound it up higher, take your hands and place them on both sides of the boule, making sure you have some flour on the surface so your hands don't stick to the dough. Then turn the boule in a counterclockwise direction, shaking it gently from side to side in a push pull motion to encourage the dough ball up off of it's flat condition and into a more tightly rounded dough ball.

Do this just a little bit like three or four turns. It doesn't matter if you get it exact, just twist the loaf and you will



see the dough ball jump up higher. If your dough ball isn't stuck somewhat to the table this won't work.

When you are done with the twisting, you will see that the dough ball sits up higher and is ready to be put into an



approximately 8 " diameter glass/ceramic baking dish or bowl which is ovenproof and is greased and sprinkled with Cornmeal or Semolina flour



Place the dough into your baking dish for its final proofing (raising). For later loaves we will try baking with the loaf directly on the baking stone, but for this first try, just use a nice baking container to make it easier. Sprinkle a little cornmeal or Semolina flour over the surface of your dough, so the cloth won't stick to the dough, and then put a damp cloth over the dough and bowl.

Then allow the dough to proof for approximately 2 hours or when the loaf looks about 1 ½ times its original size. Make sure your oven is well preheated to 450 degrees when the dough is ready to go in at the end of the 2 hours. You don't need a baking stone when your bread is baked in a pan or dish.

When the 2 hours is up and your oven is preheated, slash the top of the dough with a sharp knife or lame. You usually slice at an angle of about 30 degrees. Think of slicing "flaps" instead



of cuts and you will get the idea.

Put the baking pan or dish containing the proofed dough into the preheated oven (450 degrees) for the first ten minutes. During the ten minutes spray water into the oven and around the sides of the dough (not directly on the dough) several times, about once every two minutes.



Spray quickly and get the oven door closed so you won't lose too much heat. As an alternate to spraying, see the chapter on "Home Baking of Sourdough-Roasting Pan Method of Baking". After the ten minutes is up, turn the oven down to 425 degrees and bake the bread for another 20 minutes, turning the loaf halfway for even browning. If you notice that the dough is getting too brown during the halfway point, turn your oven down to 400 degrees. No spraying is needed after the first ten minutes. The spraying helps keep the dough in a humid, moist atmosphere so it can expand.

When the baking is done and your bread looks nice and brown, take the bread from the oven and turn out the loaf from the pan or dish. Be careful- the dish is hot!

Put the bread back into the oven for 3 -5 more minutes to brown the bottom of the loaf, which was shielded by the dish and needs browning. When the five minutes is up, you should have a nicely browned loaf. Put it on a cooling grate, so it can cool without getting soggy. If you wait until it is cooled, it will slice nicer and show you a better crumb.

Now you have a finished loaf! It should weigh approximately 2 lbs.

When you feel comfortable with making the sourdough bread this way, obtain a baking stone and try baking with your dough directly on the baking stone instead of a dish. You can also try working with two day sourdoughs and higher hydration dough.

A variation of the roasting pan method for steaming your bread while it is baking, is to form an aluminum foil baking cover. Get a large piece of heavy aluminum foil and before you place your dough into the baking dish or bowl, turn the bowl upside down and form a cover with the aluminum foil using the bowl as a mold. Take the formed foil lid off of the overturned bowl and then turn your bowl back up right and use it for holding the dough (don't forget to grease and sprinkle cornmeal on the inside of the bowl before placing the dough inside. Once you are ready to bake, spray the dough once and then place the foil over the dough in the bowl and bake the same as above. The foil helps hold in the steam so you only have to spray the dough once.



BEGINNING RECIPES



SOURDOUGH ABLESKIVERS



Delicious Ableskivers!
Makes approximately 20 Ableskivers.

Add together in first bowl:

- ❖ 1 cup sourdough starter @ 166 % hydration - 9 oz
- ❖ 1/2 cup water - 4 oz
- ❖ 1/2 cup canned milk - 4 oz
- ❖ 2 large beaten eggs - 3.5 oz
- ❖ Honey - 2 oz (or 1/4 cup sugar) - 1.8 oz
- ❖ 2 teaspoons vanilla flavoring - .30 oz
- ❖ 1/2 cup oil or melted butter - 4 oz

In second bowl mix together:

- ❖ 1&1/2 cups of all purpose flour - 6.6 oz
- ❖ 1 teaspoons salt - .21 oz
- ❖ 1/2 teaspoon baking soda - .08 oz
- ❖ 2 teaspoons baking powder - .32 oz

Stir the dry ingredients of the second bowl into the wet ingredients of the first bowl. Heat your Ableskiver pan on a medium-low heat till sizzling hot, grease the pan and then fill depressions with batter. As the Ableskivers brown and cook, turn them using a sharp bladed knife or a skewer stick.

Sourdough Ableskivers:

Ingredient	Volume	Standard	Metric	Bakers %
Starter @ 166%	1 cup	9 oz	255 g	90.1 %
Water	½ cup	4 oz	113 g	40.1 %
evaporated milk	½ cup	4 oz	113 g	40.1 %
Honey	2 TBSP	2 oz	56 g	20 %
Vanilla Extract	2 teasp	.3 oz	8 g	3.0 %
Oil or Melted Butter	½ cup	4 oz	113 g	40.1 %
2 large beaten eggs	2	3.5 oz	99 g	35.1 %
All Purpose Flour	1 ½ cups	6.6 oz	187 g	66.1 %
Baking Soda	½ teasp	.08	2.3 g	.8 %
Baking Powder	2 teasp	.32	9.1	3.2 %
Salt	1 teasp	.21 oz	5 g	2.1 %
Total Dough Weight	2 lb 2 oz	2 lb 2 oz	964 g	340.7%
Total Flour Weight	10 oz	10 oz	283 g	100.0 %
Total Water Weight (hydration)	1 lb 1.1 oz	1 lb 1.1 oz	485 g	171.4%

Bring out your Ableskiver pan and make up some Ableskivers. They are such a nice treat instead of the usual pancakes or waffles. If you ever find a good cast iron Ableskiver pan...buy it! Mine is old and well seasoned, the bottom has some surface rust which won't come off unless I get a metal scrubber in there, which I won't as it will be back in no time in my climate.

Here is what a good Ableskiver pan looks like :



It has seven little depressions to fill with batter. The pan has to be hot like a griddle where a drop of water sizzles and jumps. Grease the little bowls. Then fill each depression with batter and wait until the Ableskiver sets a little.

Then you take a skinny sharp pointed knife or a stainless knitting needle and shove it into the batter to the bottom of the little bowl, you use the knife and pull the Ableskiver around so that it is setting halfway up and the batter in the middle pours out and starts cooking on the bottom of the bowl. As you continue to turn the Ableskiver while it is cooking, you create a ball with a hollow middle.



Ableskivers are just right for stuffing something into, like blackberry or blueberry preserves , jams, dried fruit, etc. Then you sprinkle with powdered sugar and...yummmmy!!

Enjoy them with a hot cup of coffee for a great breakfast treat. In case you are wondering, the Ableskivers pictured are filled with Blackberry preserves made from berries gathered from my backyard.

HONEY BUTTER CORNBREAD



To your mixer add:

- ❖ 3 cups of sourdough starter (at 166% hydration) - 27oz/765g
- ❖ 1 cup evaporated milk (or 1/2 & 1/2 milk) - 8oz/226g
- ❖ 1/2 cup of melted butter cooled to lukewarm - 4 oz/113g
- ❖ 3 large eggs (beaten slightly before putting in mixer) - 5.2 oz/147g
- ❖ 1/4 cup of honey or malt syrup - 3oz/85g

Mix these ingredients together just enough to incorporate them.

In a separate bowl mix together:

- ❖ 2.5 cups of freshly ground cornmeal - 10.7oz/303g
- ❖ 2 cups of all purpose flour - 8.8 oz/249g
- ❖ 1 Tablespoon salt - .6 oz/17g
- ❖ 1 Tablespoon baking powder -.5 oz/14g
- ❖ 1 teaspoon baking soda -.16 oz/4.5g

Stir all of these dry ingredients together with a spoon until well mixed and then add the dry ingredients to the wet ingredients which are in the mixer. Turn on the mixer and stir just long enough to mix all ingredients together. Then pour your cornbread batter into a large 17 cup bundt or cake pan which has been sprayed with pan oil or greased.

Honey Butter Cornbread:

Ingredient	Volume	Standard	Metric	Bakers %
Starter @ 166%	3 cups	27 oz	765 g	91.1 %
evaporated milk	1 cup	8 oz	226 g	27.0 %
Honey	¼ cup	3 oz	85 g	10.1 %
Melted Butter	½ cup	4 oz	113 g	13.5 %
2 large beaten eggs	3	5.2 oz	147 g	17.5 %
Cornmeal	2 ½ cups	10.7 oz	303 g	36.1 %
All Purpose Flour	2 cups	8.8 oz	249 g	29.7 %
Baking Soda	1 teasp	.16	4.5 g	.5 %
Baking Powder	1 TBSP	.5	14 g	1.7 %
Salt	1 TBSP	.6 oz	17 g	2.0 %
Total Dough Weight	4 lb 4 oz	2 lb 2 oz	1926 g	229.2%
Total Flour Weight	1 lb 13.7 oz	1 lb 13.7 oz	840 g	100.0 %
Total Water Weight (hydration)	1 lb 14.4 oz	1 lb 14.4 oz	862 g	102.6%



The batter will come up to 3/4 of the pan sides. I let the batter set for one hour to allow the cornmeal to absorb the liquid. Then I baked the bread in a preheated 400F/204C degree oven for 50 minutes, turning the pan a few times for even browning. This recipe will make a large 4 lb 4 oz loaf of cornbread, cut the amounts in half for a smaller bundt pan.

This cornbread is wonderfully moist and crumbly. I serve it with Poquito Beans which are a great complement to Honey Butter Sourdough Cornbread!



The Poquito Beans are native to Santa Maria California and are a hidden treasure. We get them special ordered from the coast of California in large bags. I came from that area and I make up the beans with my own special recipe which is oohed and aahhed by anyone who tries them. They have bacon and lots of garlic in them. You have never had a terrific coastal meal until you have had Poquito Beans, fresh baked sourdough and barbequed rib steaks or barbequed fresh tuna. Life is good!

CRANBERRY APPLESAUCE MUFFINS



To help use up that extra sourdough starter, bake up some of these wonderful muffins!

This batter can be made into Cranberry Tea Bread also.
Before you start the muffins, make the crumb topping:

In first small bowl mix together:

- ❖ $\frac{3}{4}$ cup all purpose flour - 3.3 oz/93g
- ❖ $\frac{1}{4}$ cup white sugar - 1.7 oz/48g
- ❖ Cut in $\frac{1}{3}$ cup butter until crumbly, set crumbs aside - 2.6 oz/73g

Cut in butter and mix until it forms crumbly lumps. Set bowl aside.

In second larger mixing bowl combine:

- ❖ 1 ½ cups active sourdough starter(166%) - 13.5 oz/382g
- ❖ ¾ cup applesauce - 6.5 oz/184g
- ❖ ⅓ cup Oil - 2.6 oz/73g
- ❖ ¾ cup evaporated milk - 6 oz/170g
- ❖ ½ cup sugar - 3.5 oz/99g
- ❖ 1 large egg - 1.7 oz/48g

Beat all together with a wire whisk. Set bowl aside.

In a third medium sized bowl stir together:

- ❖ 1.5 cups all purpose flour - 6.6 oz/187g
- ❖ 1 ⅓ cups whole wheat flour - 5.6 oz/158g
- ❖ 1 ½ teaspoon salt - .3 oz/8.5g
- ❖ 1 ½ teaspoon cinnamon - .12 oz/3.4g
- ❖ ½ teaspoon nutmeg - .04 oz/1.1g
- ❖ 1 teaspoon baking soda - .16 oz/4.5g
- ❖ 1 Tablespoon baking powder - .5 oz/14g

Add the dry ingredients of the third bowl to the wet ingredients of the second bowl and gently stir until just combined. Add 2 cups chopped cranberries - 7.7oz/218g and mix in gently. Do not over mix. Oil or grease muffins tins and fill the batter to the top of each cup. Sprinkle some of the crumb mixture on top of the batter for each muffin and press in lightly. Bake on the center rack in a preheated 375F/190C degree oven for 25 -30 minutes or toothpick comes out clean. This recipe makes 1 dozen muffins.

Instead of or besides cranberries, add raisins and chopped walnuts.



SOURDOUGH DANISH RYE PUMPKIN MUFFINS



This is a moist, tender muffin. The low gluten rye flour in the starter helps make a tender muffin.

In the first bowl add the wet ingredients:

- ❖ 2 cups vigorous Danish Rye or (other wholegrain) sourdough starter at 100 % hydration - 18 oz/510g
- ❖ 3 large eggs - 5.2 oz/147g
- ❖ 2 cups of pumpkin puree - 17 oz/482g
- ❖ ½ cup oil - 4 oz/113g
- ❖ 1.5 cups packed dark brown sugar packed - 11.6 oz/328g
- ❖ 1 Tablespoon Vanilla - 0.5 oz/14g

Mix the ingredients well. Set aside.

In a second bowl stir the dry ingredients together:

- ❖ 2 cups all purpose flour - 8.8 oz/249g (If you don't have a rye starter try substituting 1 cup of rye flour for the AP flour)
- ❖ 2 Tablespoons cinnamon - 0.6 oz/17g
- ❖ ½ cup toasted wheat germ - 1.5 oz/42g
- ❖ 1 teaspoons salt - .21 oz/6g
- ❖ 2 Tablespoons baking powder - 1 oz/28g
- ❖ 1 teaspoon baking soda - 0.16 oz/4.5g

In a third bowl make the topping:

- ❖ 1/3 cup toasted wheat germ - 1.3 oz/36g
- ❖ 1/3 cup whole wheat flour - 1.4 oz/39g
- ❖ 1/3 cup brown sugar - 2.3 oz/65g
- ❖ 1/3 cup soft butter - 2.6 oz/73g

Stir ingredients well until crumbly.

Add the bowl of dry ingredients to the bowl of wet ingredients and stir only until just combined. Too much stirring will make a tough muffin. Optionally you can add raisins, nuts, etc to the batter. Fill the greased muffin tins to the top and press some of the topping into the top of each muffin. Bake in a preheated 400F/204C degree oven for 20 - 25 minutes. Enjoy! Will make 12 large muffins.

Substitute applesauce for the pumpkin puree for a slightly different treat
Add raisins or walnuts

PUMPKIN CRANBERRY QUICK BREAD



This is a variation of the Cranberry Applesauce muffins.

In a large mixing bowl or to your mixer combine the wet ingredients. Beat all of the wet ingredients together with a wire whisk or on medium speed in your mixer.

Then in a separate medium sized bowl add together the dry ingredients. Stir all of the dry ingredients together well.



Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Wet Ingredients: Bowl One				
Sourdough Starter - 166% hydration	2 cups	18 oz	510 g	74.8 %
Evaporated Milk	1 cup	8.0 oz	226 g	33.2 %
Pumpkin Puree	3/4 cup	6.4 oz	181 g	26.6 %
Sugar	1 cup	7.0 oz	198 g	29.1 %
Oil	1/2 cup	4.0 oz	113 g	16.6 %
Large Eggs	2	3.5	99 g	14.5 %
Dry Ingredients: Bowl Two				
Whole Wheat Flour	1 ½ cups	6.3 oz	178 g	26.2 %
All Purpose Flour	2 ½ cups	11 oz	311 g	45.7 %
Salt	2.5 teasp	.5 oz	14 g	2.1 %
Cinnamon	2 teasp	NA	NA	NA
Allspice	½ teasp	NA	NA	NA
Baking soda	2 teasp	NA	NA	NA
Baking Powder	1 TBSP	NA	NA	NA
Chopped frozen Cranberries	2.5 cups	9.6	272 g	39.9 %
Total Dough Weight	4 lb 10.3 oz	4 lb 10.3 oz	2106 g	308.7%
Total Flour Weight	1lb 8.1 oz	1lb 8.1 oz	682 g	100.0 %
Total Water Weight (hydration)	1 lb 11.5 oz	1 lb 11.5 oz	780 g	114.4%

Add the dry ingredients of the second bowl to the wet ingredients of the first bowl and gently stir until just combined (or stir on low speed in your mixer). Add 2.5 cups chopped frozen cranberries and stir in gently. Oil or grease two 9" x 5" x 2.5" bread pans and fill the batter not quite to the top. Bake on the center rack in a preheated 350F/C degree oven for about 1 hour or done (when a toothpick inserted in the middle comes out clean). Cover the top with foil for the last 20 minutes or so if the bread is getting too brown. This recipe will make up two large loaves. As an option you could leave out one cup of frozen cranberries and add walnuts and/or raisins to the batter just before spooning out.

Banana Bread Variation:

For a delicious sourdough Banana Bread, make up the Pumpkin Cranberry Bread with the following changes:

Use 11 oz of banana puree instead of pumpkin puree. Leave out the chopped cranberries and the allspice. Use only 1 teaspoon of cinnamon and add one Tablespoon of Vanilla extract.

To make a sugar crumbly topping for the Banana Bread:

In a bowl add $\frac{1}{2}$ cup of sugar, $\frac{1}{2}$ cup of All Purpose flour and $\frac{1}{4}$ cup of butter. Rub all ingredients together until crumbly and place half of the crumbs on top of each pan of Banana Bread batter before baking.



Old Fashioned Sourdough Flapjacks



Here are some Old Fashioned Flapjacks like you might have enjoyed in the “Olden Days”. This makes a large batch of pancakes for when you need to feed a crowd.

In a large bowl beat together FOUR LARGE EGGS and then add:

- ❖ ½ cup melted, cooled butter - 4 oz/113g
- ❖ 1 cup evaporated milk - 8 oz/226g
- ❖ ½ cup water - 4 oz/113g
- ❖ 2 cups vigorous sourdough starter at 166% hydration - 18 oz/510g

- ❖ 1 generous Tablespoon of Malt syrup (or Honey) - 1 oz/28g

In a smaller bowl mix together:

- ❖ 3 Cups All Purpose flour (or substitute $\frac{1}{2}$ cup Whole Wheat flour for $\frac{1}{2}$ cup of AP flour, if using Honey instead of Malt syrup, then you can have Honey Whole Wheat Flapjacks). - 13.2 oz/374g
- ❖ 1 Tablespoon Baking Powder - .5 oz/14g
- ❖ 1 teaspoon Baking Soda - .16 oz/4.5g
- ❖ 1 teaspoon salt - .2 oz/5.7g

Now add the dry ingredients to the wet ingredients and stir together gently. Let batter set for about 10 - 15 minutes to allow the flour to absorb the liquids, and get your griddle good and hot, about 375F/190C degrees. Lightly grease the griddle. Griddle your flapjacks until one side is bubbly and the edges are slightly dry, then flip once and griddle on the other side. Serve with lots of fresh butter and Maple syrup (we add Malt syrup to our Maple syrup for extra flavor). Get ready to be asked for more! This recipe makes a batch of about 20 pancakes for a large family or plenty of second helpings. So cut the amounts in half for a smaller batch.



OVERNIGHT JACKS



This batter is fermented overnight and then griddled up next morning. It is a honey whole wheat kind of flapjack.

In the evening:

In a large container add together:

Ingredient	Volume 12 Jacks	Standard 12 Jacks	Metric 12 Jacks	Bakers %
Sourdough Starter	¼ cup	2.2 oz	63 g	18.9 %
Water	1 & ½ cups	12 oz	340 g	103.2 %
Evaporated milk	¼ cup	2 oz	56 g	17.2 %
Melted Butter	3 TBSP	1.5 oz	43 g	12.9 %
Honey	1 TBSP	1 oz	28 g	8.6 %

Whole Wheat Flour	¾ cup	3.1 oz	87 g	26.7 %
All Purpose Flour	1 ¾ cups	7.7 oz	218 g	66.2 %
Salt	1 ¼ teasp	.25 oz	7 g	1.7 %

Stir the ingredients together well and cover the container and let it set, covered overnight at room temperature.

Next morning:

First add two teaspoons of water to a small bowl and then dissolve the baking soda and baking powder in it. Then add the three large eggs to the same bowl and whip the eggs until bubbly. Add this small bowl of egg/soda mixture to the overnight flapjack batter and fold the two together gently so you don't collapse the bubbles in the flapjack batter.

Ingredient	Volume 12 Jacks	Standard 12 Jacks	Metric 12 Jacks	Bakers %
Pancake Batter	All	All	All	
Eggs	2 Large	3.4 oz	96 g	29.2 %
Water	2 teasp	.3 oz	8 g	2.6 %
Baking Soda	½ teasp			
Baking Powder	1 teasp			
Total Dough Weight	2 lb 1.4 oz	2 lb 1.4 oz	946 g	287.3 %
Total Flour Weight	11.6 oz	11.6 oz	329 g	100.0 %
Total Water Weight (hydration)	1 lb 2.9 oz	1 lb 2.9 oz	535g	162.5 %

Have your griddle heated to 375F/190C and spray or oil the griddle when it is heated. Ladle out batter in circles on griddle and let cook until there are bubbles all over and the edges look dry. Then flip and cook on the other side for about one more minute or when the flapjack looks done. This recipe will make about 20 large Flapjacks. Eat immediately with butter and syrup.

SOURDOUGH PANCAKES



Quick Method:

Bowl 1:

Mix together:

- ❖ Beat 2 large eggs with whip first and then add:(or see Extra Fluffy method below)
- ❖ 1 ¼ Cups Sourdough Starter - 11.2 oz/317g
- ❖ 1 Cups water - 8oz/226g
- ❖ ¼ cup oil or melted butter - 2oz/56g
- ❖ ¼ cup powdered milk - .6 oz/17g

Bowl 2:

Stir together:

- ❖ 1 ³/₄ cups all purpose flour - 7.7 oz/218g
- ❖ 1 Tablespoons sugar - .5 oz/14g
- ❖ ³/₄ teaspoons salt - .15 oz/4.3g
- ❖ 1 teaspoons baking powder - .16 oz/4.5g
- ❖ ¹/₂ teaspoons baking soda - .08 oz/2.3g
- ❖ 2 teaspoons soy flour - .13 oz/3.7g (optional)

Pour the second bowl of ingredients into the first bowl. Gently stir together (Add more water if too thick).Heat griddle until hot 375F/190C then grease griddle and cook pancakes. Serve with butter and syrup.

(For some added whole wheat- take out 1/2 cup of the flour and substitute 1/2 cup whole wheat flour freshly ground)

Extra Fluffy method:

Instead of adding the eggs to bowl- 1, use another bowl:

Bowl 3:

Separate the egg yolks from the whites. Beat the 2 eggs whites until soft peaks form. Then with beater on low speed, beat in the egg yolks, one at a time. Add this fluffy mixture to the final batter after bowl 1 & 2 have been mixed together and a batter has been formed. Make sure to fold egg mixture in gently. This recipe makes about one dozen pancakes.



PUMPKIN PANCAKES



These Pumpkin Pancakes can be made with any winter squash with great results; Use your blender to smooth any stringiness from the squash.

In your blender add:

- ❖ 1 cup baked pumpkin or squash - 8.2 oz/232g
- ❖ 3 large eggs - 5.2 oz/147g
- ❖ 1 cup milk - 8 oz/226g
- ❖ ½ teaspoon cinnamon
- ❖ ½ teaspoon nutmeg
- ❖ 2 teaspoons vanilla extract- .3 oz/8.5g
- ❖ 2 Tablespoons sugar- .8 oz/22.7g

Blend on medium for one minute to a smooth consistency.

Pour contents of blender into a large bowl and then add:

- ❖ **½ cup water - 4 oz/113g**
- ❖ **1 cup vigorous sourdough starter at 166% hydration- 9 oz/255g**
- ❖ **½ cup melted, cooled butter - 4 oz/113g**

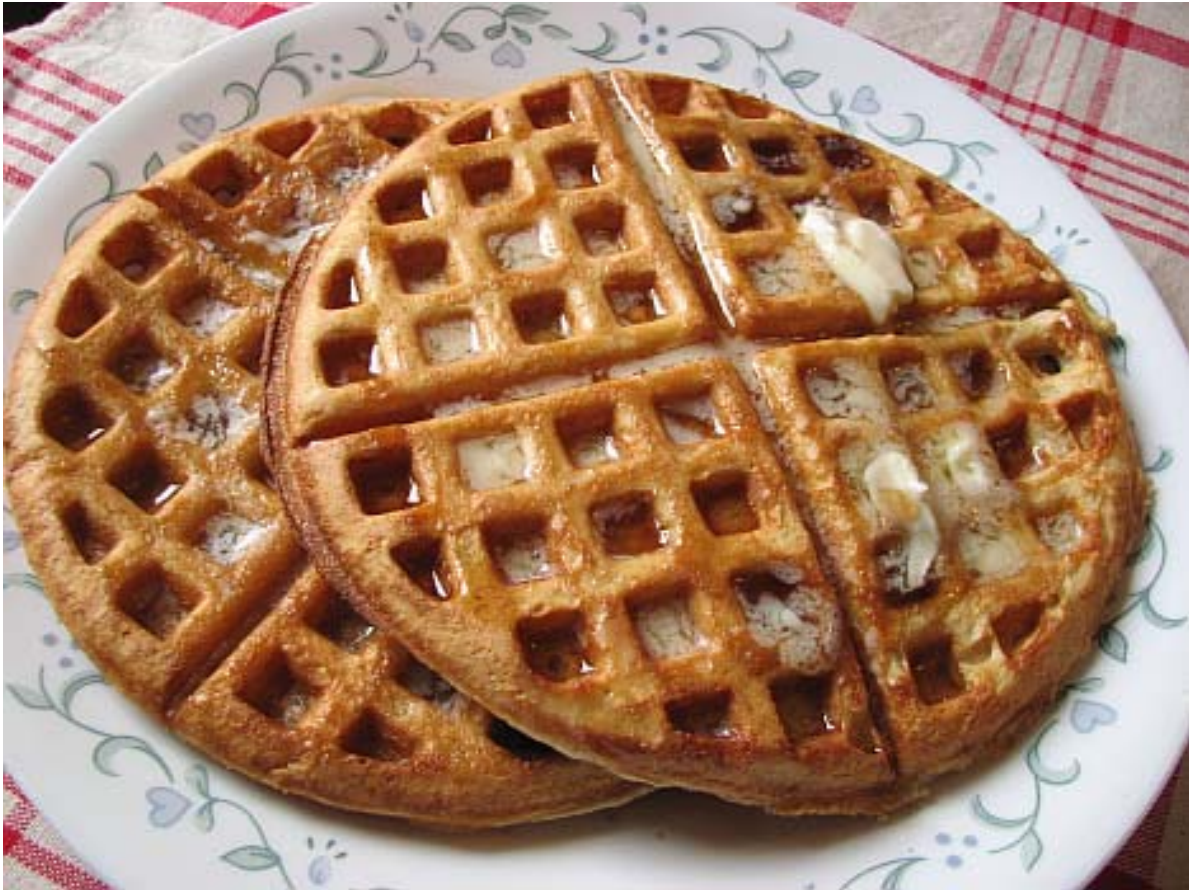
Whip the ingredients together well.

In a smaller bowl mix together:

- ❖ **2.5 Cups All Purpose flour - 11 oz/311g**
- ❖ **1 teaspoon Baking Powder - .16 oz/4.5g**
- ❖ **1 teaspoon Baking Soda - .16 oz/4.5g**
- ❖ **1 teaspoon salt - .2 oz/5.7g**

Now add the dry ingredients to the wet ingredients and stir together gently. Let batter set for about 10 - 15 minutes to allow the flour to absorb the liquids, and get your griddle hot, about 375F/190C degrees. Lightly grease the griddle. Griddle your flapjacks until one side is bubbly and the edges are slightly dry, then flip once and griddle on the other side. Serve with lots of fresh butter and Maple syrup (we add Malt syrup to our Maple syrup for extra flavor). Another topping to try for Pumpkin pancakes is to sprinkle a cinnamon/sugar mixture over the buttered pancakes. These pancakes are tender and delicious! Makes about 20 4-5 inch pancakes.

SOURDOUGH WAFFLES



Here is an incredibly crisp, delicious Sourdough Waffle recipe.
Makes approximately 7 - 8 inch round waffles.

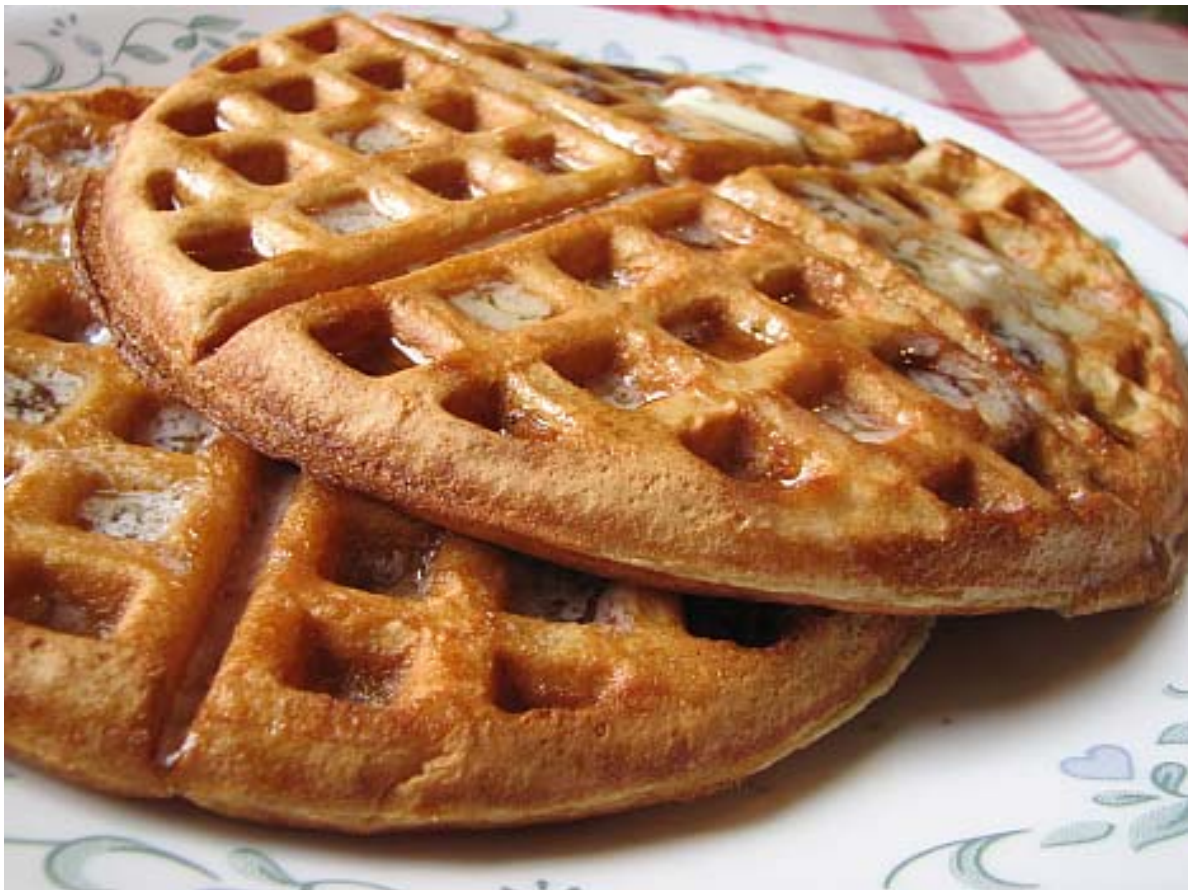
Add together in first bowl:

- ❖ 1 cup sourdough starter @ 166% - 9 oz/255g
- ❖ ½ cup water - 4 oz/113g
- ❖ ½ cup milk - 4 oz/113g (or instead, use ½ cup warm water + ¼ cup dry milk)
- ❖ 2 large beaten eggs - 3.5 oz/99g
- ❖ 1 Tablespoon of malt syrup - .8 oz/22.7g
- ❖ ½ cube butter melted, cooled slightly or ¼ cup of oil - 2oz/56g

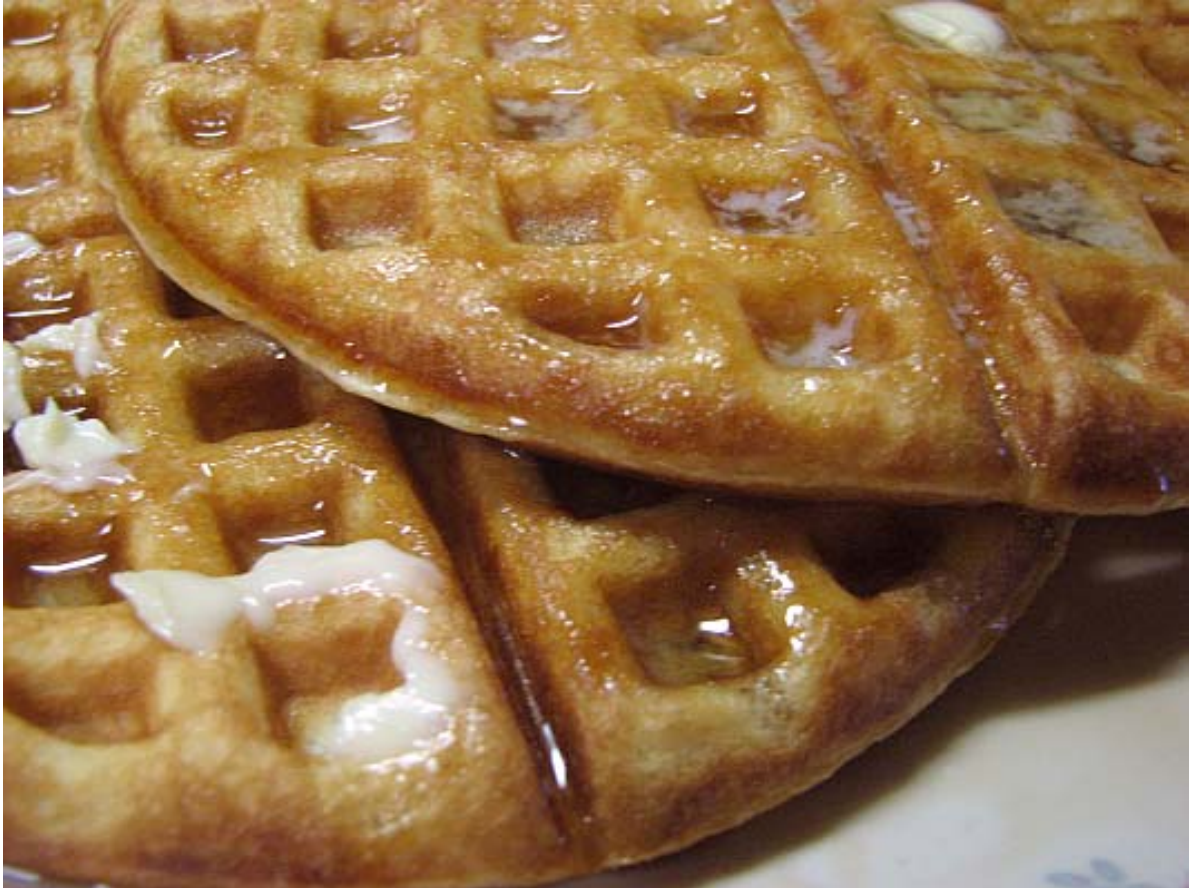
In second bowl mix together:

- ❖ 1 & 1/3 cups of all purpose flour - 5.9 oz/155g
- ❖ 1 teaspoons salt - .2 oz/5.7g
- ❖ 1/2 teaspoon baking soda - .08 oz/2.3g
- ❖ 2 teaspoons baking powder - .32 oz/9g

Stir the dry ingredients into the wet ingredients; add more water if batter is too thick (waffle batter needs to be on the thin side but not too thin!). Heat your waffle iron to its hottest setting, because sourdough needs really hot temperatures, cook, enjoy!



KILLER SOUR CREAM WAFFLES



I was going to make up some sourdough waffles using my regular recipe, but my son asked me to add more eggs to the batter. So I decided to not only add an extra egg, but to add some sourcream as well. When I baked (waffled, griddled?) up the waffles, my son was really happy (how can you NOT make a 17 year old boy happy with waffles?) then my daughter said, "These are KILLER waffles, mom!" So I will pass on the changes to the recipe to you and see what you think.

Bowl -1 Whisk together:

- ❖ 1 cup vigorous sourdough starter at 166% hydration -9 oz/255g
- ❖ $\frac{3}{4}$ cups warm water (about 90 degrees) - 6 oz/170g

Bowl -2 Add each following ingredient and then beat with whisk after each addition:

- ❖ 1/2 stick of melted butter -2 oz/56g (real butter, no substitutes)
- ❖ 1 generous Tablespoon Malt Syrup -about 1 oz/28g
- ❖ 3 large eggs -5.2 oz/147g
- ❖ 1/4 cup of sour cream (no low fat or no fat stuff!) - 2 oz/56g

Bowl-3 Add following ingredients and mix thoroughly:

- ❖ 1 1/2 cups all purpose flour -6.6 oz/187g
- ❖ 1 teaspoons salt - .2 oz/5.7g
- ❖ 1/2 teaspoon baking soda - .08/2.3g
- ❖ 1 Tablespoon baking powder -.5/14.2g

Now add the contents of bowl one and bowl two together and using your whisk, mix thoroughly. Then add the contents of bowl three to the bowl of wet ingredients and whisk all together until blended.

Let the mixture set for ten minutes while your waffle iron is heating to a high heat. The batter is a bit thin, but if it is too thick the waffles will be heavy, not light and crispy with a fluffy, soft interior. I spray my waffle iron when it is heated, with pan spray, and then I use one ladle of batter for my waffle iron and cook on high until it is as brown as I like. These waffles are so good that the taste of smooth, rich butter continues as you swallow each bite.

The outside is crisp, but not crunchy, the interior like I mentioned, is soft, rich, smooth and buttery. Try some and see if you don't think so as well! This recipe makes 12 eight inch waffles.

EASY SOURDOUGH BISCUITS



Easy Sourdough Biscuits

The night before you are planning to bake biscuits for breakfast, add together in a large bowl:

- ❖ 1 cup sourdough starter - 9 oz/255g at 166% hydration
- ❖ 2 cups milk (1/2 & 1/2 is best) - 16 oz/453g (or you can use 1 cup canned milk and 1 cup water)
- ❖ 1/4 cup melted butter(cooled) or oil - 2 oz/56g
- ❖ 2 cups all purpose flour - 8.8/249g
- ❖ Stir well and cover lightly, leave overnight at room temperature. Next morning add together in another bowl :
- ❖ 2.5 cups all purpose flour - 11 oz/311g

- ❖ 1 Tablespoon sugar - .5 oz/14g
- ❖ 2 teaspoons salt - .42/11.9g
- ❖ 1 Tablespoon baking powder -.5 oz/14g
- ❖ 1 teaspoon baking soda - .16 oz/4.5g

Stir all of the dry ingredients together and then add the dry ingredients all at once to the large bowl of starter mixture. Mix together and pour out onto a well floured surface. Knead enough times to make the dough workable and keep the dough ball covered in flour on the outside but don't knead in too much flour because you want the dough to be sticky in the middle. The dough is supposed to be wet. Gather up the dough making sure there is enough flour on the top and bottom and roll out $\frac{3}{4}$ inch thick dough. Using a 3 inch biscuit cutter, cut out the biscuits and flatten them slightly when you place them on a greased baking sheet. Pop into a 400F oven and bake for 15-18 minutes, turning the pan halfway for even browning. Tear one biscuit in half to make sure they're done- butter, enjoy! When finished you can brush butter on the tops. This makes about 18 large biscuits.

FLUFFY SOURDOUGH BISCUITS



For this recipe, have everything ready in each bowl and be prepared to work quickly once you add the baking powder and soda to the liquid. It will foam up as you stir in the baking powder/soda and you need to add the dry ingredients at once before all of the bubbles are gone. If you work quickly, the bubbles are trapped in the dough and help make a light, fluffy biscuit. The dough is sticky and wet, and needs plenty of flour on the work surface to keep from sticking.

Bowl 1:
Wisk together:

- ❖ 1 Cup Active Sourdough Starter - 9 oz/255g at 166% hydration
- ❖ 1 cup milk - 8 oz/226g (rich milk is better)

- ❖ 4 Tablespoons oil or melted butter - 2 oz/56g

In bowl 2 mix :

- ❖ 3 cups all purpose flour - 13.5 oz/382g
- ❖ 1.5 teaspoons salt - .3 oz/8.5g

Add all at once to bowl 1:

- ❖ 2 teaspoons baking powder - .3 oz/8.5g
- ❖ 1/2 teaspoon baking soda - .08 oz/2.3g

It will bubble up and foam immediately. Stir gently, and as it bubbles, **VERY QUICKLY** add the contents of bowl 2 to this bubbly mixture. With large spoon stir until ingredients come together and still working quickly:

Pour out on a floured surface and knead in any extra flour you require, but keep this dough sticky, this dough will be very sticky: Knead approximately 15 times.

Roll out with rolling pin very thick for biscuits, cut with biscuit cutter or knife. The dough will be coated on the outside with flour, but sticky on the inside, so dip your cutter into flour each time to keep it from sticking to the dough.

On a greased baking sheet, bake biscuits in a preheated oven at 425F/218C degrees for 12-15 minutes. Serve with lots of fresh butter. These biscuits must be handled quickly and gently so as not to degas the dough. They are a little bit challenging to make, but the taste is worth it! This recipe makes approximately 12 - 15 biscuits.



RUSTIC BISCUITS



Instead of just white flour, I added a small amount of cornmeal and whole wheat to give the biscuits a more rustic flavor. This is a large batch of biscuits for when the whole clan arrives for Sunday morning breakfast. Cut the amounts in half for one dozen biscuits.

Rustic Sourdough Biscuits

In a medium bowl mix:

- ❖ 2 cups vigorous Sourdough Starter - 18 oz/510g 166% hydration
- ❖ 1.5 cups Milk - 12 oz/340g
- ❖ 1/2 cup oil or melted Butter - 4 oz/113g
- ❖ 1 rounded Tablespoon Malt Syrup/or substitute 1 Tablespoon Brown Sugar - 1 oz/28g

In a medium large bowl mix the dry ingredients:

- ❖ 4 1/3 cups all purpose flour - 19 oz/538g

- ❖ 1/4 cup Whole Wheat flour - 1 oz/28g
- ❖ 2 Tablespoons of Cornmeal - .5 oz/14g
- ❖ 2.5 teaspoons Salt - .5 oz/14g
- ❖ 1 teaspoon Baking Soda - .16 oz/4.5g
- ❖ 4 teaspoons Baking Powder - .65 oz/18.4g

Stir dry ingredients together and then add the first bowl of wet ingredients to the second bowl of dry ingredients, stir gently with a fork until a soft sticky dough is formed. Pour out on a well floured surface and knead just enough to have the dough gather into a ball and be smooth and pliable. This dough will still be somewhat sticky on the inside, just keep the outside covered with flour as you roll it out and cut biscuits with a biscuit cutter.

If the dough is kneaded too much or you add so much flour while kneading that it is no longer sticky inside, it will be a tougher biscuit. So handle the dough gently and quickly and get the cut biscuits onto a baking sheet lightly greased or sprayed with pan spray. Pop the biscuits into a preheated oven at 400F/204C degrees for 12 - 15 minutes. Eat while hot with dripping butter/honey/jam etc. Enjoy! This makes about 2 dozen large biscuits.



Sourdough Scones



These sourdough scones are very rich and delicious. They are cooked on a griddle. This recipe will make 14 - 16 large scones. If you are not cooking for a large crowd, cut the ingredients in half.

Bowl 1:
Whisk together:

- ❖ 2 Cup Active Sourdough Starter - 18 oz/510g at 166% hydration
- ❖ ¼ cup evaporated milk - 2 oz/56g
- ❖ Two sticks of melted butter - 8 oz/226g

In bowl 2
Stir well:

- ❖ 6 cups all purpose flour - 1 lb 10.4 oz/748g

- ❖ 3 teaspoons salt - .6 oz/17g
- ❖ 3 teaspoons baking powder - .5 oz/14g
- ❖ 1 teaspoon baking soda - .16 oz/4.5g

Add the dry ingredients of bowl 2 to the wet ingredients of bowl 1. Stir together with a fork and bring the dough into a ball. Place on floured surface and knead the dough ball 10 times. Then using a rolling pin, roll the dough out to about 5/8 inch thick. Now using your pastry cutter or dough scraper, cut the dough into wedges, about 14 - 16 pieces.



Wedges cooking on their sides:

Place the wedges on a preheated griddle at 300F/148C degrees. Cook on the top for 10 minutes then flip over onto the bottom for another 10 minutes. Finally cook on each of the sides for 5 minutes on each side. Take off the griddle and serve immediately.

ONION CHEESE BATTER BREAD



This bread smells so good when it is baking, that you will have family members hanging around the kitchen. This is an easy to bake batter bread. Check the options below before mixing. This recipe makes approximately 3 lbs 13.6 oz of a batter like dough. Enough to bake 2 loaves.

Early in the day, add to your mixer:

- ❖ 2 cups vigorous starter at 166% hydration - 18 oz/510g
- ❖ 2 cups lukewarm water - 16 oz/453g
- ❖ 1/4 cup powdered milk - 1 oz/28g
- ❖ 1 Tablespoons Oil - .5 oz/14g
- ❖ 1 rounded Tablespoon Malt syrup - 1 oz/28g
- ❖ 5 & 1/3 cups mixture of 1/2 bread and 1/2 all purpose flour - 1 lb 8 oz/ 680g
- ❖ 1 Tablespoon salt - .6 oz/17g (Add after Autolyse)

Don't add next ingredients until later:

- ❖ 2 - large sweet onions, chopped and fried until browned (use more or less depending on how oniony you want your bread)
- ❖ 1 lb/453g of chunked Cheddar cheese

Process the dough on medium speed for about 3 minutes. Let the dough rest for 20 minutes (Autolyse) and then add the salt and mix for about 7 more minutes on low speed. Cover and let dough bulk ferment until doubled, 4 - 6 hours. While waiting for the dough to ferment, chop the onions and fry in oil on medium heat until nicely

browned, cool. Cut the cheese into large chunks approximately 1/2 inch square. When dough is proofed, add your onions (cooled) and cheese chunks. Stir in the cheese and onions on low speed until the chunks are mixed into the dough. Then fill two large (9" x 5" x 2.5") greased bread pans halfway with the batter (1 lb 14.8 oz each). I pushed in some extra cheese chunks on the top of the loaves. Let dough rise to the top of the pan (about two - three hours). When the dough is almost to the top, preheat oven to 400F/204C degrees. Bake both loaves for 35 - 40 minutes turning loaves halfway. Cool bread for a short time, and while still warm, turn out loaves so they don't get stuck in the pan. Then cool completely.

Options:

- ❖ Substitute 1/2 cup of evaporated milk for 1/2 cup of the water instead of the powder milk or in addition to it.
- ❖ Add 1/2 teaspoon of onion powder to the batter during mixing.
- ❖ Add chopped canned chili peppers
- ❖ Sprinkle in some cracked black pepper or some red chili flakes.
- ❖ Use Swiss cheese chunks

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Sourdough Starter @166%	2 cups	18 oz	510 g	58.5 %
Water	2 cups	16 oz	453 g	52.0 %
Powdered Milk	1/4 cup	1 oz	28 g	3.3 %
Malt Syrup or Honey	1 TBSP	1 oz	28 g	3.3 %
Oil	2 TBSP	1 oz	28 g	3.3 %
AP & Bread Flour	5 & 1/3 cups	1 lb 8 oz	680 g	78.0 %
Salt (add after autolyse)	1 TBSP	.6 oz	17 g	2.0 %
Total Dough Weight	3 lb 13.6 oz	3 lb 13.6 oz	1746 g	200.2%
Total Flour Weight	1 lb 14.8 oz	1 lb 14.8 oz	872 g	100.0 %

SOFT WHITE PAN SOURDOUGH



Soft White Pan Sourdough is started in the evening as a preferment (sponge).

Soft White Pan Sourdough:

This dough is a moist dough made up to be a soft sandwich bread baked in a loaf pan.

For the preferment mix up the evening before bake day:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	68.3 %
Water	1 cup	8 oz	226 g	60.7 %
Rye Flour	1/4 cup	.9 oz	25 g	6.8 %
Whole Wheat Flour	½ cup	2.1 oz	59 g	15.9 %
Bread Flour	1 ½ cups	6.8 oz	192 g	51.6 %

Total Weight	1 lb 10.8 oz	1 lb 10.8 oz	759 g	203.3 %
Hydration				103.3 %

This will be a stiff sponge, mix with a strong wooden spoon. Cover and let the preferment/sponge ferment overnight at room temperature.

Next morning early, pour the sponge mixture into your dough mixer and add:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	70.6 %
Water	½ cup	4 oz	113 g	10.5 %
Evaporated Milk	¾ cup	6 oz	170 g	15.8 %
Melted Butter	4 TBSP	2 oz	56 g	5.3 %
Malt Syrup or Honey	1 TBSP	1 oz	28 g	2.6 %
Bread Flour	5 ½ cups	1 lbs 8.8 oz	703 g	65.3 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19 g	1.8 %
Total Dough Weight	4 lb 1.3 oz	4 lb 1.3 oz	1851 g	171.9%
Total Flour Weight	2 lb 6.0 oz	2 lb 6.0 oz	1076 g	100.0 %
Total Water Weight (hydration)	1 lb 8.3 oz	1 lb 8.3 oz	689 g	64.0%

Mix the ingredients well in your mixer for about 2 - 3 minutes or just until mixed. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, mix dough on low speed for about 4 minutes. Then let the dough bulk ferment (which just means the first rise) for about 4 hours or until doubled.

Stir the dough down with just two turns of the dough hook twice during the bulk fermentation. This is to strengthen the gluten strands and line them up, much like folding would do plus it helps to keep the dough from over fermenting. After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times then gather into a ball. Divide the dough into two pieces weighing around 2 lbs each.

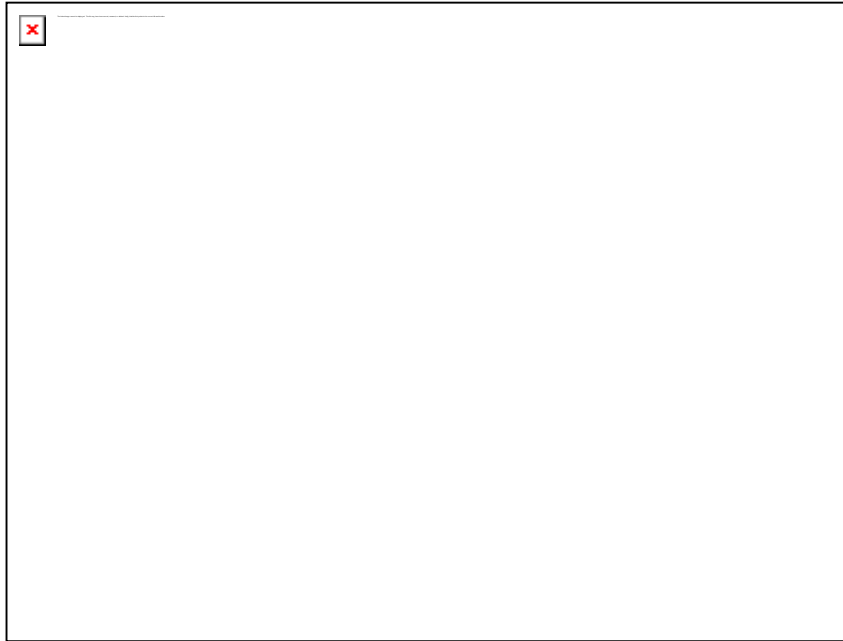
Shape loaves into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching (resting) shape loaves into their final shapes and put them into large loaf pans. Then allow the dough to rise until proofing is done. Proofing is the second raising of the dough. This can take anywhere from 1 - 3 hours.

When the dough is ready and feels bubbly and springy but not saggy, slash the bread down the middle, not too deep, about 3/8 inch or so, spread melted butter over the top of the loaf and bake all three in a preheated 400F/204C degree oven for 30 - 40 minutes, turning halfway for even browning.

You don't need your baking stone for this recipe. If when you take out the bread, you want it a little browner on the bottom, turn out the loaf and put it back into the oven for a few more minutes. Cool the bread and eat with fresh butter. This bread slices up nicely and makes great sandwiches or toast.



Oat & Honey Soft Sourdough



This bread is a one day bread. It is mixed, proofed and baked on the same day.

In the morning:

In your dough mixing bowl combine all of the following ingredients in the order on the list, except the salt, which will be added after autolyse.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
SourdoughStarter @166%	2 cups	18 oz	510 g	46.9 %
Water	1 cup	8 oz	226 g	20.9 %
Evaporated milk	2/3 cup	5.3 oz	147 g	13.8 %
Oil	1.5 TBSP	1.5 oz	42 g	3.9 %
Honey	1 TBSP	1 oz	28 g	2.6 %
Quick Oats	2/3 cup	3.6 oz	102 g	9.4 %
Whole Wheat Flour	¼ cup	1 oz	28 g	2.6 %
Bread Flour	6 cups	1 lbs 11 oz	765 g	70.4 %

Salt (add after autolyse)	3.5 teasp	.7 oz	19 g	1.8 %
Total Dough Weight	4 lb 2.1oz	4 lb 2.1 oz	1874 g	172.3 %
Total Flour Weight	2 lb 6.4 oz	2 lb 6.4 oz	1087 g	100.0 %
Total Water Weight (hydration)	1 lb 8.7 oz	1 lb 8.7 oz	701 g	64.5%

Mix until ingredients are well incorporated (about 2 -3 minutes) on medium speed and then let the dough rest (autolysis) for about 20 minutes.

After autolysis is done, add the salt and mix the dough for 5 minutes in your mixer on low speed. Allow the dough to bulk ferment, covered, for 4 - 6 hours (or until doubled).

Pour dough out on work surface and knead just enough to gather the dough into a ball. Divide the dough into two pieces. Shape each piece of dough by pulling it into a rectangular shape as long as the bread pan, and then rolling it up into a tight tube.

Rolling the dough over some oats sprinkled on the work surface gives the bread a nice touch or lightly sprinkle oats to coat the inside of the greased pan before placing the dough in. Now place the dough into the greased 9"x 5"x 2.5" bread pan. Cover the dough lightly with a damp cloth or spray with pan spray to keep the dough from drying out. This dough can also be made up as a free form loaf and proofed in a banneton. If made as a free form loaf, use the roasting pan method of baking.

Allow the dough to proof in a warm place for about 2 - 3 hours (it usually takes 2 hours). When the dough is done proofing, (push the tip of your finger into the side of the dough, if it feels bubbly, soft and the dent fills in slowly, it is ready).

Slash the top of the dough (if you want a long vertical slash to fill with melted butter) or leave plain and don't slash at all, if you prefer a nice rounded top. Brush melted butter on the top of the loaves or spray the top with pan oil (to keep the dough from drying out while baking).

Then bake in a well preheated 400F/204C degree oven for 30 - 35 minutes, turning the loaf when halfway done to evenly brown the crust. Cool, slice and enjoy!



Sourdough Tortillas



Making up some Sourdough Tortillas is a great way to use up that sourdough starter.

To make 3 lbs of dough, add together in a medium mixing bowl:

- **Sourdough starter – 9 oz/ 255g @ 166% hydration**
- **Water hot from the tap or about 130F–11 oz/314g**
- **Oil – 1 oz/ 28g**
- **Salt – .4 oz/11g**
- **All Purpose Flour - 1 lb 11 oz/765g**

First weigh your starter into the bowl, then your oil and salt. Next add the hot water and flour. Get your hands into the bowl and mix the dough real well with your hands. The dough has an interesting feel to it and seems more wet than it's 54.7% hydration. Once the mixture is well incorporated, cover the bowl and let the dough set for 20 minutes.

Now divide the dough into 12 pieces which weigh around 4 oz each. Roll the dough into little balls. Cover the dough pieces with a slightly damp cloth. Heat a heavy bottom 12" skillet on medium heat, don't let it smoke. Now take each ball one at a time and with great timing, sprinkle your surface with flour and roll the ball out to about 5 inches.

Then let it rest while you roll one or two more balls to the 5 inch size . Now go back to the first ball which has had a chance to rest and roll it out (sprinkle flour as necessary to keep the dough from sticking) to about a 10 inch diameter circle.



Roll out to 10"

Once you accomplish this, flip the dough into your hot skillet and let the dough bubble up on one side then flip it again and let it bubble on the other side. The tortillas shouldn't be cooked too long or they get like a cracker or cardboard. Once your beautiful tortilla is done place it on a plate and cover it with a kitchen towel to keep warm and stay soft.



Then get your next tortilla into the pan. I roll out a few tortillas and have them waiting in line to cook, it takes a bit of timing to keep everything going. The reason you roll out the dough in two stages is because if you try to roll the dough out to 10 inches right away it will resist your efforts, so the rest period helps the gluten to relax again for the final stretch! 4 oz dough balls make a thick tortilla.

If you wish a thinner tortilla, use 3.5 oz of dough and roll it out to the 10 inch diameter circle, the dough should be almost see through. After you are done cooking up your lovely stack of tortillas, serve them with fresh butter, beans and whatever else makes your meal complete.

Fresh Homemade Tortillas



SYRIAN FLATBREAD



To your mixer add:

- ❖ 1 cup starter very vigorous at 166% hydration - 9 oz/255g
- ❖ 1 cup water - 8 oz/226g
- ❖ 3/4 cup evaporated milk - 6 oz/170g
- ❖ 3 Tablespoons melted butter or oil - 1.5 oz/42g
- ❖ 3 tsp salt (1 Tablespoon) - .6 oz/17g
- ❖ 4 cups all purpose flour - 17.6 oz/499g
- ❖ 2 cups whole wheat flour - 8.4 oz/238g

Mix up the ingredients in your mixer or by hand and let autolyse. Then mix again for 3 - 5 minutes. Bulk ferment for 4 - 6 hours or until doubled. Then divide the dough into 7 pieces of about 7 oz each, roll into balls and let rest for 5 - 10 minutes.

After resting, roll out the pieces of dough about 1/4 inch thick. You can roll the dough in sesame seeds for flavor and looks. Then let the dough proof again for about two hours. In a preheated oven (500 degrees), on a hot stone, gently stretch the dough out slightly and throw the dough onto the top of the hot stone.

Bake for 4 minutes on each side. The dough puffs up into a balloon after the first 4 minutes. If the flatbreads aren't soft enough bake on each side for less time. Serve cut in half for pita sandwiches or warm with butter.

These are very delicious! These Syrian Flatbreads were about 8 inches in diameter when done baking, if you want them smaller cut the dough into 4 or 5 ounce pieces. Here are the results:



This recipe makes approximately 3 lbs 3 oz of dough.



WALNUT RAISIN SURPRISE



Walnut Raisin Surprise uses an overnight preferment. The All Purpose flour helps produce tender dough. The surprise is Cinnamon syrup, used in layers and poured over the dough.

Preferment: mix together the night before:

With a sturdy spoon, mix together in a medium sized container:

- ❖ 1 Cup Active Sourdough Starter - 9 oz at 166% hydration
- ❖ 1 cup water - 8 oz
- ❖ 2 cups All Purpose flour - 8.8 oz

Lightly cover the container and let it set at room temperature overnight. This preferment dough equals 1 lb 10 oz at 110% hydration.

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	73.9 %
Water	1 cup	8 oz	266 g	65.7 %
All Purpose Flour	2 cups	8.8 oz	249 g	72.2 %
Total Weight	1 lb 9.8 oz	1 lb 9.8 oz	731 g	211.8%
Hydration				111.8%

Next morning before finishing the final dough, make up the Cinnamon syrup so it can cool:

Cinnamon Syrup:

To prepare syrup, add all of the following ingredients to a medium sized saucepan and just bring to a boil, remove pan and cool syrup until just warm.

- ❖ 1.5 cups brown sugar - 10.6
- ❖ 6 Tablespoons butter - 3 oz
- ❖ 1 Tablespoon Vanilla extract - .5 oz
- ❖ 1/3 cup evaporated milk or cream - 2.6 oz
- ❖ 4 teaspoons Cinnamon - .3 oz

Finish the dough:

Now pour the preferment into your mixing bowl and add:

- ❖ 4 oz evaporated milk or 1/2 and 1/2 milk - 4 oz
- ❖ 1/4 cup melted, cooled butter - 2 oz
- ❖ 2 beaten large eggs - 3.5 oz
- ❖ 2 Tablespoon Vanilla extract - 1 oz
- ❖ 1/3 cup sugar - 2.4 oz
- ❖ 1/2 teaspoon Cinnamon - .04 oz
- ❖ 2.5 teaspoons salt - .5 oz
- ❖ 3 & 1/4 cups All Purpose flour - 14.6 oz



Don't be tempted to add more Cinnamon to the dough, Cinnamon can make the dough sluggish and take longer to raise.

Ingredient	Volume 2 Rolls	Standard 2 Rolls	Metric 2 Rolls	Bakers %
Preferment	All	All	All	96.3 %
Canned or ½ & ½ milk	½ cup	4 oz	113 g	14.9 %
Sugar	1/3 cup	2.4 oz	68 g	9.0 %
Vanilla Extract	2 TBSP	1 oz	28 g	3.7 %
Melted Butter	¼ cup	2 oz	56 g	7.5 %
Large Eggs	2	3.5 oz	99 g	13.1 %
All Purpose Flour	3 ¼ cups	14.6 oz	413 g	54.5 %
Cinnamon	½ teasp			
Salt (add after autolyse)	2 ½ teasp	.5 oz	14 g	1.9 %
Total Dough Weight	3 lb 5.8 oz	3 lb 5.8 oz	1525 g	200.9 %
Total Flour Weight	1 lb 10.8 oz	1 lb 10.8 oz	759 g	100.0 %
Total Water Weight (hydration)	1 lb 1.8 oz	1 lb 1.8 oz	505 g	66.5%

Mix all ingredients together on low speed for 5 minutes. Let rest for 5 minutes.

Add some of the raisins and walnuts to the dough now stirring in:

- ❖ ¾ cup coarsely chopped walnuts
- ❖ ¾ cup raisins

Also, when layering the dough into the pan with the Cinnamon syrup add another.

- ❖ ¾ cup coarsely chopped walnuts
- ❖ ¾ cup raisins

In a large well greased 17 cup bundt pan, cover the bottom of the pan with some of the cinnamon syrup, about ½ cup, and then sprinkle raisins and walnuts over the syrup. Next layer about half of the dough over the raisin/walnut/syrup mixture. Then add more syrup, raisins and walnuts on top of the dough layer. Add remaining dough mixture, keeping some raisins/walnuts/and syrup to add over the top layer of dough. Make about two layers of dough with layers of Cinnamon syrup/raisins/walnuts/layered in between. Pour the rest of the Cinnamon syrup/raisins/walnuts over the top. Take a butter knife and poke the batter around somewhat to mix the layers up somewhat, but not too much.

Allow the mixture to proof around 3 - 4 hours or until it is about 7/8 up the sides of the pan. Then bake in a preheated oven at 400 degrees for one hour, covering the pan with aluminum foil about half way through the bake, so it doesn't get too dark. Test the inner temperature to make sure it is around 200 degrees F, before removing from oven. Right away, turn out bread on platter, so it doesn't get stuck in the pan while cooling. Eat while still warm, with pats of butter.



SOURDOUGH GLOSSARY

Acetic acid	An organic acid produced by a lactobacilli bacteria
All purpose flour	A blend of wheat flours with protein level around 9-11 %
Amylase Enzyme	Amylase enzymes present in dough break down starch into sugars. Amylase is present in larger amounts in sprouted grains and whole grains
Artisan Bread	Handcrafted bread made by an skilled baker
Baguette	A French style loaf which originated in Austria it has a long shape with an optimum amount of crust to crumb ratio
Bakers Blade	A dough scraper with a blade usually around 6" x 4" same as a bench scraper or pasry blade.
Bakers percentage	A method of measurement where the ingredients are figured as a percentage of the flour weight
Baking sheets	Flat sheets for baking, like a cookie pan or a flat pan with no sides. Common sizes are full size, 18" x 26" and half size 18" x 13" pans sized to fit a full sized bakery oven
Baking stone	A flat stone used on the bottom of the oven to simulate a masonry oven, usually for baking bread or pizza
Banneton	Willow or cane basket used for proofing dough
Barm	A starter made from brewers grain by-products or foam
Batard	A bread shaped like a regular French bread, shorter than a baguette and much wider
Bench scraper	A tool in a rectangular shape with one edge used as a scraper or divider and the other edge as a handle, usually 4" x 6" with a handle on one side. Same as a bakers blade or a pastry blade.
Biga	A lower hydration dough cultured with commercial yeast and used as a seed for building dough

Boule	A loaf of bread shaped as a ball or in the round
Bread flour	A flour made with higher protein levels of 10 - 12 % , used for making bread. It usually is enriched and has malt and dough enhancers added. Can be bleached or unbleached.
Bread thermometer	A thermometer which has a long point which is thrust into a loaf of bread to measure the interior temperature, usually reads at least to 220 degrees F
Brotform	Same as Banneton , German variation of word Banneton A cane or rush basket used for proofing dough.
Bulk ferment	First rising or fermentation of dough after mixing
Carbon dioxide - CO ₂	Gas by-product of fermenting yeasts and bacteria
Chef (when used for a leaven)	French word for a culture used as a seed for the first stage of dough building
Cob	A rustic round shaped loaf
Commercial or Bakers yeast	A modern variation of yeasts derived from brewers yeast, which is fast acting and has a long shelf life
Couche	A long, heavy linen or canvas cloth used to hold dough while it is proofing, with folds to separate the loaves
Crumb	The interior structure of a baked item is called it's crumb
Crust washes or glazes	Finishes for bread crust, egg glaze, sugar glaze, cornstarch wash, are some of the finishes for a particular look and texture for the crust. Glazes may be applied before, after or during baking.
Culture	A stable mixture of yeast and bacteria propagated in a water/flour mixture
Desem	Flemish sourdough starter made with whole wheat flour
Diastatic malt	Usually made from sprouted, barley which is dried at a low temperature to keep the enzymes active.
Docking	Poking holes in dough to control over rising or bubbling up of dough
Dough	A mixture of liquid, flour and often some type of leaven
Dough Scraper	Same as a bench scraper
Extensible	A dough is extensible when it has the ability to stretch

	easily
Fermentation	When carbohydrates are converted into alcohol, acids and gasses as a result of yeasts, bacteria and enzyme activity
Foccacia	A type of flat bread usually with toppings
Gluten	A protein including gliadin and glutenin which form the weblike structure of bread which traps the gasses formed during fermentation
Grain Ferment Method	Pre-ferment method of treating wholegrains to break down and soften the indigestible portions before making dough
Hooch	The liquid that rises to the top of a high hydration culture
Hydration	The amount of water to flour ratio by weight
Instant read thermometer	A digital thermometer used for instant readout of temperature usually with a probe and digital readout
Lactic Acid	An organic acid tolerant to lower Ph levels which contributes to the flavor of bread
Lactobacilli	A bacteria present in sourdough cultures which produces organic acids
Lame	A French word for a tool with an attached razor used for slashing dough
Leaven	A substance used to produce carbon dioxide for raising dough
Levain	A French type of pre-ferment used to make bread
Masonry oven	A baking oven made with stone, brick or concrete and heated by fire, electricity or gas
Motherdough	Cool fermented sourdough starter from 50-80% hydration
Natural Leaven	The wild yeasts and bacteria present in fruits and grains used to raise dough
Non diastatic malt	A malted grain powder or syrup in which the enzymes are no longer active
Old dough	A piece of fermented dough saved to be used in a subsequent batch of dough
Pastry blade	Same as a dough scraper or baker's blade

Pate Fermente	Same as Old dough
Poolish	A Polish wet preferment usually made with a small amount of commercial yeast
Pre-ferment	A mixture of flours/grains and liquids fermented before adding to the main dough
Proofing	Second raising of dough after shaping
Proofing Cloth	A cloth used to line baskets or bread molds for holding dough while it proofs
Proofing test	A test used to see if a leaven is still viable
Protease	An enzyme in dough activated by the addition of water to flour, which helps to degrade or break down the strands of gluten making the dough more extensible
Rack	Cooling racks are used to cool baked goods.
Refresh	To feed a sourdough starter/culture water and flour
Retard	To cool down a dough and slow it's fermentation
Retarder	A temperature controlled environment for cooling dough
Roasting Pan Method	A method of baking that keeps steam next to the loaf
Sauerteig	A German term for sourdough
Scoring	Decorative and useful slashing or slicing in the dough before baking, used so the dough can expand in an expected manner
Slashing	Cutting or slicing dough to allow dough to expand while baking
Sourdough	A natural leavening or wild yeast fermented dough
Sourdough starter	A stable culture of yeasts and bacteria in a water/flour mixture used to leaven dough.
Sponge	A type of pre-ferment usually around 100% hydration
Starter	Same as Sourdough Starter
Straight mix	A method of mixing dough with the minimum amount of stages.
Stretch and fold method	A hand stretching and folding method of developing dough
Torpedo	A loaf shaped somewhat like a skinny football with pointed ends.

Vigorous or active starter	A healthy stable culture of wild yeasts and bacteria
Wild yeast	Yeasts found in the natural environment
Yeast	A fungi which reproduces by budding, it's fermentation causes CO ₂ as a by-product which raises dough

About the Author

I have been baking for 40 years. At the age of ten, I was baking and selling cupcakes to the neighbors.

I became the mother of ten children and so I had plenty of reasons to bake.

My interest in real sourdough began in the Summer of 2004 when my daughter challenged me to bake “real” sourdough, because “Nobody can bake real sourdough at home.”

Taking up her challenge, I had no idea that it would lead me to my own sourdough business, called Northwest Sourdough, a blog and a forum all about sourdough.

Northwest sourdough bread was featured on KNOE TV's What's Cooking with Diane Cage in April of 2006.

It's been fun, Teresa



End of Part 1

“Discovering Sourdough” is comprised of three parts. The first section is Part 1- Beginning Sourdough. The second section is Part 2- Intermediate Sourdough. The final section is Part 3 - Advanced Sourdough.

Contact me at: northwestsourdough@gmail.com

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Have fun baking!



Discovering Sourdough

By Teresa L. Hosier Greenway

PROFESSIONAL SOURDOUGH BREADS BAKED AT HOME

USING ONLY THE WILD YEAST

Part II

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PART 2

INTERMEDIATE SOURDOUGH



Contents Part 2

Intermediate Sourdough

Intermediate Dough Handling

Ingredients and Techniques.....	5
Mixing, Folding and Handling Dough.....	23
Basic White Loaf.....	29

The Intermediate Recipes:

Extra Sour Sourdough.....	38
Wheat Potato Loaf.....	41
Western Wheat Sourdough.....	44
Sour Rye.....	47
Dark Beer Rye.....	49
Sesame Honey Wheat.....	51
Molasses Wheat Sourdough.....	54
Italian Sourdough.....	56
Danish Rye Pumpernickel.....	58
Cracked Wheat San Francisco Sourdough.....	60
Cracked Grain Mill Loaf.....	63
Spicy Jalepeno Loaf.....	67
Garlic Onion Rye Sourdough.....	70
Desem Rye Malted Sourdough.....	73
Saltzburg Sourdough.....	76
Two Night Sourdough.....	79
Honey Sunflower Loaf.....	82
San Francisco Sunrise.....	86
Buckwheat Sourdough.....	89
Austrian Farm Bread.....	92

INTERMEDIATE DOUGH HANDLING

INGREDIENTS & TECHNIQUES



When baking, use the best, highest quality ingredients you can find. If you want to have terrific bread, you need to start with terrific ingredients. Here are some of the ingredients used in sourdough baking:

Flour:

Use high quality unbleached bread flour, preferably organic, if you can get it. Bread flour is higher in protein and will form the gluten strands necessary for a great loaf of sourdough. A mix of All Purpose flour and Bread flour is sometimes used in Artisan breads. Check at your local

bulk or health food store to see if you can buy 25 - 50 lb bags of flour with a good quality name brand. Generic flours are more likely produce generic bread and flopped bread isn't fun. When you start baking with wholegrain flour, it is really essential to use fresh flours that are preferably organic. I grind my own and age them a week or two. If you buy flour that is ground at the bulk food store, you can at least find out how old it is. Store flour in a cool, dry place away from strong odors.

The wild yeast and bacteria present in the sourdough starter, are sensitive and may not perform well with poor quality, old, rancid, flour. Organic flours are great for sourdough baking, although regular store bought flour should produce acceptable results as well. If you grind your own wholegrain flour, try to grind it at least ten days before baking. Then store it in a cool place in non airtight containers, then it won't be "green" when you are ready to use it. If you mix the flour once in a while it will oxygenate and age more quickly. After the ten days, store it in airtight container. Green (freshly ground) flour can cause problems

in dough. A dough made with “green flour” can be wettish when it shouldn’t be. This is because the gluten fibers do not bond well and cannot absorb water as well as aged flour. The flour will initially take up the water but then later it releases the water and the dough can feel slimy or wet. This can happen with freshly ground or “green” flours. Dough made from “green” flour can be difficult to handle. However, if only a small amount of freshly ground flour is used in the dough, you shouldn’t have much trouble. White flour that is not enzyme balanced can cause problems as well. Amylase is an enzyme present in flour. It helps break down the starch present in the flour into sugars which are then available for fermentation. However, once flour is sifted and becomes white flour, there is less Amylase present, since most of it is found in the germ portion of the wheat berry. If the amount of Amylase is too low, it will produce dough that doesn’t ferment well and bread with crust deficient in color and flavor. Look at the ingredient list on your bag of flour, if it states: “added enzymes”, “fungal enzymes”, “fungal amylase”, or lists malt or malted flour as an additive, then the

flour is enzyme balanced and is good for baking bread. Bread flour is usually enzyme balanced and often has vitamin C added to strengthen the dough.

Whole grain and rye flour need to be stored in a cool, dry environment as they go rancid quickly in warm/humid environments. All flour can pick up odors, so don’t store onions next to the flour bag.

Water: Water quality was discussed in “Caring for Your Starter”. It is very important to the quality of the dough. Some city tap water is so laden with chemicals that the sourdough starter cannot survive. However, there are those who find that their city tap water is compatible with sourdough culture. If you are not sure about your water quality, and have a dried starter, divide the contents in half. Using one half of the dried starter flakes, make up one container of starter using your city water, then in a different container, mix up another batch, using either your tap water which has been boiled, cooled and left uncovered for 24 hours (to outgas) or bottled water. Feed the one starter each day with city water and flour and the

other one with the boiled or bottled water and flour. After one week, see what the outcome is. If both starters are doing well and showing signs of life, then you could use your own tap water. If the starter fed with tap water is dead looking or smells bad, then continue to use either the boiled water or the bottled water. Realize that the dough would be affected the same. If your tap water kills the starter, it won't be good for making up dough either. Make sure you feed your starter regularly to have it healthy and vigorous for baking with. Feed it the day before you will be mixing dough. A starter should be used within 6 - 18 hours of feeding. If it has been longer, feed your starter and wait to use it until it is vigorous again. A starter kept in the refrigerator, should be taken out the day before mixing, fed and allowed to get bubbly and vigorous before use. However, if you haven't been feeding your refrigerated starter at least once a week or so (maybe up to two weeks with thicker starters), then bring it up to room temperature, discard most of it and then feed the part you have saved for at least two days before using. Or feed it for however many days it takes to regain it's vigor. It would be a real

mistake to use a starter that isn't vigorous.

Sourdough Starter:

If you have been feeding your starter about one cup of flour (5 oz) and one cup of water (8.3 oz), you have a hydration of 166%. This amount (or more) of feed is used when you are baking the next day, otherwise you would be feeding more like ½ cup flour and ½ cup water to maintain it. This is a thin batter which will not crawl out of the container. It will often form a layer of liquid on the top called hooch because it is so thin, that it is difficult for the flour to remain in suspension. If you have been feeding your starter each day, and it doesn't look bubbly or very active, don't worry, it most likely is very active and will bake up a great loaf of bread. When the starter is kept very thin, the bubbles escape, so you cannot really tell by looking that the starter is really active. It can look quite uninspiring, and yet be very vigorous.

A thin batter ferments more quickly than a thicker batter and has vigorous enzyme activity. It is easier to add a liquid starter when mixing.

Another common hydration that sourdough starters are kept at is 100% hydration. 100% hydration is equal weight of water and flour mixed together. A 100% hydration starter will last longer between feedings. It is better to keep whole grain starters at 100% hydration rather than 166% hydration because they already have a tendency to ferment so quickly.

To turn a 100% starter into a 166% starter transfer 6.77 ounces of starter at 100% hydration to a new container and add 2.23 oz of water to the 6.77 oz of starter. This will give you one cup or 9 oz of starter at 166% hydration.

Salt: Protease is an enzyme present in dough that breaks down and softens gluten. Salt inhibits the Protease action in dough. It slows down fermentation and strengthens dough. The affect of salt on dough contributes to the color in the crust. It is also hygroscopic which means it holds onto water. Salt can be used as a tool in bread baking because of these characteristics.

If available, use salt which has no additives. Kosher salt, sea salt and Morton's canning salt are all good to use. Regular table salt can be used, but I have had several batches of dough turn gooey right after adding salt, so I started looking for salt without additives. Since sourdough cultures are sensitive to chemicals, maybe some of the chemicals added to salt caused the problems I experienced. Some types of salt need to be measured differently. Kosher salt is made up of flakes instead of grains, so a smaller amount of it takes up more space in your measuring spoon, but doesn't weigh as much as table salt when measured with the same spoon. You would need almost double the amount of kosher salt compared to regular table salt, when using volume measurements. This of course depends upon the brand of kosher salt. Approximately 1 tablespoon of table salt is equal to about 1.75 tablespoons of kosher salt. Many brands of kosher salt have the conversion amounts available on their label. Some table, kosher and sea salts have added chemicals, so make sure to read the label.

It is best to weigh salt. It is more accurate and you don't have to mess with leveling off teaspoons or tablespoons. Don't use kosher salt in very low hydration (dry) dough unless you add it while you are adding liquids. This is because the flakes of salt are large enough, that they might not dissolve completely in dry dough after the autolyse period.

Oil: The oils used in most of the recipes in this book are regular vegetable oils or olive oil; however in most cases melted butter can be substituted.

Milk: Milk powder and canned evaporated milk (not to be confused with condensed milk) are sometimes used in bread. Milk adds color to the bread crust and softens the crumb, making it tender with a finer crumb. Dry milk or evaporated milk are used because they don't need to be scalded to neutralize any live enzymes that might ruin the dough. Sometimes $\frac{1}{2}$ & $\frac{1}{2}$ is used. $\frac{1}{2}$ & $\frac{1}{2}$ is a mixture of cream and milk and is used because of its high fat content. $\frac{1}{2}$ & $\frac{1}{2}$ or any other milk can be substituted for evaporated milk, but they would need to be scalded first and then cooled before using. To scald milk, bring it to 180F/82C

degrees while stirring, then take it off the burner and cool before using. When dry milk is used in a recipe there is no substitute, unless you use part liquid milk instead of water in the recipe.

Sugars: Sugars, syrups, honey, molasses and malt (powder and syrup) are some of the sweeteners that you might use in bread baking. A small amount of sweetener can enhance fermentation. A larger amount of sweeteners, especially in breakfast and dessert dough, can inhibit the yeasts and it may take significantly longer for your dough to bulk ferment and proof. Sugars enhance the color of the crust and are also hygroscopic.

Dried Fruits and Spices: Dried fruit and spices can also inhibit dough fermentation. Whenever possible, layer the spices or fruits in the dough, instead of adding them to the bulk dough during mixing. Seeds and hard ingredients can cut apart the gluten strands of the dough. Add these at the end of mixing or after the autolyse period or even wait until shaping the loaves to work in these types of ingredients.

Other Ingredients:

Any other ingredients used should be fresh and of the best quality.

Equipment:

This is some of the equipment you may find handy for baking sourdough breads. Substitute and improvise whenever necessary:

- ❖ Dough Mixer
- ❖ Scale
- ❖ Spray bottle
- ❖ Large containers for fermenting dough - 4 & 8 quart sizes work well
- ❖ Peel or flat baking sheet for moving dough, cooling racks
- ❖ Pastry brush
- ❖ Measuring cups, spoons etc
- ❖ Spatulas, dough scrapers, mixing spoons
- ❖ Semolina, rice flour, or cornmeal for dusting
- ❖ Lame, sharp knife or blade for slashing, bread cutting knife
- ❖ Container for sourdough starter storage
- ❖ Bannetons, baskets, bowls, couche, or dough molds

- ❖ Proofing cloths
- ❖ Roasting lid for steaming dough
- ❖ Baking stone
- ❖ Plastic bags for covering proofing dough
- ❖ Long, sharp serrated bread knife
- ❖ Dough folding trough
- ❖ Dedicated refrigerator
- ❖ Proofing cabinet / dishwasher
- ❖ Dough and oven thermometer

Baking stone: For sourdough baking, a hot baking stone will give the dough a high initial transfer of heat which it needs for good oven spring and a great crust. Get a good baking stone. A baking stone should hold up under the high heat and steam used in sourdough baking. If the stone cracks, it isn't a very good quality stone. An inch or two of clearance around the stone is necessary for heat circulation. It is good to get the largest stone that will fit your oven with this clearance. Some of the stones that people have used are firebricks lined up on a baking sheet (it can be hard to move the dough around on a lot of cracks), Travertine tiles and

other kinds of stone tiles, pizza stones, unused kiln shelves, bought from a kiln supply. Also, you could try a cast iron griddle, or cast iron skillet, but you have to be prepared for the fact that they could crack. If you have a tile and stone supply store nearby, you might talk to the owner about what you need. They might cut a large tile to fit your size oven and maybe you could get a good deal on it, especially if you promise a future loaf of bread! Whatever stone you use, make sure to season the stone before using it.

To season a stone that has not been baked at high oven temperatures, you need to make sure it is dry and then be prepared to bake it for a long time. Start at a low temperature (**200F/93.3C**) for one hour and then raise the temperature 50 degrees each hour, until the highest heat you will probably bake at (**475F/246.1C**) is reached. This should be done over several hours and will help drive out any moisture caught in the interior of the stone, that could potentially cause cracks. I have a Fibrament stone which works really great for my sourdough baking. You can find them [online](#) at:

<http://www.bakingstone.com/> I also have a Travertine tile and it works really nice too.

Oven Temperature

Most Sourdough breads need high baking temperatures. Lean dough breads (dough made without added sugar, milk, and oils) are usually baked at **450F/232.2C** degrees. Sometimes I even start out at **475F/246.1C** degrees. However during the baking period I will turn the oven down part way through the bake. Sweet breads or bread with milk need slightly lower temperatures. Sweet breads would be baked at around **400F/204.4C** degrees and breads made with milk are often baked at **425F/218.3C** degrees. See the “Home Baking of Sourdough Breads” chapter for more information on baking with steam.

Dough Temperature: The desired temperature for dough is called the DDT. In bakeries the DDT is critical because when you have a very large mass of

dough, the temperature better be accurate otherwise you will have your dough fermenting too fast or too slow and when you have hundreds of loaves of bread in line waiting to be baked, they better be ready on time. For home bakers the temperature isn't as critical and there can be a lot more flexibility. A good average temperature for fermenting dough is between **74-78F** /23-25C degrees. That can differ depending on the recipe and your technique. Also you might want the initial dough temperature to be around **75F/23C** degrees but you might want it to reach in the upper **80's/26+C** at the end of the proofing period. With cold fermented dough, the dough starts out very cold; it is kept in the refrigerator and then only warmed up toward the end of the proofing period. For Desem dough, you might want the final proofing to be around **90F/32C**. Desem dough is whole wheat dough made with a Flemish Desem starter. You can find out more about Desem from the book "The Laurel's Kitchen Bread Book" by Laurel Robertson. There is also a few Desem recipes in the Recipe section of this book.

If a higher temperature is used for fermenting dough, you would have to make sure the humidity was also high or your dough would dry out. Some ways to keep dough from drying out would be to oil the top of the dough, another way would be to drape a damp cloth over the dough or put the dough into a plastic bag. I have a way of proofing dough in a warm, humid environment that actually works pretty well. I use my dishwasher. I spin the dial around until it is at the heat/dry cycle. I add a cup of water to the bottom of the dishwasher, put a thermometer in the dishwasher and then let it heat 5 - 10 minutes. When the thermometer indicates that it is as warm as I need, I turn the dial off, put in the dough that needs proofing and keep the door shut. Periodically I check the temperature and turn the heat back on. I always put a timer on for five minutes to remind me to turn it back off so I don't cook my dough prematurely! I also load the top rack with a few coffee cups; they help hold the heat longer. Think about it, a dishwasher is a little box that is humid and warm, exactly what you need for a proofing box!

When I proof dough this way, I use bannetons or baskets to hold the dough and cover them with plastic bags. This is just to make sure the dough stays moist, it helps hold in the warmth too. You can try it without the plastic bags; if it is humid enough it should work fine. Another place for keeping dough warm is in the oven with the light on; it can average 80F/26C degrees (If I use my oven, I need to keep the door cracked open so it doesn't get too warm, even with just the light bulb on). The real drawback to this of course is that when you need the dough to be kept warm while in its last stage of proofing, you will have to take it out of the oven to preheat the oven for baking. If you have two ovens, you could use one oven for a proofer and one for baking. Many people make their own proofing boxes at home. Some have used ice chests with a warming pad inside, or a styrofoam chest with a night light used for warmth. I don't know how safe or how well these home proofing boxes work, but if you have an experienced electrician for a neighbor maybe they could help you set up a home proofing box.

Mixing and Dough Development

This book is geared toward the home baker with a dough mixer. Some generally available mixers for the home baker are manufactured by: Blendtec, Kitchen Aid, Bosch, Anvil, Globe, Varimixer, Electrolux, Berkel, etc. They range in price from hundreds of dollars to thousands of dollars and come in many sizes from 5 qt to 20 qt capacity (restaurants and small bakeries use even larger mixers). The recipes in this book make enough dough for the smaller home mixer to work properly. This is usually around four pounds of dough, which will bake up two - 2 lb loaves of bread. The recipes can be cut down to make smaller amounts of dough suitable for either hand mixing or dough folding. Any of these recipes are also suitable for hand mixing. Just use a bowl for combining and mixing ingredients, and instead of kneading the dough on a surface covered with flour, use the bowl to knead the dough in, without adding extra flour. Ferment per instructions and continue the recipe the same as the mixer instructions.

There are different methods of mixing dough and each method has its own use. A common way to mix dough, using commercial yeast, is to add all of the ingredients together, mix and then let the dough bulk ferment; this is called the Straight Dough method of mixing. For commercial yeast dough, you need to develop the gluten during the mixing period because commercial yeasted dough doesn't have time during its short fermentation to develop the gluten fully.

With sourdough baking this is different because of the longer fermentation needed. Once sourdough is mixed, it will develop gluten just sitting in a bowl on the counter, without even kneading (so will commercial yeasted dough). This is the basis of some of the "No Knead" methods that are popular (including Jim Leahy's no knead method). However, you need time to allow the gluten to develop. If you used the Straight Dough method of mixing until the dough is fully developed, you would still have the gluten continuing to develop and then begin to break down during the long fermentation period. That is why, when working with sourdough, you need to

mix the dough just until the ingredients are incorporated. Then allow it to rest or autolyse for 15 - 20 minutes to completely hydrate the gluten strands. Letting the dough rest right after mixing but before kneading allows the gluten strands to absorb the water and the Protease enzymes to go to work on the gluten. After the rest (autolyse) period, you mix/knead the dough gently for just a few minutes. The dough will not look completely developed nor will it pass the windowpane test. The windowpane test consists of stretching out a piece of dough to see if it will get thin enough to let light through. This is a test which helps you to know if the dough is developed. You do not want the dough well developed at this stage as it will continue to develop the gluten's strength on it's own during the long bulk fermentation period. You would want your dough to pass the windowpane test after it has bulk fermented.

If you observe the condition of the dough during the whole process you will see how the gluten develops. Right after mixing you have ragged looking dough which will pull apart and not stretch

much; it will be clumpy and sticky. After the autolyse period, the dough has a shine, is more stretchy and you can already see the gluten strands developing. After a couple of hours, during bulk fermentation, the dough is even more elastic, like a rubber band. When the dough is done bulk fermenting, it is very stretchy and when you try to pull it off the dough hook, it is actually easier to slide it around the hook than pull to it off. With a high hydration dough which is very wet, this gluten development is harder to see, but is still present.

High hydration dough and one day mix and bake dough need a bit more mixing to develop the gluten (see the Double Hydration technique in the Advanced section). This is because they are not fermented as long as other sourdough methods and so don't have as much time to develop gluten. Sourdough should be handled gently. No punching down, no high speed mixing. No mixing for long periods of time. However, during bulk fermentation, it is good to take the dough and fold it over on itself at regular periods, or if you are bulk fermenting

dough in the mixer, give the hook a few turns every couple of hours. This will line up the gluten strands and strengthen the dough. You will get used to the "feel" of the dough and adjust the water or flour by experience after you bake for awhile. That is why I would suggest you feel the dough at all of the stages each time you bake so you can learn by feel what is necessary to make the dough just right.

Another method of mixing and fermenting is the Pre-ferment method which consists of pre-fermenting part of the ingredients for some hours or overnight and then mixing up the rest of the dough the next day and baking. This method is covered in the Advanced chapter. Another method of mixing and fermenting which is covered in the Advanced chapter is the Motherdough method. Motherdough is a cold dough which is fermented at low temperatures for several days before being used in a dough formula or recipe.

Folding and Shaping Dough

Folding the dough is a really nice way of strengthening dough. It helps to strengthen the dough and it also incorporates oxygen, which helps develop the flavor. To fold dough you need to bulk ferment your dough in a large flat container or bowl with a lid. Once you have placed the dough into the container, let it ferment, and fold the dough at regular intervals (see chapter on Dough Folding). You will notice with wetter dough, at the beginning of the folding process, that it is sticky and somewhat unmanageable. Once the bulk ferment is done, the dough is setting up higher after being folded; it is stronger, more manageable and less sticky.

The stage when the dough is fermented after it is done mixing, is called “bulk fermentation”. After the dough is bulk fermented, it is ready for shaping into loaves. Then comes “scaling” which means to divide and/or weigh the dough on a scale into the size you wish. After scaling, shape the dough into the general shape you wish and then allow the dough to rest for 5 - 10 minutes. This is called “bench rest.” The dough always has a tendency to “contract” and become more

difficult to manage after it has been worked with. If you allow the dough to rest so the gluten can relax after being worked, it is easier to shape. Some bakers let the dough rest after scaling and after the first general shaping. Once you have the dough divided and scaled into the sizes you wish and your bench rest is done, take each piece of dough and shape it into its final shape. If it is going to be a round loaf (a boule) or a long loaf (oval or torpedo), shape it and place it in a banneton, basket or couche (a couche is a heavy fabric of either linen or canvas that is used to hold proofing bread). After the shaping of the dough, the next period of fermentation is called “proofing”. This is the final rising of the dough before baking.

Couche:



Bannetons and Baskets: When the dough is shaped, place it upside down, with the seam upwards, into a banneton or basket which has been sprinkled with Semolina Flour, rye flour, rice flour or fine cornmeal. You can use bannetons or baskets without a liner if you make sure to flour the basket enough. It is good to pack the holes and ridges in a bannetons or basket with rye flour first and then sprinkle some Semolina flour over that. The rye flour is low in gluten so it won't "glue" the dough to the basket like white flour would, the rye flour also stays put in the cracks because it is finely ground. The semolina flour or cornmeal releases the dough and is easier to brush off of the dough if you don't wish it to show. Bannetons and baskets used this way are air dried and the flour is left in the cracks. With each use, the basket releases the dough more easily. If the basket gets too much of a build up of flour, just get a stiff brush and brush it out. Do not wash the bannetons or baskets, don't get them wet. Sometimes, little flour bugs or moths try to get into the baskets. Clean out what you can and then put the baskets in a low temperature oven, 250F degrees for a few

minutes and the critters won't give you trouble, at least not for a while.

If you are working with higher hydration dough or the dough is sticky, use cloth liners for your bannetons, baskets or bowls. These are called proofing cloths and are usually made of linen or cotton. Before using the cloth for the first time, lay it flat on the table and work some rye flour into the weave of the cloth, then lay it flat over the top of the bannetons, sprinkle the cloth with semolina flour, then allow the weight of the dough to shape the cloth to the banneton as it sets down into the banneton. This will keep the semolina from falling into the bottom of the banneton which would happen if you laid the cloth into the bannetons and pushed it down to form to the sides first. Liners are also best if not washed after each use. Air dry the cloth so the flour dries onto the cloth. Then fold the cloth and put it away in a dry place until the next use. Cloths kept this way get better with each use, releasing the dough with very little added semolina flour. Don't wash the cloths unless you really need to. Then if the cloth is bug infested or too caked on or the flour is rancid, soak the

cloths in cold water until you can hand scrub off most of the flour, and wash in a washing machine as usual following washing directions for the type of cloth used. Even though the cloth most commonly used for liners is linen or cotton, other cloths can be used as well.

The advantage of using bannetons or baskets instead of bowls or pans, is that the material of the banneton or basket wicks moisture from the outside of the dough forming a skin which holds the dough together and allows a nice slash.

Proofing: The proofing of the dough is the last stage just before baking. It can be difficult for a new baker to decide when the dough is done proofing. Proofing can be done in a cool environment, like a refrigerator, or it can be done in a warm environment like a proofing box, oven or your dishwasher. Most commonly, home bakers proof at room temperature. There are many different techniques for different breads. For dough that is cool proofed in a refrigerator, take out the proofing dough, one at a time, staggering them at least 30 minutes apart. This will allow each loaf to be done proofing and ready to bake at a different time. You

don't want all loaves proofed and ready to bake at the same time. Shaped dough, refrigerated overnight, is usually covered with plastic to keep it from drying out. In the morning when you take out the dough to warm up, remove the plastic unless you are using a proofing box or dishwasher in which case you would want to keep the plastic on. The dough will take anywhere from 1 hour to 3 hours to finish proofing. Dough that is very active may even be done proofing when you take it out of the refrigerator. To determine if the dough is ready to bake, feel the dough. It should feel spongy, bubbly, and alive. When you press your finger into the side of the dough, it should make an indentation that fills in slowly; this indicates it is ready to bake. If the pressure of your finger makes no real indentation or bounces back instantly, it isn't done proofing yet. If the pressure of your finger makes a dent very easily, the indentation doesn't bounce back at all, and the dough seems baggy, saggy, is way too soft and filled with air, or it sighs and slumps down once you press it, the dough is overproofed and must be reshaped and proofed again. Knowing

when a loaf is ready to bake is one of the most difficult skills for a new baker to learn and there is no substitute for experience. So to gain experience quickly, feel the dough carefully as it is proofing, check each loaf many times, and soon you will know when the dough is ready to bake. It is better to err on the side of baking an underproofed loaf rather than an overproofed loaf. If you suspect the loaf might be underproofed but you are just not sure, just slash a little more deeply than you usually do, it will help the dough to expand more if it is underproofed. If you slash proofed dough and it sighs and slumps, it is overproofed, if it sighs slightly and barely slumps, that means it is just barely overproofed. In this case if you don't wish to knock the dough down, reshape and reproof it, just slash the dough very shallow and bake it anyway, the slashes will not open very well and the loaf won't be optimum, but it will still taste good and may even be an acceptable loaf.

If the dough is proofed at room temperature it will take longer to proof than if you use a proofing box. A proofing box warms up the dough and

makes it capable of exceptional expansion. You can have low hydration dough that bakes up into an airy loaf with an open, holey crumb by using a warm proofing temperature. You don't have to have wet, high hydration dough to achieve a holy, airy crumb. There are different techniques for proofing. You can take the dough out of the refrigerator, have a warm up time and then bake. You can pop the dough right into a proofer and proof it for an hour or several hours if necessary before baking, you can also proof at room temperature for several hours. Dough that is warm when ready to bake is capable of greater expansion than cold dough.

Slashing: Dough slashing is usually done just before baking. However, some bakers prefer to slash before proofing. Whenever you slash, make sure your slashing blade is sharp. A dull blade will drag the dough, making an unsightly ragged slash. The acid in the dough will dull blades quickly, so wash the blade after each use.

Slash boldly, with confidence. Slash at an angle of about 30 degrees and make a slash that is more like a flap than a cut.

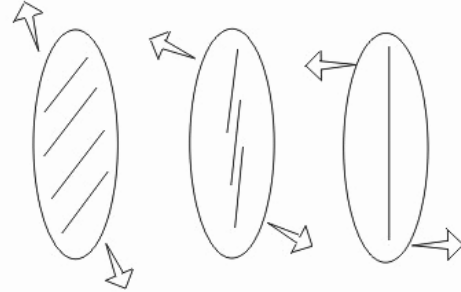
This is for a regular slash. For special fancy slashing, used for decoration more than expansion, like when slashing diamonds, slash very shallow and don't hold the blade at an angle or hold it at a less acute angle. Very wet dough like a Ciabatta loaf isn't slashed at all because the dough is just too wet to slash. Some dough is poked with holes, stippled or docked to keep air bubbles from forming, especially on flat dough. You can also use scissors to make a deep slashing scissor cut. There are many different kinds of decorative or functional slashes that can be used, such as:







direction the dough expands while it is baking.



With a proper slash, and the right hydration, your dough will open up along the slash into a beautiful “grigne” or grin, which will really set off the “perfect loaf.” You may have heard that the slashes are called the “ears” of the loaf. Slashing takes practice, the more mistakes you make, the faster you will gain confidence to make bold slashes. So take heart when those slashes don’t come out quite right, next time they are more likely to.



When slashing, keep in mind that the direction of the slash will influence the

MIXING, FOLDING AND HANDLING DOUGH

For mixing the ingredients I often follow this order:

Add the starter or preferment to the mixing bowl first, followed by the liquids (water, milk etc), then add any other wet ingredients like malt syrup, honey, oils or fats, eggs, mashed potatoes, flavorings, etc. Next add dry ingredients like dry sugars, spices, wheat germ etc. Then add the flours. The salt is usually added last after the autolysis period. If I have any seeds, nuts, raisins, or ingredients which might cut the gluten strands, add them at the end of the bulk fermentation or when shaping the dough into loaves. Ingredients like cracked grains, bran and some of the seeds or spices do better in a preferment. In a preferment grains are soaked and broken down by fermentation so that they are more digestible, this way they don't rob the final dough of water. Some spices retard or slow down the dough and are better added in layers in the dough, instead of being mixed into

the dough. A good example of this would be the way cinnamon is sprinkled and then rolled up in layers for Cinnamon Rolls. Honey, malt syrup, sugar and other sweeteners can also retard (slow down) the dough and should be used sparingly or the dough should be given extra time for bulk fermentation and proofing. Technically, for Autolyse, nothing is supposed to be added except the starter, flour and water before adding the salt. But since the salt is really added to inhibit the Protease action on the gluten, other ingredients can be added before the salt without having the quality of the dough suffer.

During the mixing of the dough, the speed of the mixer should be at the lowest setting that can get the job done, usually the lowest or medium speed. Long fermented dough needs gentle handling and the least amount of mixing that you can get away with. Time itself will develop the gluten and over mixing will cause the gluten structure to break down later on during the fermentation. With one day sourdough breads, like pizza, Focaccia, Vienna, and French bread, you need to mix longer to develop

the gluten during the mixing stage. This kind of dough doesn't have as long of a bulk ferment so the dough will need more gluten development with the mixer. This is also true of some doughs that use a preferment. During the second stage of the dough, you add the rest of the ingredients that were not added to the preferment the night before. The flour which is added the next day during the second stage needs a bit longer mixing to develop its gluten because it will not have a long bulk ferment time. However, since the preferment already has a mature gluten structure, you still don't want to mix too long with a preferment dough.

DOUGH FOLDING

You can use a mixer to mix the dough and then use a trough to fold the dough during bulk fermentation. First mix the dough, allow it to rest a few minutes, and then pour it into the dough trough without adding any flour to keep the dough from sticking to the sides. It won't matter if the dough sticks to the trough, as you can just scrape it off with your spatula or hands. You can use a light coating of oil if you wish, but it isn't necessary, unless your dough hydration

is low and you need to keep the dough from drying out. Use a lid to help keep the dough moist and hold in the dough's warmth.

With hand kneading on a floured surface, an excessive amount of flour is usually mixed into the dough, making hand kneading impractical for higher hydration (wet) dough. Instead, hand mixing of the ingredients in a container or trough and then turning (folding) the dough at regular intervals, will not only produce great results but will avoid incorporating too much flour into the dough. Some bakeries still use these methods of hand mixing and folding of the dough, instead of using large mixers. In these bakeries, large troughs are used for mixing the ingredients by hand. After mixing, the dough is left in the trough and then folded at intervals to develop the gluten. This folding of the dough strengthens the dough structure. This method can also be used by the home baker, if there is no mixer available or even because it is the preferred choice.

A dough folding trough:



To use a dough folding trough, weigh out and place the ingredients into the trough. Then mix all of the ingredients together by hand or use a large spoon (it is better to just get your hands in the mix). When the dough is all mixed together, allow it to bulk ferment. Fold the dough at spaced intervals of every one or two hours depending on how much you wish to strengthen the dough. There are many different timing methods used for dough folding. You can experiment to find out what works best for the dough you are making.

To fold dough, take the edge of one side of the dough and fold it over the top of the dough in thirds.



Then take the opposite side and fold that side of the dough over in the opposite direction so that the dough is lying on top of the dough you just folded the first time.



Next take the other sides of the dough and do the same thing.

Fold over one side:



And then the other side:



When you are done, you have folded over all of the four sides. After folding the dough, cover it to keep the dough moist. Repeat this process at regular intervals during bulk fermentation. You can see and feel the dough getting stronger with each fold, becoming easier to handle. This is especially true with high hydration dough.

There is a similar way of strengthening the dough using your mixer. After

mixing, keep your dough in the mixer during bulk fermentation, then at regular intervals, turn the mixer on low and let the mixing arm spin a few turns, just enough to knock the dough down a bit and twist it around the hook. I usually do this once every hour or so.



When the dough is done bulk fermenting, it is time to pour it onto a work surface and shape it. High hydration dough can be difficult to handle at this stage. When handling wet dough, use the least amount of flour on the work surface that you can get away with. With some dough that means a lot of flour though. Use a dough scraper, and expect to wash your hands often. Professional bakers might be able to shape one hundred loaves of very sticky dough without washing the dough off their hands, but I need to wash it off often or the dough sticks to the dough already on my hands. Work with the dough using quick, deft movements and get it shaped quickly. The longer the dough is in contact with your hands, the more it will stick.

Tip: A baker told me that at his bakery they use water instead of oil or flour to keep the dough from sticking.

Try this, press your hand quickly against wet dough, and then pull away quickly. Next, press your hand slowly into the dough. You will see that quick handling is more effective when working with wet dough.

When dough has been overworked and becomes hard to handle, or if you are trying to shape a loaf and the dough looks worse the more you work with it, just walk away and let it rest for ten minutes or so. That will give the gluten in the dough time to relax, making the dough more extensible (able to be stretched) and easier to manipulate.

Keeping your dough warm during the bulk ferment will help the dough ferment faster, be easier to handle, and encourage more tang in the flavor. To keep your dough warmer during the bulk ferment, turn on the light in your electric oven, do not turn on any heat, just use the bulb, and put the whole dough trough into the oven. I need to prop the door of my oven open to keep the oven from getting too warm. It is good to keep the temperature of the dough below 86 degrees. If you use the oven to keep your dough warm, you really should get a thermometer to let you know what the temperature is. I have ruined a couple of batches of dough that got too warm. They produced bread crumb that was a grayish color and somewhat dense. The best way to keep your dough warmer than the room

temperature is a proofing box, with a temperature controller. You can rig up proofing boxes with picnic coolers (Styrofoam or plastic), by using a heating pad or a low watt light bulb for the heat source. It is usually a good idea to have some kind of venting so the heat does not build up too high. A thermometer is a necessity. For this kind of home rigged proofing box, keep safety in mind and use common sense or ask your neighborhood electrician for help.

You can use your microwave as a proofing box as well. Heat a cup of hot water in the microwave and then put in your dough and close the door, leaving the hot cup of water in with the dough (always use caution when moving hot items in your microwave, use kitchen gloves).

I have also used my dishwasher for a proofing box. I turn the dial until it gets to the heated drying stage. I leave the drying stage on for just a few minutes, turn it off, test the temperature with a thermometer, and if the temperature is around 80- 90 degrees, I put my folding trough full of dough or the proofing loaves into the dishwasher right on top of

the racks and close the door. For extra humidity, you can pour a cup of water into the bottom of the dishwasher when it is heating. Make sure the dial or lever is in the off position, once you have your dishwasher as warm as you want it. You don't need someone to come by and turn it on! If you are doing a final proof of your shaped loaves in a warmed dishwasher, you can place the bannetons/baskets inside plastic bags before placing them in the dishwasher, that will help hold the heat next to the loaf, keep the dough moist, and you might be able to salvage your dough if someone (horrors!) turns on the dishwasher!

THE BASIC WHITE SOURDOUGH RECIPE:



Baking the Basic White Sourdough Loaf will help you to learn the intermediate techniques in this section.

The Basic White Sourdough Loaf is the loaf to practice your new techniques on. It is an easy, tasty loaf with a crisp crust and a light crumb. It can be used for many other recipes as well such as pizza, Focaccia, bread sticks, crusty rolls etc

For correct timing, start this dough at 12:00 - 1:00 p.m.

The Ingredients for Basic White Sourdough:

- 2 cups sourdough starter at 166% hydration - 18 ounces (510g)
- 1 $\frac{3}{4}$ cups water - 14 ounces (397g)
- $\frac{1}{4}$ cup of evaporated milk - 2 oz (56g)
- 1 Tablespoon of oil - .5 ounce (14g)
- Bread Flour (about 8 cups) - 2 lbs 4 ounces (1020g) (if using a cup measure, make sure to fluff up your flour and spoon it into the cup, then level off).
- 4 teaspoons salt - .8 oz (22g)(add salt AFTER autolyse)

This will make approximately 4 lbs 7.3 oz of dough at 63.7 % hydration, which will make two large loaves, or three smaller loaves. Making enough dough for at least two loaves is necessary for the mixer to develop the dough properly.

Add the starter to the mixer.

Then add the water and milk.

Next add the oil or melted cooled butter.

Now add eight cups of flour (weigh it if possible - 2lb 4 oz) and mix all of the

ingredients at medium speed. Using your spatula, push dough down if it tries to crawl out of the bowl, being careful to turn off the mixer each time you need to do this. If you have weighed the ingredients, the dough should be at 63.7% hydration. (64% rounded off) If you have not weighed, you must feel the dough to see if you have added enough flour or too much, it is easier to hold back the flour and add a little at a time until the dough “feels” right than to have to add water to bring it back, but it can be done both ways. The dough should feel sticky, but not stick to your finger when you push it against the sides of the dough.

The dough should have pulled away from the sides of the bowl somewhat but not completely and feel nice and springy. It should take 2 - 3 minutes to mix the dough. At this point, turn off the mixer and allow the dough to autolyse (or rest) for about 20 minutes. This is to allow the gluten time to absorb the liquid - the process of gluten development has begun! Pull the dough at this stage (beginning of autolyse) and you will see almost no gluten development. It is sticky and pulls apart easily. Now let the dough

rest. After the autolyse is over, feel the dough again and pull it again. You will already see a change in the dough. It has a smoother, stretchier feel and you can see the gluten strands already bonding to each other and developing.

After Autolyse is done, add the salt. Turn the mixer back onto low speed and sprinkle the salt on the dough as you continue to mix the dough. Mix the dough for about two more minute after adding the salt.

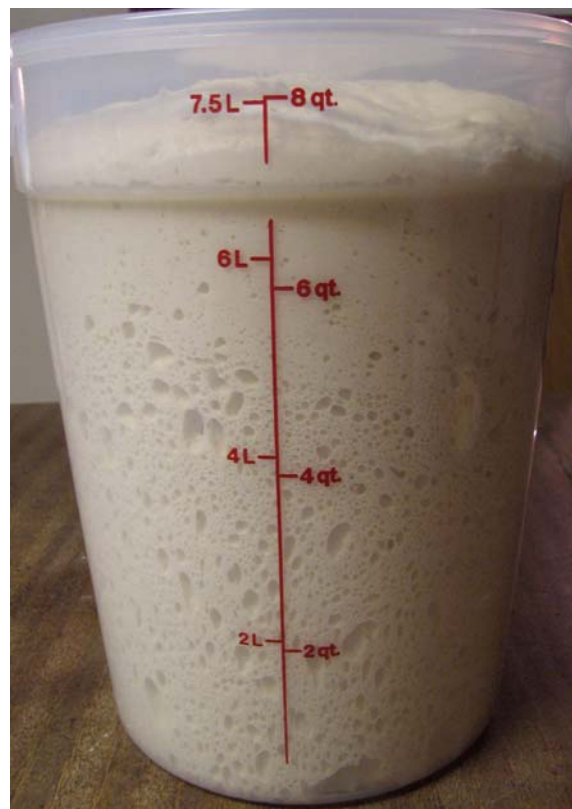
The salt is added after the dough has autolysed to give the gluten strands a chance to absorb water and allows a certain enzyme called Protease to act on the gluten to soften it enough to help it stretch and handle more easily (extensibility). That is why once you add salt, you notice that the dough seems to toughen up. Salt acts to strengthen dough and inhibit the Protease enzyme. However, for many beginning sourdough bakers, it is easier to add the salt during mixing, before Autolyse. Try both ways and see which way you prefer.

Now allow the dough to bulk ferment (this is the term used for the first raising

of the dough). Bulk fermentation time is variable depending on what your sourdough starter's proofing ability is, how warm the dough is and what ingredients you have used.

If your sourdough starter takes 6 hours to peak when you test it at 100% hydration, then your starter has a 6 hour proofing time. Some starters take only three hours others can take 6 , 8 or 11 hours. It is very variable. However, if you know what your starter is capable of, you can adjust the bulk ferment to exactly what you need. The average starter takes around 4 - 6 hours. If all of this is confusing, just watch the dough and see about how long it takes to double in the bowl or container. Move the dough to a large graduated, clear or translucent container so you can easily see when the dough has doubled (this isn't always the starters proofing point, starters will often continue to proof after the dough has doubled, but you will have a pretty mature dough once it doubles). The dough can be fermented at room temperature (for consistency, it is good to have dough ferment in an environment you can control. Using a temperature

controlled proofing box can help you keep your dough at the temperature you desire. An optimum temperature is between **74-77F** (23.3-25C) degrees). However, a little cooler or warmer doesn't affect the home baker too much. Don't allow your dough to get too warm. When it gets over 90 degrees, it can start fermenting too fast and you can get some off flavors and the crumb can even turn a



grayish color. A warm bulk ferment at a steady temperature between **75-80F** (23.9-26.7C) degrees with an overnight proof at cooler temperatures between **43-50F** (6.1-10.0C)

degrees, once the dough is shaped, can help produce a nice sour bread with lots of bubbles and blisters on the crust.

During fermentation, turn the dough every couple of hours. You can fold the dough with your hands right in the translucent container, or if you left the dough in the mixer to bulk ferment, process the mixer on slow speed and turn the hook about three spins, once an hour or every two hours. This helps line up the gluten strands and makes the dough stronger. Folding is usually done at regular intervals; however, the timing is not critical. For folding dough, you can also purchase a rectangular plastic container which enables you to fold the dough more easily right in the container, and then cover it with the lid when you are done folding. This is called a dough folding trough. Every time the dough is folded, it is strengthened.

After bulk fermentation is over for your Basic White Sourdough (the dough has at

least doubled), pour the dough out on a lightly floured surface. Using your hands or the dough scraper blade, scoop up the sides of the dough and shape it into a ball. Take your scraper blade again and divide the dough into two portions or however many portions you wish to make. Dividing the dough into halves would give you approximately two- 2 pound 3 oz pieces of dough for a couple of nice sized loaves. If you want three loaves just divide it and weigh it out on your scale at a little over 1 pound 7 oz each. After dividing the dough, shape it into the general shape you wish each piece to be, and let it rest five to ten minutes. This is called bench rest.

“Shaping it into the general shape” means that if you wish to make round loaves (boules) then shape the dough generally into the shape of a ball. You don’t have to be picky at this stage, just get it into the general shape. If you wish to make a batard(a French bread shaped loaf) or a baguette loaf then form it into a longer shape and let it rest.

While the dough is resting, get your bannetons ready by sprinkling them with semolina flour. If you use a proofing

cloth, lay the cloth on a flat surface and work some rye flour into the weave of the proofing cloth then lay the cloth flat over the bowl or banneton and sprinkle with a little bit more semolina flour.

After the bench rest, take each piece, which has been generally shaped and now shape it into the final loaf and then place the dough into a banneton, basket, cloth lined bowl, or pan for its final proofing (raising). When you are doing the final shaping, you are molding the dough so the outer layer is formed into a kind of a skin enveloping the dough to help it keep its shape and to help the dough with oven spring. Shaping is an art in itself and needs practice. Once your shaping is done and you have placed the dough into the bannetons/bowls, allow the dough about 30 minutes to rest. If the dough has been very active all during mixing and proofing, allow it to rest only 15 minutes. If it has seemed somewhat sluggish or slow, allow it to rest for one hour. Once the resting time is up, place the dough, banneton and all into a plastic bag and refrigerate overnight. If you forget about your dough and it goes well over the 30 minutes to one hour of

resting, push it down and reshape your loaves and go ahead and refrigerate it without waiting for a rest period again.

Refrigerate overnight. Next morning, take out one loaf at the time spaced about 30 minutes apart, remove the plastic bags. The spacing allows the dough to be ready for the oven at different times. If you took them all out at the same time, they would all be ready to bake at the same time, which is great if you have a bakery and a large enough oven to hold them all at the same time. Now allow the dough to warm up to room temperature and finish proofing. This will usually take from one and one half to three hours (2 hours is average) depending upon how active your dough is, how warm the dough is, and how warm your room temperature is (a warm, humid, proofing cabinet is a great help at this stage).

Knowing when the dough is proofed and ready to bake is one of the hardest skills in bread baking. The dough should be springy, spongy and bubbly and when you push into the side of the dough, it should leave a slight imprint that fills in slowly. If the dough feels stiff and pressing doesn't leave an imprint, or the

imprint fills in almost immediately, it is not done proofing. If it feels very bubbly and soft, and the imprint stays without filling in plus the dough seems a bit saggy, it is overdone and should be reshaped and re-proofed. Feel every loaf and soon you will get a good idea when your dough is done proofing.

When the dough is final proofing, and you think there is about an hour until it is done proofing, place your baking stone in the oven and heat it to **450F/232.2C** degrees. Sometimes when I am not sure how long it will take the dough to proof, I turn my oven on to **350F/176.7C** degrees and then turn it up as I see it is getting closer to baking time. I put a roaster pan lid into the oven to preheat for about 5 - 10 minutes just before actual baking. Using the roasting pan lid for steaming is the only way I have found to eliminate opening your oven every few minutes and spraying water to get steam in the first minutes of baking. This technique requires a hot baking stone and a hot roasting lid to place over your dough, which holds in the steam. Finally, no more hassle with constant spraying.

When the dough is ready to put into the oven, sprinkle the top (which is the actual bottom of the loaf) with semolina flour to make sure there are no sticky spots on the dough which would make it stick to the peel, sprinkle some semolina on the peel too and then using your hand to support the dough, turn it upside down and onto your flat baking sheet or peel. Brush off any excess semolina- if you used an unlined banneton, or peel off the proofing cloth carefully- if you have used a lined banneton. If your proofing cloth sticks to the dough, spray a little water on the cloth and it should come away from the dough. Now slash the dough. Using a very sharp lame razor or knife, slash the dough in a swift motion holding the lame at an angle of about 30 degrees. You should be thinking “flap” not trench. Now open your oven and working quickly, take the roasting lid off of the stone, then with a quick forward jerk of your peel, slide the dough onto the middle of the stone, spray the loaf all over with water, cover the dough with the hot roasting lid and shut the oven door. Now set your timer for 20 minutes. After the 20 minutes are up, open the oven door and with thick oven mitts, take

the roasting lid off of the dough. You need to be careful of steam when you do this. Put the roasting lid on top of the oven to keep it handy, and then turn down your oven to **425F/218.3C** degrees. Put your timer on for 10 minutes and continue to bake the loaf. When this 10 minute time period is about half over, turn the loaf in the oven once to allow even browning of the loaf. In some convection ovens with fans, this step may not be necessary. Once your 10 minutes is over with, check to see if your bread is done by using a thermometer to take the internal temperature. The thermometer should read between **200-205F** (93.3-96.1C). Or just observe the loaf. Knock on the bottom of it with your knuckles, does it sound hollow? Is the crust a nice deep color? If not bake for 5 more minutes and then check again. Once it is done, take out your very beautiful loaf with oven mitts or using your peel. Place the hot loaf on a cooling grate.

Now turn your oven back up to **450F/232.2C** degrees and put the roasting lid back into the oven to preheat also. Reheating the oven will take around 5 -

10 minutes. Bake the rest of your loaves the same way as the first loaf. Allow your loaves to cool to room temperature once baked. This will set the crumb and allow the volatile compounds to finish dissipating. If you try to slice the loaf while it is still hot, the crumb will look shredded and be gummy. The flavor and texture of white bread is at its best in the 2 - 6 hours after baking. Some bread, like rye breads, are better the next day.

There are many different things you can do with Basic White dough. You can make small rolls, hot dog and



hamburger buns, bread sticks, baguettes, stretch bread- which is a piece of dough cooked on the griddle, pizza squares, pita bread, etc.



INTERMEDIATE RECIPES



EXTRA SOUR SOURDOUGH



This sourdough bread has some rye and whole wheat flour to help bring out the sour. The diastatic malt helps the dough ferment and increases the sour flavor. The night before mixing, make sure to feed your starter and have it at 166% hydration which is one/one volume of flour/water. Then the next day around noon:

- ❖ 2 cups vigorous sourdough starter @ 166% - 18 oz
- ❖ 1 ³/₄ cups tepid water- 14.0 oz
- ❖ 1 Tablespoon oil - .5 oz
- ❖ ¹/₂ cup Rye Flour - 1.8 - oz
- ❖ ¹/₂ cup Whole Wheat flour - 2.1 oz
- ❖ 6 ¹/₄ cups Bread flour -1 lb 12 oz
- ❖ 1 teaspoon diastatic malt powder - .1oz
- ❖ 3.5 teaspoons salt - .7 oz (add after autolyse)

Mix the ingredients well in your mixer for about 2 - 3 minutes or just until mixed. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add salt and mix dough on low speed for about 1 minute. Then let the dough bulk ferment (which just means the first rise) for 6-8 hours in a warm 80F/26.7C place. Stir the dough down with just three turns of the dough hook four times during the 6 -8 hour bulk fermentation or fold the dough in a folding trough. This is to strengthen the gluten strands and line them up plus it helps to keep the dough from over fermenting.

After bulk fermentation, pour the dough onto a lightly floured surface and knead a couple of times then gather into a ball. Divide the dough into two pieces. Shape loaves into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths (Bannetons do not have to be lined). Allow the dough to set out for ¹/₂

hour and then refrigerate, covered with plastic bags, overnight. You can skip the ½ hour wait if the dough has been very vigorous during the day.

Next morning take out the loaves 30 minutes apart (so you don't have to bake them at the same time) then allow the dough to rise until it is done proofing. This can take anywhere from 1 - 3 hours and is when the dough increases in size about 1 ½ times. When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn out onto a peel or flat baking sheet.

Then slash the dough while it is still on the peel, slide the dough into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Slicing is difficult and can make the bread gummy if you slice while still hot. Cool the bread and eat with fresh butter. (edited to mention that the diastatic malt is used at 1 teaspoon-.1 oz/3%bakers)

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter	2 cups	18 oz	510 g	46.6 %
Water	1 ¾ cups	14 oz	397 g	36.2 %
Oil	1 TBSP	.5 oz	14 g	1.3 %
Rye Flour	½ cup	1.8	51 g	4.7 %
Whole Wheat Flour	½ cup	2.1	59 g	5.4 %
Bread Flour	6 ¼ cups	1 lb 12 oz	793 g	72.4 %
Salt	3 ½ teasp	.7 oz	19.8 g	1.8 %
Total Dough Weight	4 lb 1.2 oz	4 lb 1.2 oz	1848 g	168.6 %
Total Flour Weight	2 lb 6.7 oz	2 lb 6.7 oz	1096 g	100.0 %
Total Water Weight (hydration)	1 lb 9.2 oz	1 lb 9.2 oz	715 g	65.3 %



WHEAT POTATO LOAF



Around 1:00 pm add to your mixer:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Sourdough Starter	2 cups	18 oz	510 g	46.1 %
Water	1 cup	8 oz	226 g	20.5 %
Evaporated Milk	½ cup	4 oz	113 g	10.2 %
Brown Sugar	3 TBSP	1.5 oz	42 g	3.7 %
Mashed Potatoes	½ cup	4 oz	113 g	10.2 %
Melted Butter	3 TBSP	1.5 oz	42 g	3.8 %
Whole Wheat Flour	1 ¼ cups	5.3 oz	150 g	13.6 %
Bread Flour	6 cups	27 oz	765 g	69.1 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 6.1 oz	4 lb 6.1 oz	1987 g	179.4%
Total Flour Weight	2 lb 7.1 oz	2 lb 7.1 oz	1107 g	100.0 %
Total Water Weight (hydration)	1 lb 9.1 oz	1 lb 9.1 oz	711 g	64.3%

Mix together on a medium speed, all ingredients except salt, just until incorporated, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add the salt and mix dough on low speed for one more minute. Now let the dough bulk ferment (which means the first rise after mixing) for about 6 hours. After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times, then gather into a ball.

Divide the dough into approximately 2 pieces weighing a little over 2 lbs each. Shape and place in bannetons and cover with plastic bags. Refrigerate the dough overnight. In the morning take out the dough one by one 30 minutes apart. Allow the dough to proof for one to two hours or when the dough increases in size about 1 ½ times.

Preheat oven (and roasting lid) to 450F/232C degrees. When ready to bake, turn dough out onto peel, glaze and/or sprinkle with sifted flour and slash.

Place dough onto hot baking stone and cover with preheated roasting lid (you don't need to spray if you have glazed or floured the top of the bread). Bake at 450F/232C degrees for 20 minutes. After the 20 minutes, take off the roasting lid and set the lid on top of your oven.

Turn down your oven to 400F/204C Continue to bake for another 10-15 minutes. When bread is nicely browned with a hollow sound when you thump the bottom or registers 200-205F/93-96C on an instant read thermometer, take out the bread and place on cooling rack. Put the roasting lid back into the oven and heat the oven to 450F/232C before baking next loaf. Cool Potato Bread completely before slicing.

Glaze- add one Tablespoon of dried potato flakes to ¼ cup of boiling water, stir, take off heat and cool. Use this glaze for brushing on your loaf before slashing. You can also sift flour over the glaze before slashing for a pretty loaf.



WESTERN WHEAT SOURDOUGH



Western Wheat is a light wheat sourdough bread with a tangy sour flavor. The night before mixing, make sure to feed your starter and have it at 166% hydration which is one/one volume of flour/water. Then next day around noon:

To your mixer add:

- ❖ 2 cup vigorous sourdough starter -18 oz
- ❖ 1 ³/₄ cups water tepid water- 14 oz
- ❖ ¹/₂ cup dry milk - .8 oz
- ❖ 2 TBSP oil -1 oz
- ❖ 1 Tablespoon malt syrup - .8 oz
- ❖ 1 Tablespoon dark Molasses - .7 oz
- ❖ ¹/₃ cup rye flour - 1.8 oz
- ❖ 2 ¹/₃ cups Whole Wheat flour - 9.7 oz
- ❖ 4 ¹/₂ cups Bread flour -1 lb 4.3 oz
- ❖ 3 ¹/₂ teaspoons salt - .7 oz (add after autolyse)

Mix the ingredients well in your mixer for about 2 - 3 minutes just until mixed. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add salt and mix dough on low speed for about 2 minutes. Then let the dough bulk ferment for 6-8 hours.

Stir the dough down with just three turns of the dough hook four times during the 6 -8 hour bulk fermentation or fold dough in a dough trough. This is to strengthen the gluten strands and line them up, plus it helps to keep the dough from over fermenting.

After bulk fermentation, pour the dough onto a lightly floured (Whole Wheat flour) surface and knead a couple of times then gather into a ball.

Divide the dough into two pieces. Shape loaves into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets (Bannetons do not have to be lined). Allow the dough to set out for ½ hour and then refrigerate overnight. You can skip the ½ hour wait if the dough has been very vigorous during the day.

Next morning take out the loaves staggered 30 minutes apart (so you don't have to bake them at the same time) then allow the dough to rise until proofing is done. This can take anywhere from 1 - 3 hours and is when the dough increases in size about 1 ½ times.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter	2 cups	18 oz	510 g	46.9 %
Water	1 ¾ cups	14 oz	397 g	36.5 %
Milk Powder	1/3 cup	.8 oz	22 g	2.1 %
Oil	2 TBSP	1 oz	28 g	2.6 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.1 %
Dark Molasses	1 TBSP	.7 oz	19.8 g	1.8 %
Rye Flour	1/3 cup	1.2	34 g	3.1 %
Whole Wheat Flour	2 1/3 cups	9.7	275 g	25.3 %
Bread Flour	4.5 cups	1 lb 4.3 oz	575 g	52.9 %
Salt	3 ½ teasp	.7 oz	19.8 g	1.8 %
Total Dough Weight	4 lb 3.2 oz	4 lb 3.2 oz	1905 g	175.2 %
Total Flour Weight	2 lb 6.4 oz	2 lb 6.4 oz	1087 g	100.0 %
Total Water Weight (hydration)	1 lb 9.6 oz	1 lb 9.6 oz	726 g	66.8 %

When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn out onto a peel or flat baking sheet. Then slash the dough while it is still on the peel, slide the

dough into the hot preheated 400F/204.4C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid. Turn the loaf around in the oven and continue baking for 20 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway once more through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

This dough does well baked in a regular bread loaf pan and is great as toast.



SOUR RYE



This is a wonderful Rye Bread with terrific flavor and is an easy dough to handle. This recipe makes one large three pound loaf.

Around 2:00 pm add to your mixer:

Ingredient	Volume 1 Loaf	Standard 1 Loaf	Metric 1 Loaf	Bakers %
Sourdough Starter	1 ½ cups	13.5 oz	382 g	46.7 %
Water	¾ cup	6 oz	170 g	20.7 %
Strong Coffee	½ cup	4 oz	113 g	13.8 %
Molasses	2 TBSP	1.5 oz	42 g	5.2 %
Oil	1 ½ TBSP	.7 oz	21 g	2.6 %
Rye Flour	1 cup	3.6 oz	102 g	12.4 %
Bread Flour	4.5 cups	1 lbs 4.2 oz	574 g	70 %

Onion Powder	1.5 teasp			
Onion Flakes	1 TBSP			
Caraway Seeds	1 TBSP			
Salt (add after autolyse)	1 TBSP	.6 oz	17 g	2.0 %
Total Dough Weight	3 lb 2.2 oz	3 lb 2.2 oz	1423 g	173.6%
Total Flour Weight	1 lb 12.9 oz	1 lb 12.9 oz	820 g	100.0 %
Total Water Weight (hydration)	1 lb 2.7 oz	1 lb 2.7 oz	530 g	64.7%

Mix together on medium speed all ingredients except salt, just until incorporated, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes. After autolysis, add the salt and mix dough on low speed for one more minute. Now let the dough bulk ferment (which means the first rise) for about 4 hours. After bulk fermentation, pour the dough onto a lightly floured surface and knead a couple of times, then gather into a ball. Let the dough rest for five minutes.

Shape into a boule and place in round Semolina or Rye floured banneton and cover with a plastic bag. Refrigerate the dough overnight. In the morning take out the dough. Allow the dough to proof for one to two hours or until the dough increases in size about 1 ½ times.

Preheat oven to 450F/232.2C degrees. When ready, turn your dough out onto a peel.

Then slash the dough while still on the peel, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.



Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Cool your Sour Rye completely before slicing. Rye bread is better the next day.

DARK BEER RYE



Dark Beer Rye Sour uses a Danish Rye Starter which is at 100 % hydration (ratio : 8.8oz water/8.8 oz flour) This recipe makes 4 lbs 10 oz, enough for two large loaves at 2 lb 5 oz each.. The dough is at 64.7% hydration. Start mixing the dough in the afternoon around 12:00 - 1:00 pm.

In the afternoon, to your dough mixer add:

- ❖ 2 cups Rye starter at 100% hydration - 18 oz/510g
- ❖ 1 cup water - 6oz/170g
- ❖ 1 dark rich beer - 12 oz/340g
- ❖ 3 Tablespoons Oil - 1.5 oz/42g
- ❖ 1 Tablespoon non-diastatic Malt syrup -.8 oz/22g
- ❖ 1 Tablespoon Dark Molasses - .7 oz/19.8g
- ❖ 3 Tablespoons dried toasted onion flakes - .6 oz/17g
- ❖ 3 Tablespoons Caraway seeds - 1 oz/28g
- ❖ 3 cups Bread flour -13.5 oz/382g
- ❖ 3 cups Whole Wheat flour - 12.6 oz/357g
- ❖ 2 cups Rye flour - 7.2 oz/204g
- ❖ 4 teaspoons of Sea Salt - .8 oz/22.7g

Mix the ingredients on a medium speed just until mixed, this takes about 2 - 3 minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, mix dough on low speed for about 1 minute. Then let the dough bulk ferment (which just means the first rise) for 4 - 6 hours until doubled.

After bulk fermentation, pour out the dough onto a lightly floured (Rye flour) surface and knead a couple of times, then gather into a ball. Divide the dough into two large pieces.

Shape loaves into the general shape you wish and then allow the dough to rest for 5 minutes (bench rest). After benching (resting) shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths if you wish (Bannetons do not have to be lined).

Refrigerate overnight. Next morning, take out the dough staggered about 40 minutes apart, and allow the dough to warm up and proof this should be when the dough increases in volume 1 ½ the size. You have to be more careful not to overproof Rye breads. When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet.

Then slash the dough while still on the peel, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes, or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Bake the same as the first loaf. Cool this delicious bread and eat with fresh butter and cream cheese. This bread has a dark, sour, delicious flavor, and is great for sandwiches.

SESAME HONEY WHEAT



Sesame Honey Whole Wheat is made up in the afternoon, fermented, refrigerated overnight and baked the next day.

In the afternoon around 1 - 2 PM mix together in your mixer:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
166% Starter	2 cups	18 oz	510 g	50.8 %
Water	1 ½ cups	12 oz	340 g	33.8 %
Honey	2 TBSP	2 oz	56 g	3.9 %
Melted Butter or Oil	¼ cup	2 oz	56 g	5.6 %
Whole Wheat Flour	2 cups	8.4 oz	238 g	23.7 %
Bread Flour	4 ½ cups	1 lbs 4.3 oz	575 g	57.2 %

Salt (add after autolyse)	3 ½ teasp	.7 oz	19 g	2.0 %
Toasted Sesame Seeds- add to dough	1/3 cup	2 oz	56 g	5.6 %
Total Dough Weight	4 lb 1.4 oz	4 lb 1.4 oz	1854 g	184.4%
Total Flour Weight	2 lb 3.5 oz	2 lb 3.5 oz	1005 g	100.0 %
Total Water Weight (hydration)	1 lb 8.0 oz	1 lb 8.0 oz	681 g	67.8 %

Mix together all of the ingredients, (except the salt and sesame seeds), on medium speed, just until mixed (this takes two to three minutes). Then allow the dough to Autolyse for 20 minutes. After Autolyse, add the sesame seeds and salt and mix for one more minute.

Then either leave the dough in the mixer and put the lid on, or put the dough into a large container and bulk ferment the dough at room temperature for 6 hours. You can fold (see chapter on dough folding) or turn the dough (turn the dough means turn on the dough hook for a few revolutions and turn down the dough down) two or three times during bulk ferment.

After bulk fermentation, press down the dough, put it back into a covered container and refrigerate overnight. In the morning, divide the dough into two pieces and then take each piece and divide it into three more pieces each, for a total of six pieces.

Take three of the pieces for each loaf and make a braided loaf. Place the braided dough into oiled bread tins and allow the dough to proof for about one to two hours in a warm place (70-80F/21-26.7C) until the dough is almost doubled and puffy looking.

When the dough is proofed, brush the egg wash (see below) over the top of each loaf and sprinkle sesame seeds heavily on top. Bake both loaves at once in a preheated 425F/218C degree oven. Bake for 30 minutes, turning the loaves halfway through the bake, for even browning. Dough should register about 200-205F/93-96C on an instant thermometer when done. I used raw sesame seeds on top, but toasted them for adding to the dough.

Egg Wash:

Beat together one egg and one tablespoon of water in a bowl. Use this mixture to brush onto the loaves before sprinkling the sesame seeds on.



MOLASSES WHEAT SOURDOUGH



For Molasses Whole Wheat Sourdough you can use a whole wheat starter or white starter which is at 166 % hydration (5 oz flour to 8.3 oz water when feeding the starter). This recipe makes 4 lbs 0.8 oz, enough for two large loaves. The dough is at 66% hydration. Start mixing the dough in the afternoon around 12:00 - 1:00 pm.

In the afternoon, to your dough mixer add:

- ❖ 1.5 cups vigorous starter at 166% hydration - 13.5 oz/382g
- ❖ 1 cup water - 8 oz
- ❖ ¾ cup strong room temperature coffee - 6 oz/170g
- ❖ 2 Tablespoons Oil - 1 oz/28g
- ❖ 2 Tablespoons dark Molasses - 1.4 oz/39.7g
- ❖ 1.2 oz/34g (.25 cup) wheat bran, softened with 2 oz/56.7g boiling water, then cool
- ❖ 2 ¼ cups Bread flour - 10.1 oz/ 286g
- ❖ 5 cups Whole Wheat flour - 21 oz/595g
- ❖ 3 ½ teaspoons of salt - .7 oz/19.8g (add after autolyse)

Mix the ingredients on a medium speed just until mixed, this takes about 2 - 3 minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add then mix dough on low speed for about 2 minutes. Let the dough bulk ferment (which just means the first rise) for 4 - 6 hours until doubled.

After bulk fermentation, pour out the dough onto a lightly floured (wheat flour) surface and knead a couple of times, then gather into a ball. Divide the dough into two large pieces. Shape loaves into the general shape you wish and then allow the dough to rest for 5 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths if you wish (Bannetons do not have to be lined).

Refrigerate overnight. Next morning, take out the dough staggered about 40 minutes apart, and allow the dough to warm up and proof. When the dough is ready and feels bubbly and springy but not saggy, then, taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet.

Then slash the dough while it is still on the peel, slide the dough into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Cool and enjoy slathered with fresh butter. This bread makes terrific toast.

ITALIAN SOURDOUGH



Italian Sourdough Loaf is made using Italian Sourdough Starter. This recipe makes 4 lbs 7.4 oz of dough at 64 % hydration.

Feed the starter in the evening on the day before mixing the dough. Next afternoon around 11:00 a.m. - 12:00 noon, mix together in your mixer:

In your mixer add:

- ❖ **2 cups sourdough starter - 18 oz at 166% hydration**
- ❖ **1 ¾ cups water - 14 oz**
- ❖ **2 Tablespoons of Oil - 1 oz**
- ❖ **1 Tablespoons malt syrup or honey - .8 oz**
- ❖ **1/2 cup mashed potatoes - 4 oz**
- ❖ **6 2/3 cups of Bread flour - 1 lb 14 oz**
- ❖ **2/3 cup Whole Wheat flour - 2.8 oz**
- ❖ **4 teaspoons of Salt - .8 oz**

Mix the ingredients on a medium speed just until mixed, this takes about two minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, mix dough on low speed for about 1 minute. Then let the dough bulk ferment (which means the first rise) for 4 - 6 hours until doubled. Turn the

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
166% Starter	2 cups	18 oz	510g	45.5 %
Water	1 ¾ cup	14 oz	397 g	35.4 %
Oil	2 TBSP	1 oz	28 g	2.5 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.0 %
Mashed Potatoes	½ cup	4 oz	113 g	10.1 %
Whole Wheat Flour	2/3 cup	2.8 oz	79 g	7.1 %
Bread Flour	6 2/3 cups	1 lbs 14 oz	850 g	75.8 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 7.4 oz	4 lb 7.4 oz	2024 g	180.5%
Total Flour Weight	2 lb 7.6 oz	2 lb 7.6 oz	1121 g	100.0 %
Total Water Weight (hydration)	1 lb 10.1 oz	1 lb 10.1 oz	739 g	65.9%

dough down at least twice during the bulk ferment which helps develop and line up the gluten strands.

To do this hit the start button and let the hook stir the dough about twice around the bowl on the lowest setting. After bulk fermentation, pour the dough onto a lightly floured surface and knead a couple of times, then gather into a ball. Divide the dough into two pieces. Shape loaves into the general shape you wish and then allow the dough to rest for 10 minutes (bench rest). After benching, shape loaves into their final shapes and put them into lined proofing baskets (Bannetons do not have to be lined).

Let dough set out for about 30 minutes and then cover the dough with plastic bags and refrigerate overnight. In the morning, allow the dough to final proof for around 2 hours (dough will look doubled and spongy/springy) and then turn the dough out onto a peel and slash, spray, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes.

After 20 minutes, remove roasting lid, turn down the oven to 400F/204.4C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Take out loaf and cool on a rack. If your first loaf turns out too brown, turn the oven down to 425F/218.3C degrees during the first half of the bake instead of 450F/232C degrees. Don't forget to put the roasting lid back into the oven and reheat to 450 degrees again, before putting in the next loaf. This is a wonderful, tasty loaf and is terrific with butter or used for sandwiches.

DANISH RYE PUMPERNICKEL



This recipe makes enough dough at 4 lbs 2.7 oz for two large loaves at a little over 2 lb each. It uses a Danish Rye Starter at 100% hydration.

100 % hydration starter is a ratio of 5 ounces of flour for every 5 oz of water. Start this recipe around 1:00 pm

- ❖ **2 cups vigorous Danish Rye starter at 100% hydration - 18 oz/510g**
- ❖ **2 cups strong coffee - 16 oz/453g**
- ❖ **3 Tablespoons oil - 1.5 oz/42g**
- ❖ **2 Tablespoons Molasses - 1.4 oz/39.7g**
- ❖ **2 cups Dark Rye Flour - 7.2 oz/204g**
- ❖ **2 cups Whole Wheat Flour - 8.4 oz/238g**
- ❖ **3 cups Bread Flour - 13.5 oz/382g**
- ❖ **3 ½ teaspoons salt - .7 oz/19.8g**

Mix all ingredients together including salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolysis, mix dough on low speed for about 2 minutes. Then let the dough bulk ferment (first rise) for 6 hours. After bulk fermentation, pour out the dough onto a lightly floured (Rye flour) surface and knead enough to gather into a ball. Divide the dough. I divided the dough into two large loaves weighing a little over 2 lbs each. Shape dough into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest).

After benching, shape loaves into their final shapes and put them into the proofing baskets, pans, or couche. Place bannetons in plastic bags and refrigerate overnight. In the morning, allow the dough to final proof for 2 - 2.5 hours (until not quite doubled but soft when you press in a finger) then slash, spray, and bake, on top of a baking stone, in a preheated 450F/232.2C degree oven for 20 minutes using the Roasting Pan Method for steaming. After the first 20 minutes, turn down the oven to 400F/204.4C degrees and continue baking for about 18 - 25 more minutes, or until your bread thermometer reads 200-205F/93-96C, turning halfway for even browning. Cool.

This is a delicious, strong flavored rye and freezes well.



CRACKED WHEAT SAN FRANCISCO SOURDOUGH



Use a San Francisco Sourdough starter for this recipe for it's longer fermenting capability. This recipe makes approximately 4 pounds dough at 65 % hydration. Feed the starter in the evening on the day before mixing the dough.

Next afternoon around 11:00 a.m. - 12:00 noon, mix together in your mixer:

In your mixer add:

- ❖ 2 cups sourdough starter - 18 oz at 166% hydration
- ❖ 1 ³/₄ cups tepid water - 14 oz
- ❖ 2 Tablespoons oil - 1 oz
- ❖ 1/3 cup cracked wheat - 1.8 oz
- ❖ 6 ³/₄ cups bread flour -1 lb 14.3 oz
- ❖ 4 teaspoons salt - .8 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
starter	2 cups	18 oz	510 g	46.4 %
Water	1 ¾ cups	14 oz	396 g	36.1 %
Oil	2 TBSP	1 oz	28 g	2.6 %
Cracked Wheat	1/3 cup	1.7	48 g	4.4 %
Bread Flour	6 ¾ cups	1 lb 14.3 oz	859 g	78.2 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.1 %
Total Dough Weight	4 lb 1.8 oz	4 lb 1.8 oz	1865.9 g	169.7%
Total Flour Weight	2 lb 6.8 oz	2 lb 6.8 oz	1099 g	100.0 %
Total Water Weight (hydration)	1 lb 9.2 oz	1 lb 9.2 oz	715 g	65.1 %

Mix the ingredients, except salt, on a medium speed just until mixed, this takes about two to three minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add salt and then mix the dough on low speed for about 1 more minute. Then let the dough bulk ferment (which just means the first rise) for 7- 8 hours or until doubled. Fold the dough four times during the bulk ferment which helps develop and line up the gluten strands.

If you are fermenting your dough in the mixer, hit the start button and let the hook stir the dough about twice around the bowl on the lowest setting. Or, if using a dough folding container, fold the dough about every 1 ½ hours or so and cover. After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times, then gather into a ball. Divide the dough into two pieces weighing about 2 lbs each. Shape loaves into the general shape you wish and then allow the dough to rest for 10 minutes (bench rest). After benching, shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths (Bannetons do not have to be lined).

Let dough set out for about 30 minutes and then cover the dough with plastic bags and refrigerate overnight. In the morning, allow the dough to final proof for 2 - 3 hours (whenever the dough looks about 1 ½ times the original size) then turn the dough out on a peel. Slash, spray, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn the oven down to 425F/218C degrees and continue baking for about 15 more minutes or until your bread thermometer reads 200-205F/93-96C , turning halfway for even browning. Take out loaf and cool on a rack. If your first loaf turns out too brown, turn the oven down to 400F/204C degrees during the second half of the bake instead of 425F/218C degrees. Don't forget to put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf. This San Francisco Sourdough loaf is chewy, has a crispy crust, and is full of holes, it tastes great!



CRACKED GRAIN MILL LOAF



Sourdough Loaf with cracked Rye, Wheat and seeds

This recipe is started in the afternoon at 2:00 pm :

- ❖ 1 cup boiling water - 8 oz
- ❖ 1 cup of mixed cracked wheat and rye - 6 oz
- ❖ 1 Tablespoon Malt syrup - .8 oz
- ❖ 1 Tablespoon Sesame or Dill seeds -.4 oz
- ❖ 1 Tablespoon Millet seeds - .4 oz
- ❖ ¼ cup flax seeds - 1.5 oz
- ❖ ¼ cup sunflower seeds or mixed seeds/trail mix - 1.5 oz

Add the 6 oz of mixed cracked Rye and Wheat grains to a cup of boiling water. Let the grains boil for one minute then take the pan off the burner. Stir all of the different seeds and malt syrup into the hot mixture and let

cool for 30 minutes. Set aside (Alternately you can use up to 4 oz of any mixture of seeds you prefer).

To a dough mixer add:

- ❖ 2 cups vigorous sourdough starter @ 166% hydration - 18 oz
- ❖ 1 ¼ cup water - 10 oz
- ❖ 1 Tablespoons Oil - .5 oz
- ❖ 5 ½ cups of bread flour - 24.8 oz
- ❖ ½ cup whole wheat flour - 2.1 oz
- ❖ 4 teaspoons salt - .8 oz - add after autolyse

If you added more than the suggested seeds, you may need to add more water or less flour to make up difference in the liquid amount needed.

Process this in the mixer for two to three minutes then let the dough autolyse for 20 minutes.

Next add the cooled seed/grain mixture and the salt to the dough and mix in well. Allow the dough to bulk ferment for about 6 hours. During bulk ferment, fold the dough every two hours.

When bulk ferment is done, press down dough and transfer it to a lightly floured surface using rye flour. Knead the dough just enough to gather it into a ball. Divide the dough into two pieces and shape the loaves of bread. Place dough into floured or lined baskets, cover with a plastic bag and refrigerate overnight.

Next morning, take loaves out of the refrigerator (stagger the loaves about 30 minutes apart) and let dough warm up and proof. Since this bread is filled with seeds, it can take the dough longer to proof (expect it to take 2- 3 hours or more).

When the dough is ready and feels bubbly and springy but not saggy, then, taking the first loaf sprinkle the top (actually the bottom) with semolina or rye flour and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 450F/232C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204C degrees. Continue baking for 10 -15 more minutes or until your bread thermometer reads 200-205F/93-96C, turning

the loaf once for even browning. For the next loaf, turn the oven back up to 450F/232C degrees and put the roasting lid back in to preheat for five minutes or until the loaf is ready to go in. Bake the same as the first loaf. This bread will not expand as much as a white loaf would, it will be a bit denser because of the weight of the seeds. Cool completely. Enjoy! This bread is excellent for deli type sandwiches.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Seed Mixture Add together:				
Boiling water	1 cup	8 oz	226 g	20.2 %
Cracked Wheat and Rye	1 cup	6 oz	170 g	15.1 %
Seeds	¾ cup	3.8 oz	107 g	9.6 %
Malt Syrup	1 Tablespoon	.8 oz	22 g	2 %
Dough Mixture:				
Mix together in mixer:				
Sourdough Starter	2 cups	18 oz	510 g	53.5 %
Water	1 ¼ cup	10 oz	283 g	29.7 %
Oil	1 TBSP	.5 oz	14 g	1.5 %
Whole Wheat Flour	½ cup	2.1 oz	59 g	6.2 %
Bread Flour	5 ½ cups	24.8 oz	701 g	73.7 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.4 %
Total Dough Weight without seeds/grain	3 lb 8.2 oz	3 lb 8.2 oz	1593 g	166.9%
Total Flour Weight	2 lb 1.7 oz	2 lb 1.7 oz	954 g	100.0 %
Total Water Weight (hydration)	1 lb 5.2 oz	1 lb 5.2 oz	602 g	63.1%
Total Dough Weight with seeds/grain	4 lbs 10.8 oz	4 lbs 10.8 oz	2120 g	169.0 %
Total Flour Weight with seeds/grain	2 lbs 12.3 oz	2 lbs 12.3 oz	1254 g	100.0%
Total Water Weight with seeds/grain	1 lb 14.0 oz	1 lb 14.0 oz	850 g	67.7 %



SPICY JALEPENO LOAF



This sourdough is made using a preferment.
The night before baking mix together in a large bowl:

- 1 cup vigorous sourdough starter at 166% hydration -9oz
- 1 ½ cups water - 12 oz
- ½ cup Whole Wheat flour - 2.1 oz
- ½ cup Rye flour - 1.8 oz
- 2 cups Bread flour - 9 oz

Mix the preferment together and let set, covered, overnight at room temperature.

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	46.2 %
Water	1 ½ cups	12 oz	340 g	73.7 %
Rye Flour	½ cup	1.8 oz	51 g	11.1 %
Whole Wheat Flour	1/2 cup	2.1 oz	59 g	12.9 %
Bread Flour	2 cups	9 oz	255 g	55.3 %
Total Weight	2 lb 2.7 oz	2 lb 2.7 oz	983 g	213.1%
Hydration				108.2 %

Next morning early:

Pour preferment into a bread mixer and add:

- 1 cup evaporated milk - 8 oz
- 2 Tablespoons Oil - 1 oz
- 1 teaspoon cracked black pepper -.07 oz
- 1 Tablespoons Dill Seed -.23 oz
- 1 Tablespoons flaked red pepper -.08 oz
- Add 5 ¼ cups bread flour
- 4 teaspoons salt- .8 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	130.2 %
Evaporated Milk	1 cup	8 oz	226 g	19.9 %
Oil	2 TBSP	1 oz	28	2.5 %
Spices				
Bread Flour	5 ¼ cups	23.6 oz	669 g	58.6 %
Salt	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 6.4 oz	4 lb 6.4 oz	1995 g	167.7%
Total Flour Weight	2 lb 10 oz	2 lb 10 oz	1190 g	100.0 %
Total Water Weight (hydration)	1 lb 11.6 oz	1 lb 11.6 oz	782 g	65.8 %

Mix all ingredients, including salt together and let rest for 20 minutes. Then process on low speed for about 4 more minutes. Let proof for about 4 - 6 hours or doubled. Have about 8 oz Jalapeno cheese chunked for each loaf. Separate the dough into two pieces.

Take one piece of dough and spread it out into a rectangular shape, press about 4 oz of the chunked cheese into the dough, then fold the dough into thirds. Flatten the dough out again, press in the other 4 oz of cheese and fold into thirds again.

Then let the dough rest five minutes and finish shaping into your loaf by folding over and pinching the dough at the bottom. Place the dough into a greased bread pan or place in a banneton/basket. Shape the other loaves and then let proof for 2 - 3 hours or until the dough increases in size about 1 ½ times.

Then slash the dough while still on the peel, slide into the hot preheated 400F/204.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and continue baking for 15 - 20 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.



GARLIC ONION RYE SOURDOUGH



Garlic Onion Rye Sourdough uses a Danish Rye Starter which is at 100 % hydration (ratio = 8oz water: 8 oz flour) This recipe makes about 4 lbs of dough, enough for two large loaves at 2 lbs each.. The dough is at 66.5% hydration. Start by making an overnight preferment the evening, the night before baking.

To a large container add:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 100% hydration	1 cup	9 oz	255 g	37.0 %
Water	2 ½ cups	1 lb 4 oz	567 g	82.3 %
Rye Flour	2 cups	7.2 oz	204 g	29.6 %
Whole Wheat Flour	3 cups	12.6 oz	357 g	51.9 %
Dried Toasted Onion Flakes	2 TBSP	.4 oz	11 g	1.6 %
Dried Chunk Garlic	3 TBSP	.6 oz	17 g	2.5 %
Salt	1 teasp	.2	5.7 g	0.8 %
Total Weight	3 lb 2 oz	3 lb 2 oz	1417 g	205.8%
Hydration				100.8 %

See below if you want to use fresh roasted garlic instead of dried garlic.

Cover with a lid and allow mixture to ferment overnight at room temperature 68 - 72 degrees.

Next morning, pour your sponge ferment into your mixer and add:

If you were unable to obtain dried chunk garlic for the preferment, now is the time to add some roasted chunked fresh garlic, add to taste. A whole roasted bulb weighs about 2 oz and around 1 oz of garlic, roasted and then chopped into large chunks is used for each loaf although 2 oz per loaf is better for those that love garlic.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	130.2 %
Molasses	2 TBSP	1.4 oz	39 g	3.6 %
Granulated Onion Powder	2 teasp	.2 oz	5.7 g	0.5 %
Bread Flour	3 cups	13.5 oz	382 g	35.2 %
Salt	2 ½ teasp	.5oz	14 g	1.3 %
Total Dough Weight	4 lb 1.6 oz	4 lb 1.6 oz	1859 g	170.8%
Total Flour Weight	2 lb 6.4 oz	2 lb 6.4 oz	1088 g	100.0 %
Total Water Weight (hydration)	1 lb 9.5 oz	1 lb 9.5 oz	723 g	66.5%

Mix the ingredients including salt on medium speed just until mixed, this takes about 2 - 3 minutes. Dough will be sticky. Then allow the dough to autolyse (rest) for 20 minutes. After autolysis, mix dough on low speed for about 4 minute. Then let the dough bulk ferment for about 4 hours until doubled.

After bulk fermentation, pour the dough onto a lightly floured (Rye flour) surface and knead a couple of times, then gather into a ball. Divide the dough into two large pieces. Shape loaves into the general shape you wish and then allow the dough to rest for 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths if you wish (Bannetons do not have to be lined).

Cover the loaves with cloths and spray lightly with water to keep dough moist, or put dough, bannetons and all into plastic bags. Allow dough to proof 1- 3 hours or until ready.

You must be careful not to overproof Rye breads. Preheat oven to 450F/232.2C degrees. When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet. When ready to bake, turn your dough out onto a peel.

Then slash the dough while still on the peel, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Bake the same as the first loaf. Cool this delicious bread and eat with fresh butter and cream cheese. This bread has a dark, rich garlicky, onion flavor and is great for deli meat sandwiches.



DESEM RYE MALTED SOURDOUGH



This recipe makes 4 lbs of dough. The night before baking, make up a preferment by adding together:

- ❖ 1 cup vigorous DeSEM starter - 9 oz at 100% hydration
- ❖ 2 ½ cups water - 20 oz
- ❖ 2 cups rye Flour - 7.2 oz
- ❖ 1 cup whole wheat Flour - 4.2 - oz
- ❖ ½ cup cracked Malted Rye Berries* - 2.7 oz (available at local brewery store/health food store)
- ❖ ½ cup regular cracked wheat - 2.7 oz

*If you can't obtain the Malted Rye Berries, substitute regular cracked wheat.

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 100% hydration	1 cup	9 oz	255 g	42.3 %
Water	2 ½ cups	20 oz	567 g	93.9 %
Rye flour	2 cups	7.2 oz	204 g	33.8 %
Whole Wheat flour	1 cup	4.2 oz	119 g	19.7 %
Cracked Wheat	1 cup	5.4 oz	153 g	25.4 %
Total Weight	2 lb 13.8 oz	2 lb 13.8 oz	1298 g	215.0%
Hydration	1 lb 8.5 oz	1 lb 8.5 oz	694 g	115.0%

Mix the ingredients well, cover the bowl and allow the preferment to set overnight at room temperature.

Next morning pour the preferment into your dough mixer and then add:

- ❖ 2 Tablespoons oil - 1 oz
- ❖ 1 Tablespoons Malt syrup - .8 oz
- ❖ 3 2/3 cups Bread Flour - 16.5 oz
- ❖ 3 ½ teaspoons salt - .7 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	121.2 %
Oil	1 TBSP	1 oz	28 g	2.6 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.1 %
Bread Flour	3 2/3 cups	1 lb 0.5 oz	467 g	43.6 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19.8 g	1.9 %
Total Dough Weight	4 lb 0.8 oz	4 lb 0.8 oz	1837 g	171.4 %
Total Flour Weight	2 lb 5.8 oz	2 lb 5.8 oz	1071 g	100.0 %
Total Water Weight (hydration)	1 lb 8.7 oz	1 lb 8.7 oz	701 g	65.4 %

Mix all ingredients except salt together just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolysis, add salt and then mix dough on low speed for about 3 minutes. Bulk ferment (first rise) for 4 - 6 hours until dough has doubled.

After bulk fermentation, pour the dough onto a lightly floured (Rye flour) surface and knead enough to gather into a ball. Divide the dough and shape into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest).

Next shape loaves into their final shapes and put them into the lined or floured proofing baskets, pans, or couche. Allow the dough to final proof for about 2 hours (until not quite doubled but soft when you press in a finger). Then slash, spray, and bake, on top of a baking stone, in a preheated 450F/232.2C degree oven for 20 minutes using the Roasting Pan Method for steaming. After the first 20 minutes, turn the oven down to 400F/204.4C degrees and continue baking for about 15 - 20 more minutes or until your bread thermometer reads 200-205F/93-96C, turning halfway for even browning. Cool.



SALTZBURG SOURDOUGH



Saltzburg Sourdough is made using an Austrian Sourdough Starter (you can use any starter though).

This recipe makes approximately 4 lbs 13.1 oz of dough at 62.2 % hydration. It will make 3 medium loaves at 1 lb 9 oz each. Feed the starter the night before mixing the dough. Next afternoon around 3:00 p.m., mix together in your mixer:

- ❖ 2 cups Austrian sourdough starter at 166% hydration - 18 oz
- ❖ 1 ½ cups water - 12 oz
- ❖ ¾ evaporated milk - 6 oz
- ❖ 1/3 cup rye flour -1.2 oz
- ❖ 8 2/3 cups Bread Flour - 28.1 oz
- ❖ 4 ½ teaspoons salt - .9 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter @ 166%	2 cups	18 oz	510 g	38.3 %
Water	1 ½ cup	12 oz	340 g	25.6 %
Evaporated milk	¾ cup	6 oz	170 g	12.8 %
Rye Flour	1/3 cup	1.2 oz	34 g	2.6 %

Bread Flour	8 2/3 cups	2 lbs 7.0 oz	1105 g	83.0 %
Salt	4 1/2 teasp	.9 oz	25 g	1.9 %
Total Dough Weight	4 lb 13.1 oz	4 lb 13.1 oz	2185.8 g	164.2%
Total Flour Weight	2 lb 15 oz	2 lb 15 oz	1331 g	100.0 %
Total Water Weight (hydration)	1 lb 13.2 oz	1 lb 13.2 oz	828.8 g	62.2 %

Mix all ingredients, except salt, together just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolysis, add salt and mix dough on low speed for about 2 minutes. Then let the dough bulk ferment (first rise) for 6 hours or until doubled. Place the dough into a folding trough and fold it once each hour during the six hour bulk fermentation.

After bulk fermentation, pour the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into two pieces. Shape each loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets, pans, or couche.

Cover the dough with plastic bags and refrigerate overnight. In the morning, allow the dough to final proof for 2 - 3 hours (whenever the dough looks about 1 1/2 times its size and is spongy/springy) then turn dough out on peel and slash, spray, cover with roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Bread is done when the internal temperature reaches 200-205F/93-96C. Take out loaf and cool on a rack.

If your first loaf turns out too brown, keep the temperature of the oven at 425F/218C degrees throughout the whole baking period on the next bake. Don't forget to put the roasting lid back into the oven to preheat before putting in the next loaf.





TWO NIGHT SOURDOUGH



Two Night Sourdough is made using a preferment and long bulk fermentation. This recipe makes approximately 3.5 lbs of dough. It should make up two nice sized loaves weighing about 1 lb 12 oz each. This dough is 64 % hydration. The night before mixing, make up a preferment by adding together: Add up to 1 ½ teaspoons of Diastatic Malt for more “sour” flavor (be careful not to add more).

- ❖ 1 cup vigorous sourdough starter at 166% hydration - 9 oz
- ❖ 1 cup water - 8.0 oz
- ❖ 1.5 cup Bread Flour - 6.75 oz
- ❖ ½ cup Spelt or Whole Wheat Flour - 2.1 oz
- ❖ ¼ cup Rye Flour - 1.0 - oz

Preferment 1	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	68.3 %
Water	1 cup	8 oz	226 g	60.7 %
Rye flour	¼ cup	1.0 oz	28 g	7.6%
Spelt or Whole Wheat flour	½ cup	2.1 oz	59 g	15.9 %
Bread Flour	1 ½ cups	6.7 oz	189.9 g	50.8 %
Total Weight	1 lb 10.8 oz	1 lb 10.8 oz	759 g	203.3%
Hydration	13.6 oz	13.6 oz	386 g	103.3%

Mix the ingredients well, cover the bowl and allow the preferment to set overnight at room temperature.

Next morning (around 10 a.m.), to your preferment mixture add:

- ❖ ½ cup water - 4 oz
- ❖ 1 cup Bread flour - 4.5 oz

Preferment 2	Volume	Standard	Metric	Bakers %
Preferment	All	All	All	151.6 %
Water	½ cup	4 oz	113 g	22.6 %
Bread Flour	1 cup	4.5 oz	127 g	25.4 %
Total Weight	2 lb 3.3 oz	2 lb 3.3 oz	1000 g	199.6%
Hydration	1lb 1.6 oz	1lb 1.6 oz	499 g	99.6 %

Cover and allow fermentation to continue until around 3 - 4 p.m.
Then pour the whole mixture into your dough mixer and add:

- ❖ ½ cup water - 4 oz
- ❖ 2 Tablespoon oil - 1 oz
- ❖ 3.5 cups bread flour - 15.7 oz
- ❖ 1 Tablepoon salt - 0.6 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Second Preferment	All	All	All	105.7 %
Water	½ cup	4 oz	113 g	12.0 %
Oil	2 TBSP	1 oz	28 g	3.0 %
Bread Flour	3 ½ cups	15.7 oz	445 g	47.0 %
Salt (add after autolyse)	3 teasp	.6 oz	17 g	1.8 %
Total Dough Weight	3 lb 8.6 oz	3 lb 8.6 oz	1604 g	169.5 %
Total Flour Weight	2 lb 1.4 oz	2 lb 1.4 oz	946 g	100.0 %
Total Water Weight (hydration)	1 lb 5.6 oz	1 lb 5.6 oz	612 g	64.7 %

Mix all ingredients together including salt for 3 minutes.

Then let the dough ferment for about 4 hours more. After bulk fermentation, pour out the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into two pieces. Shape loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets or lined bannetons. Place baskets into a plastic bag and into the refrigerator overnight.

In the morning, take out the loaves one at a time about thirty minutes apart, and allow the dough to final proof for about 2 hours. Then slash, spray once and cover with a roasting lid which has been preheated in a 450F/232C degree oven. Bake for 20 minutes. Then, take off the roasting lid, being careful of the hot steam. Then turn down the oven to 425F/218C degrees and continue baking for about 15-20 more minutes or until your bread thermometer reads 200-205F/93-96C, turning halfway for even browning. Cool. Eat with lots of butter.

Honey Sunflower Loaf



This Sunflower seeded sourdough loaf is wonderful for sandwiches or making buttered toast. Put as many sunflower seeds in the dough as you want. It needs a preferment so make sure to start the night before baking.

In the evening mix in a large covered container:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255g	63.3 %
Water	1 cup	8 oz	226 g	58.9 %
Cracked Wheat	¼ cup	1.5	42 g	11.0 %
Whole Wheat Flour	1 cup	4.2 oz	119 g	30.9 %

Bread Flour	1 cup	4.5 oz	127 g	33.1 %
Total Weight	1 lb 11.2 oz	1lb 11.2 oz	771 g	200.2%
Hydration				100.2%

Allow the preferment to set overnight at room temperature. Next morning add all of the preferment to your mixer and then add all of the ingredients except the salt and sunflower seeds.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	72.4 %
Water	1 1/3 cup	10.6 oz	300 g	28.2 %
Honey	2 1/2 TBSP	2 oz	56 g	5.3 %
Oil	2 TBSP	1 oz	28 g	2.7 %
Whole Wheat Flour	2 1/2 cups	10.5 oz	297 g	27.9 %
Bread Flour	3 cups	13.5 oz	382 g	35.9 %
Salt (add after autolyse)	3.5 teasp	.7 oz	19 g	1.9 %
Sunflower Seeds (add later)	1/2 cup +			
Total Dough Weight	4 lb 1.5 oz	4 lb 1.5 oz	1856 g	174.3%
Total Flour Weight	2 lb 5.6 oz	2 lb 5.6 oz	1065 g	100.0 %
Total Water Weight (hydration)	1 lb 8.6 oz	1 lb 8.6 oz	697 g	65.5%

Mix together on a medium speed all ingredients (except salt and sunflower seeds), just until incorporated, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add the salt and mix dough on low speed for one more minute. Now let the dough bulk ferment (which means the first rise) for about 4 hours. After bulk fermentation, pour the dough onto a lightly floured surface and knead a couple of times, then gather into a ball.

Divide the dough into two pieces, and knead the desired amount of sunflower seeds into each piece. Let the dough rest for five minutes. Shape each piece into a boule and place in Semolina floured round banneton then cover with a plastic bag. It is best to

shape one loaf and then 30 minutes later shape the second loaf to stagger the proofing and baking time. Make sure the dough that is waiting to be shaped later is covered with a moist cloth or plastic wrap to keep from drying out.

Set the covered shaped dough in a warm place (around 80 - 86F/26-30C). Allow the shaped dough to proof for one half to two hours and is when the dough increases in size about 1 ½ times. Preheat oven to 425F/218C degrees. When ready to bake, turn the proofed dough out onto peel and slash. Place dough onto hot baking stone, spray with water all over the dough and cover with preheated roasting lid. Bake at 425F/218C degrees for about 20 minutes. After the 20 minutes, take off the roasting lid (be careful steam can escape) and set the lid on top of your oven. Continue to bake the bread uncovered for another 10 -15 minutes. When bread registers 200-205F/93-96C on an instant read thermometer, take out the bread and place on cooling rack. Put the roasting lid back into the oven and bring the oven back to 425F/218C degrees, then bake second loaf.



SAN FRANCISCO SUNRISE SOURDOUGH



This San Francisco Sourdough is a two day build and bake.

In the evening around 8 pm:

In a large bowl combine:

- 1 cup active starter at 166% hydration-9oz
- 2 cups water -16 oz
- 3 cups bread flour- 13.5 oz
- 1/3 cup Rye flour- 1.2 oz
- 1/3 cup Whole Wheat flour-1.4 oz

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	46.2 %
Water	2 cups	16 oz	453 g	82.1 %
Rye Flour	1/3 cup	1.2 oz	34 g	6.2 %
Whole Wheat Flour	1/3 cup	1.4 oz	39 g	7.2 %

Bread Flour	3 cups	13.5 oz	382 g	69.3 %
Total Weight	2 lb 9.1 oz	2 lb 9.1 oz	1165 g	210.9%
Hydration				110.9 %

Cover and let this mixture ferment overnight at room temperature. The next afternoon at 1:00 pm, put the preferment into your mixer and add:

- 3/4 cups water -6 oz
- 5 cups bread flour- 22.5 oz
- 4 teaspoons salt- .8 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	130.2 %
Water	¾ cup	6 oz	170 g	14.3 %
Bread Flour	5 cups	20.5 oz	637 g	53.6 %
Salt	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 6.4 oz	4 lb 6.4 oz	1995 g	167.7%
Total Flour Weight	2 lb 10 oz	2 lb 10 oz	1190 g	100.0 %
Total Water Weight (hydration)	1 lb 11.6 oz	1 lb 11.6 oz	782 g	65.8 %

Mix the ingredients together until well incorporated and then let the dough rest for 20 minutes (autolyse). After autolyse, add the salt and mix the dough on low speed for one more minute.

Let this dough proof until 6 pm. Then shape loaves and put into the refrigerator overnight in plastic covered baskets or bowls. Next morning take out loaves one by one, staggering 30 minutes apart. Then let the dough warm up and proof for about 2 - 2.5 hours or when the dough increases in size about 1 ½ times.

Then slash the dough while still on the peel, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water

quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.



BUCKWHEAT SOURDOUGH



Buckwheat Sourdough is started with a pre-ferment, it contains ground Buckwheat groats for a delightful new taste.

Buckwheat Sourdough:

This dough is started as a prefermentation or sponge the night before baking.

In a large bowl mix together:

- **1 cup of sourdough starter at 166% hydration -9 oz**
- **2 cups of water-16 oz**
- **1 Cup coarsely ground Buckwheat -4.6 oz**
- **1 cup Whole Wheat flour - 4.2 oz**
- **2 cups bread flour- 9 oz**

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	43.1%
Water	2 cups	16 oz	453 g	76.6%
Cracked Buckwheat Groats	1 cup	4.6 oz	130 g	22.0 %
Whole Wheat Flour	2 cups	8.4 oz	238 g	40.2 %
Bread Flour	1 cups	4.5 oz	127g	21.5 %
Total Weight	2 lb 10.5 oz	2 lb 10.5 oz	1204 g	203.5%
Hydration				103.5 %

Cover the pre-ferment and it let set overnight at room temperature.
Early next morning pour the sponge into your mixer and add:

- ½ cup orange juice- 4 oz
- 2 Tablespoons oil -1 oz
- 1 Tablespoon Malt Syrup- .8 oz
- 4 cups bread flour-18 oz
- 3 ½ teaspoons salt -.7 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	109.3 %
Orange Juice	½ cup	4 oz	113 g	10.3 %
Oil	2 TBSP	1 oz	28 g	2.6
Malt Syrup	1 TBSP	.8 oz	22 g	2.1
Bread Flour	4 cups	18 oz	510 g	46.3 %
Salt	3 ½ teasp	.7 oz	20.9 g	1.8 %
Total Dough Weight	4 lb 3.0 oz	4 lb 3.0 oz	1899 g	172.3%
Total Flour Weight	2 lb 6.9 oz	2 lb 6.9 oz	1102 g	100.0 %
Total Water Weight (hydration)	1 lb 9.9 oz	1 lb 9.9 oz	733 g	66.5 %

Mix the ingredients, except the salt, together until well incorporated (about 2 - 3 minutes) then let the dough rest for 20 minutes (autolyse). After autolyse, add the salt and mix the dough on low speed for four minutes more.

Let this dough proof for about four hours or until doubled in size. Then shape the loaves, staggering shaping 30 minutes apart. Let the dough warm up and proof for about 2 - 2.5 hours or until the volume increases in size about 1 ½ . Turn the dough onto a peel and slash, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up to 450F/232.2C degrees and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.



AUSTRIAN FARM SOURDOUGH



Austrian Farm Sourdough is made using Austrian Sourdough Starter. This recipe makes approximately 4 lbs 2 oz of dough at 65 % hydration. Feed the starter the night before mixing the dough. Next afternoon around 11:00 a.m. - 12:00 noon, mix together in your mixer:

- ❖ 2 cups sourdough starter at 166% hydration - 18 oz
- ❖ 1 ¼ cups water - 10 oz
- ❖ ½ cup of cream or ½ & ½ milk, scalded then cooled - 4 oz
- ❖ 2 Tablespoons butter melted and cooled - 1 oz
- ❖ 1 cup of Whole Wheat flour - 4.2 oz
- ❖ 6 ¼ cups Bread Flour - 28.1 oz
- ❖ 4 teaspoons salt - .8 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
starter	2 cups	18 oz	510 g	46.1 %
Water	1 ¼ cup	10 oz	283 g	25.6 %
½ & ½ milk	½ cup	4 oz	113 g	10.2 %
Melted Butter	2 TBSP	1 oz	28 g	2.6 %

Whole Wheat Flour	1 cup	4.2 oz	119 g	10.8
Bread Flour	6 ¼ cups	28.1 oz	796 g	71.9 %
Salt	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 2.1 oz	4 lb 2.1 oz	1873.9 g	169.2%
Total Flour Weight	2 lb 7.1 oz	2 lb 7.1 oz	1107 g	100.0 %
Total Water Weight (hydration)	1 lb 9.4 oz	1 lb 9.4 oz	721 g	65.1 %

Mix all ingredients, except salt, together just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, add salt and mix dough on low speed for about 2 minutes. Then let the dough bulk ferment (first rise) for 6 hours or until doubled. Place the dough into a folding trough and fold it once each hour during bulk fermentation.

After bulk fermentation, pour the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into two pieces. Shape each loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets, pans, or couche.

Cover the dough with plastic bags and refrigerate overnight. In the morning, allow the dough to final proof for 2 - 3 hours (whenever the dough looks about 1 ½ times its size and is spongy/springy) then turn dough out on peel and slash, spray, cover with roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Take out loaf and cool on a rack.

If your first loaf turns out too brown, keep the temperature of the oven at 400F/204C degrees throughout the whole baking period on the next bake. Don't forget to put the roasting lid back into the oven to preheat before putting in the next loaf.



SOURDOUGH GLOSSARY

Acetic acid	An organic acid produced by a lactobacilli bacteria
All purpose flour	A blend of wheat flours with protein level around 9-11 %
Amylase Enzyme	Amylase enzymes present in dough break down starch into sugars. Amylase is present in larger amounts in sprouted grains and whole grains
Artisan Bread	Handcrafted bread made by an skilled baker
Baguette	A French style loaf which originated in Austria it has a long shape with an optimum amount of crust to crumb ratio
Bakers Blade	A dough scraper with a blade usually around 6" x 4" same as a bench scraper or pasry blade.
Bakers percentage	A method of measurement where the ingredients are figured as a percentage of the flour weight
Baking sheets	Flat sheets for baking, like a cookie pan or a flat pan with no sides. Common sizes are full size, 18" x 26" and half size 18" x 13" pans sized to fit a full sized bakery oven
Baking stone	A flat stone used on the bottom of the oven to simulate a masonry oven, usually for baking bread or pizza
Banneton	Willow or cane basket used for proofing dough
Barm	A starter made from brewers grain by-products or foam
Batard	A bread shaped like a regular French bread, shorter than a baguette and much wider
Bench scraper	A tool in a rectangular shape with one edge used as a scraper or divider and the other edge as a handle, usually 4" x 6" with a handle on one side. Same as a bakers blade or a pastry blade.
Biga	A lower hydration dough cultured with commercial yeast and used as a seed for building dough

Boule	A loaf of bread shaped as a ball or in the round
Bread flour	A flour made with higher protein levels of 10 - 12 % , used for making bread. It usually is enriched and has malt and dough enhancers added. Can be bleached or unbleached.
Bread thermometer	A thermometer which has a long point which is thrust into a loaf of bread to measure the interior temperature, usually reads at least to 220 degrees F
Brotform	Same as Banneton , German variation of word Banneton A cane or rush basket used for proofing dough.
Bulk ferment	First rising or fermentation of dough after mixing
Carbon dioxide - CO ₂	Gas by-product of fermenting yeasts and bacteria
Chef (when used for a leaven)	French word for a culture used as a seed for the first stage of dough building
Cob	A rustic round shaped loaf
Commercial or Bakers yeast	A modern variation of yeasts derived from brewers yeast, which is fast acting and has a long shelf life
Couche	A long, heavy linen or canvas cloth used to hold dough while it is proofing, with folds to separate the loaves
Crumb	The interior structure of a baked item is called it's crumb
Crust washes or glazes	Finishes for bread crust, egg glaze, sugar glaze, cornstarch wash, are some of the finishes for a particular look and texture for the crust. Glazes may be applied before, after or during baking.
Culture	A stable mixture of yeast and bacteria propagated in a water/flour mixture
Desem	Flemish sourdough starter made with whole wheat flour
Diastatic malt	Usually made from sprouted, barley which is dried at a low temperature to keep the enzymes active.
Docking	Poking holes in dough to control over rising or bubbling up of dough
Dough	A mixture of liquid, flour and often some type of leaven
Dough Scraper	Same as a bench scraper
Extensible	A dough is extensible when it has the ability to stretch

	easily
Fermentation	When carbohydrates are converted into alcohol, acids and gasses as a result of yeasts, bacteria and enzyme activity
Foccacia	A type of flat bread usually with toppings
Gluten	A protein including gliadin and glutenin which form the weblike structure of bread which traps the gasses formed during fermentation
Grain Ferment Method	Pre-ferment method of treating wholegrains to break down and soften the indigestible portions before making dough
Hooch	The liquid that rises to the top of a high hydration culture
Hydration	The amount of water to flour ratio by weight
Instant read thermometer	A digital thermometer used for instant readout of temperature usually with a probe and digital readout
Lactic Acid	An organic acid tolerant to lower Ph levels which contributes to the flavor of bread
Lactobacilli	A bacteria present in sourdough cultures which produces organic acids
Lame	A French word for a tool with an attached razor used for slashing dough
Leaven	A substance used to produce carbon dioxide for raising dough
Levain	A French type of pre-ferment used to make bread
Masonry oven	A baking oven made with stone, brick or concrete and heated by fire, electricity or gas
Motherdough	Cool fermented sourdough starter from 50-80% hydration
Natural Leaven	The wild yeasts and bacteria present in fruits and grains used to raise dough
Non diastatic malt	A malted grain powder or syrup in which the enzymes are no longer active
Old dough	A piece of fermented dough saved to be used in a subsequent batch of dough
Pastry blade	Same as a dough scraper or baker's blade

Pate Fermente	Same as Old dough
Poolish	A Polish wet preferment usually made with a small amount of commercial yeast
Pre-ferment	A mixture of flours/grains and liquids fermented before adding to the main dough
Proofing	Second raising of dough after shaping
Proofing Cloth	A cloth used to line baskets or bread molds for holding dough while it proofs
Proofing test	A test used to see if a leaven is still viable
Protease	An enzyme in dough activated by the addition of water to flour, which helps to degrade or break down the strands of gluten making the dough more extensible
Rack	Cooling racks are used to cool baked goods.
Refresh	To feed a sourdough starter/culture water and flour
Retard	To cool down a dough and slow it's fermentation
Retarder	A temperature controlled environment for cooling dough
Roasting Pan Method	A method of baking that keeps steam next to the loaf
Sauerteig	A German term for sourdough
Scoring	Decorative and useful slashing or slicing in the dough before baking, used so the dough can expand in an expected manner
Slashing	Cutting or slicing dough to allow dough to expand while baking
Sourdough	A natural leavening or wild yeast fermented dough
Sourdough starter	A stable culture of yeasts and bacteria in a water/flour mixture used to leaven dough.
Sponge	A type of pre-ferment usually around 100% hydration
Starter	Same as Sourdough Starter
Straight mix	A method of mixing dough with the minimum amount of stages.
Stretch and fold method	A hand stretching and folding method of developing dough
Torpedo	A loaf shaped somewhat like a skinny football with pointed ends.

Vigorous or active starter	A healthy stable culture of wild yeasts and bacteria
Wild yeast	Yeasts found in the natural environment
Yeast	A fungi which reproduces by budding, it's fermentation causes CO ₂ as a by-product which raises dough

About the Author

I have been baking for 40 years. At the age of ten, I was baking and selling cupcakes to the neighbors. I became the mother of ten children and so I had plenty of reasons to bake.

My interest in real sourdough began in the Summer of 2004 when my daughter challenged me to bake “real” sourdough, because “Nobody can bake real sourdough at home.”

Taking up her challenge, I had no idea that it would lead me to my own sourdough business, called Northwest Sourdough, a blog and a forum all about sourdough.

Northwest Sourdough's bread was featured on KNOE TV's What's Cooking with Diane Cage in April of 2006.

Northwest Sourdough is mentioned in the resource section of Peter Reinhart's award winning new book, "Artisan Breads Every Day".

I am now working on a new book called: "100% Sourdough" which is exclusively 100% starter levain using only 100% wild yeast.

It's been fun, Teresa



End of Part 2

“Discovering Sourdough” is comprised of three parts. The first section is Part 1- Beginning Sourdough. The second section is Part 2- Intermediate Sourdough. The final section is Part 3 - Advanced Sourdough.

Contact me at: northwestsourdough@gmail.com

Follow my blog at: <http://www.northwestsourdough.com/discover>

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Have fun baking!



Discovering Sourdough

By Teresa L. Hosier Greenway

PROFESSIONAL SOURDOUGH BREADS BAKED AT HOME

USING ONLY THE WILD YEAST

Part III

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PART 3

ADVANCED SOURDOUGH



Contents Part 3

Advanced Sourdough

Advanced Dough Handling and Techniques.....	6
Motherdough Starters – What is Motherdough?.....	20
Salt Controlled Fermentation.....	26
Morphing Sourdough Starters.....	33

Advanced Recipes:

Alaskan Sourdough.....	37
Ciabatta.....	39
Dill Rye.....	41
Griffin’s Bread.....	43
Hearth Flaxseed Loaf.....	49
Light Onion Rye.....	52
100% Wholegrain Miche.....	54
Flemish Desem.....	57
Pumpkin Sourdough.....	61
Spelt Sourdough.....	65
San Francisco Sharp.....	68
Sour Malt.....	71
Salt Fermented Sourdough.....	75

Morphed Recipes:

Kalamata Asiago Loaf	81
Desem Morph.....	84
Northwest Morph Sourdough.....	87
Pane Pearl.....	90
Rye Morph Pan Loaf.....	92
Rosemary Potato Sourdough.....	94

Motherdough Recipes:

Baguettes.....	98
Seaside Sourdough.....	100
Pane Picante.....	103
Pane Teresa.....	106
Asiago Cracked Pepper Bread.....	110
Country Kitchen Sourdough.....	112
Coastal Loaf.....	114
Vienna White.....	117
Sourdough Millet Loaf.....	119
Onion Focaccia.....	121
Pizza Motherdough.....	123
Bay Bread.....	125
Motherdough White Loaf.....	128
Ciabatta Loaf.....	131
One Night Sponge Sour.....	134
Sourdough Fat Pretzels.....	137
Pretzel Sourdough Bread.....	140

Specialty Recipes:

Sweet Dough: Cinnamon Rolls and Hawaiian Coffee Ring...	146
Teresa's Sourdough Doughnuts.....	151
Egg Bagels.....	155
Onion Bagels.....	158
Sourdough English Muffins.....	161
Focaccia 166.....	165
French Grilled Sourdough Bread.....	168
Hawaiian Loaf.....	171
Jerky Rolls.....	174
Kaiser Rolls.....	176
Pistou Rolls.....	179
Bleu Cheese Pull-Apart Loaf.....	181
Walnut Fig Bread.....	184
Raisin Walnut Cranberry Loaf.....	187

(a)Glossary Sourdough Terms

About the Author

ADVANCED DOUGH HANDLING AND TECHNIQUES

Overnight Pre-ferments, Sponges & Grain Fermentation Method

A pre-ferment is a mixture of liquid, flours, grains, seeds or other ingredients which will be fermented for several hours or overnight before being mixed with the rest of the ingredients called for in the recipe. There are different kinds of preferments. A Sponge is a pre-ferment usually having 70-100% hydration which uses part of the recipe's liquids and flours and can include commercial yeast or only wild yeast. A Biga is based on an Italian method of pre-fermenting dough which is a very low hydration of 50 - 60 % hydration and usually has a small amount of commercial yeast. A Poolish is a pre-ferment, based on a Polish method, which is a very liquid dough mixture of around 100%, it also contains a small amount of commercial yeast. A

Motherdough is a cold pre-ferment and is made with wild yeast, it is anywhere from 50 - 80 % hydration. Old Dough or "Pate Fermente" is dough saved from a former batch and used to leaven the next batch of dough. Levain is a French type of pre-ferment which is done in stages or builds, with each build being leavened by the former build. Pre-ferments can ferment for any length of time the baker wishes, with overnight ferments being the most common in sourdough baking.

OVERNIGHT PREFERMENTS

Sometimes a bread flour has such a high gluten level that it is difficult to work with, this is called a strong flour. If your dough is usually hard to work with and not capable of relaxing enough to shape easily(not very extensible), pre-fermenting part of the bread flour overnight, would help correct this problem. If you wish to have increased extensibility, you can leave out the salt in the preferment because salt inhibits the action of Protease. Knowing how salt and Protease act on dough, can help you use them as tools to obtain the final result

you desire in your dough. Salt inhibits Protease and has a strengthening effect on the dough. Leaving out the salt during the pre-fermentation and Autolyse stage, will allow the Protease enzyme to act on the gluten and soften the dough by partially breaking down the gluten. You will want to limit this action though. For very long fermented San Francisco style breads, you might want to add salt to the preferment to protect the gluten from being broken down during the very long bulk ferment or proofing stages.

Using a pre-ferment will shorten the bulk ferment time of the final dough because a much larger portion of the final dough will be pre-fermented and very active. Dough which is partially pre-fermented is not tolerated well by those with gluten intolerance. The shorter amount of time the final stage of the dough ferments doesn't allow time for all of the gluten to be predigested, only a portion of it. Preferments are very often used for one day sourdough breads, like French Bread and Vienna Bread, because the larger amount of activity brought to the final dough will enable it to bulk ferment in a shorter time

and be ready to bake on the same day as the mixing of the final dough.

FERMENTATION OF WHOLEGRAINS

When working with overnight preferments and sponges, I like to add any of the whole grains or seeds contained in the recipe to a high hydration preferment. Whole grains or seeds fermented in this way are predigested by enzymatic activity. This results in the fullest flavor of the grains or seeds being unlocked. The parts of the grains which are difficult to digest, are broken down and become more digestible.

For instance, if I am working with a part whole wheat part white loaf, I would make up a pre-ferment mixture so I could ferment the whole grain portions of the recipe overnight. It might look something like this:

- 1 cup of starter @ 166% hydration - 9 oz / 255 g

- 2 cups of tepid water
- 16 oz / 453 g
- ½ cup cracked wheat
- 2.7 oz / 76 g
- 2 cups of Whole Wheat
Flour - 8.4 oz / 238 g
- 1 cup Rye Flour - 3.6 oz
/ 102 g
- 1/2 teaspoon salt - .1 oz
/ 2.8 g
- 3.5 cups Bread Flour -
15.7 oz / 445 g
- 2.5 teaspoons salt - .5 oz
/ 14 g

Stir the mixture thoroughly and allow it to ferment overnight at room temperatures in the 60- 70's. This pre-ferment is around 119% hydration and the small amount of salt will keep it from over-fermenting. In pre-ferments which contain whole grains, a hydration of 100% or higher is recommended so that there is plenty of liquid to soak the whole grains.

The next day, I would pour this pre-ferment into my mixer and add the rest of the ingredients, mix, autolyse, bulk ferment, shape, etc. The rest of the ingredients might include:

This would give you dough at 64% hydration with all of the wholegrain parts of the recipe pre-fermented. Pre-fermenting the whole grains and not the bread flour, ensures that the gluten of the bread flour is not broken down by the enzyme activity, and is still strong enough to bring together all of the different grains and flours in the dough. If you had added the white flour to the pre-ferment (adding a small portion of white flour is fine) the gluten in the white flour would have been partially broken down the by action of Protease, an enzyme which breaks down gluten.

Salt can be added to the pre-ferment to control over-fermentation and the action of the Protease on the gluten. Salt inhibits other enzymes besides Protease. Pre-ferments with rye grains or flours have a tendency to over-ferment and get too sour, exhausting the sugars and

producing too much alcohol. A small amount of salt in the pre-ferment keeps it from quickly over-fermenting. This is especially true the warmer the room temperature is. During the summer months it is especially helpful to add a small amount of salt to your preferments, whether whole grain or white flour.

The amount of salt would be .5 - 1 % of the total flour weight of the finished dough. You would need to make sure you minus the salt amount of the pre-ferment from the final dough so your final dough isn't too salty. If you wish to experiment making dough with an increased sour flavor, you can either leave out the salt during the preferment stage or allow a salted preferment to ferment much longer than usual while it drops in ph. Adding any whole grain or seed ingredients will make the grains more digestible by breaking down the pytales, soften the grain in the final dough, and bring out the maximum flavor of the wheat or seeds. This is especially true of seeds that are added for flavor, like Caraway seeds.

Any time you want to mix up dough using part whole grain flours, cracked grains, meal, seeds etc, make up a pre-fermentation sponge and allow the wholegrain, or seed ingredients to ferment overnight.

Pre-fermentation hydration should be kept wet, so a 100%+ hydration sponge should be used for cracked or whole grains that have not been ground. The extra water in the sponge is necessary especially when using cracked grains or meals.

Another thing that can be done with whole wheat berries, cracked grains and meals, is to pour hot or boiling water over them, let the mixture cool, and then add this cooled mixture to a pre-fermentation sponge.

Adding boiling water to whole grain flours to make a slurry or paste and then using this as part of your ingredients after it has cooled is another way of manipulating the texture, taste and crumb of the bread. Adding grains to boiling water also helps to minimize the enzyme activity. When you add boiling water to flour and mix it or add flour to

water and bring it to a boil, the starch gelatinizes which means starch has been converted to sugar. Minimize the amount of paste or slurry used in your dough or you will have gummy bread.

THE SOUR IN SOURDOUGH BREAD

With sourdough breads, you work with not only yeast but also bacteria which produce lactic and acetic acids. The acids contribute to the development of the great flavor that Sourdough and Artisan Breads are so famous for.

There are two main types of bacteria, predominant in sourdough cultures. They are Heterofermentive and Homofermentive bacteria. The Heterofermentive bacteria produce mainly Acetic acid, which contributes the vinegary sour flavor. The Homofermentive bacteria produce the lactic acids which contribute a milder acid but more complex flavor. Sourdough starter cultures can be a combination of Heterofermentive and Homofermentive bacteria or they can be predominantly

one or the other. If you are trying to obtain a real sour tang to your bread and your starter culture has predominantly Homofermentive bacteria, you will have a difficult time producing sour bread. The San Francisco culture contains mainly Heterofermentive bacteria as well as being a very long proofing starter, which makes it ideal to work with when trying to produce sour breads. However, many of the different starters available are great for producing not only sour bread, but a variety of great tasting breads. You can use the same starter to bake up some sour tasting bread and also very mild tasting bread. It is up to the baker to work with the proper ingredients and technique to control the outcome.

To encourage Heterofermentive bacteria to produce Acetic acid, lower hydration dough is kept at temperatures up to 86F. Long cool bulk ferments are often used to produce sour breads. Lactic acid is produced in temperatures over 86F degrees and in wetter doughs. As the amount of whole grains increase in a dough, enzyme action and acid production also increase. Obtaining sour

flavor in dough can be accomplished by techniques using low hydration dough at lower temperatures, fermented for long periods, or higher hydration dough fermented at higher temperatures. The use of flour with higher ash content is also a factor in producing a sour flavor. To increase the ash content of flour, you would need to add additional bran and/or germ. You can add a small amount of whole wheat or rye flour to bring up the ash content of your dough.

Fully mature dough which has gone through a full length bulk ferment will have the greatest amount of bacteria, yeasts, acids and enzymes. This will produce a colorful crust with the greatest flavor. Aeration of the dough also encourages acid production. That is done with knocking down, stirring or folding the dough as it is bulk fermenting. Another ingredient that contributes to a sharp, sour flavor in bread is the malted barley flour which bakeries have added to their flour. Malted barley flour has diastatic malt enzymes which helps in the development of the sour tang so sought after in sourdough bread. Regular malt which has had the enzymes deactivated

can also be used to encourage the sour tang, but I have had better results with the diastatic malt. If you have problems using the diastatic malt, your bread flour may already have the correct amount added so you would need to use regular malt instead. Some of the problems with using too much diastatic malt are stickiness in the dough, the dough fermenting too fast thus becoming slack and weak and a loss in color/flavor in the crust. I have obtained very sour breads using a pre-ferment with added malt left at room temperature overnight, made into dough next day then refrigerated. Once the bacteria get going, the refrigeration helps the bacteria to continue to multiply while the yeast slows way down.

To produce a deep sour flavor in sourdough bread, you need to bring together, the right starter, proper ingredients and technique. It is challenging to obtain that perfect sought after flavor, and because of that, it is so rewarding once you do.

In many formulas and recipes there is what is called the Desired Dough Temperature or DDT. The DDT means

the temperature which is desired for the dough. Optimum fermentation temperature is around 74F/23C - 78F/25.6C. However, for cold motherdough the DDT might be 44F/6.7C to 50F/10C. Keeping dough at a certain temperature for optimum development and flavor production can be difficult to do in a home environment. The DDT depends upon the technique, ingredients and desired outcome for the particular bread recipe. You can have fun experimenting with the DDT. It is possible to extend your experimentation to its fullest if you have a controlled warm environment and a controlled cool environment. I know some enterprising bakers who have setup insulated boxes or styrofoam coolers with a small light bulb to keep a warm, even temperature in a closed box. I sometimes have used my oven with the oven light on, my baking stone in the oven, and the door cracked open, to keep a nice even 80 degree temperature. The drawbacks to that are either someone might come by and turn on the oven while you are bulk fermenting your dough, or you may need to turn on your oven to preheat for baking, just when you also need your



oven for proofing your dough. There is also the danger of forgetting to take out your proofing thermometer before you turn it on to bake with and finding the thermometer later...melted!

I have also used my dishwasher as a proofing cabinet and it works well. You need a thermometer to monitor the temperature. I turn the washer on and spin the dial to the drying cycle, I then leave the washer on for just long enough to bring temperature up to between 80-90 degrees. When it reaches the right temperature, I turn the washer off and put in my dough to proof in a nice warm environment. You can also pour a cup of water into the bottom of the washer to increase the humidity. Check on the temperature during the time the dough is proofing and turn the heating cycle back on for just a few minutes if the temperature falls too much. Don't leave

and expect to come back later to turn it off, as it will overheat by then and ruin your dough completely. Use a timer if you need to and time how long you leave the drying cycle on. I often heat the washer for five minutes at a time to keep it warm when I notice it has cooled too much. For this method, it is helpful to stack a few clean, porcelain or stoneware dishes in the dishwasher to hold the heat longer.

You can also use your microwave as a proofing cabinet. I heat a cup of water in the microwave and then place the loaf I wish to warm up in the microwave with the hot cup of water pushed into the corner of the microwave and the door shut to keep in the warmth. Be careful handling a hot cup of water. This is especially useful for the last half hour of proofing the dough.

OTHER PROOFING SPACES

In the chapter on Starters and their care a dedicated starter refrigerator was talked about. A dedicated refrigerator is kept between 42 - 50F degrees which above normal refrigerator temperatures. It would be dangerous to keep most other

foods in the refrigerator because the temperature would not be cold enough to keep other foods bacteriologically safe. However, dough that you want to delay or retard would do great in the refrigerator. The dedicated refrigerator would be ideal to use as a retarding environment for your sourdough loaves. So you could actually have a dual purpose environment, a starter keeper and a dough retarder. If you have a temperature controller set up to control the temperature accurately on your dedicated refrigerator, you would have an ideal setup for your sourdough baking. The other item that would be nice to have is a warming or proofing box, something a little more accurate than a dishwasher. To control the sourness produced by the acids, it is necessary to have bulk fermentation or proofing at a controlled warm environment, say between 74 - 86 degrees. Optimum temperature for dough development is around 74 - 78 degrees for most dough. "...a temperature below 86F favors heterolactic fermentation, producing both lactic and acetic acids; lactic acid generated by homolactic lactobacilli predominates when fermentation is

conducted above 86F.” I learned this from the book, “Handbook of Dough Fermentations” written by Karel Kulp and Klaus Lorenz.

If you allow dough to over-ferment, there will be a pitted look to the dough because the gluten has broken down too much. There will also be a lack of color in the crust and the bread will have a certain popcorny flavor, both which result from the sugars in the dough being used up. Other results of over-fermentation are: a dense crumb, poor oven spring and a tough crunchy crust.

DOUGH DEVELOPMENT

Dough which is over 64% hydration but not as wet as 70+ % hydration, is mixed and handled similar to the lower hydration dough, those under 64% hydration. The ingredients are added to the mixer with the starter and water being added first, then the flours. The salt is withheld until after the autolyse period. The dough is mixed gently on medium speed to begin with and then low speed. The dough is usually mixed within the first three minutes and then allowed to autolyse or rest for 20 minutes.

After the autolyse period the salt is then added and the dough is mixed for a further one to three minutes, unless it is a one day bread in which case the dough is mixed longer. Then the dough is bulk fermented. This is one way to handle a moderately wet type of dough.

For very wet dough like Ciabatta and some of the batter breads, a technique called double hydration can be used. The Double Hydration technique is covered by Michel Suas in his excellent, highly recommended book, “Advanced Bread and Pastry”. He recommends withholding part of the water from your initial dough while mixing, bringing your dough to 2/3 development then adding the rest of the water to the dough to slowly to bring it to the correct hydration. This allows the gluten to be sufficiently developed in wet dough. With traditional mixing methods it can be difficult to develop the gluten in wet dough; the dough spins around in your mixer and will not clump together enough to give itself a good workout, often resulting in undeveloped gluten. The Double Hydration Technique can overcome this problem.

My colleague, Liudmila Valls, uses the Double Hydration Technique by withholding the sourdough starter portion from the initial dough that is mixed. Then after 2/3 dough development she slowly adds the sourdough starter to the rest of the dough. Here are her stages of dough development for high hydration dough:



Here she develops the gluten to 2/3 of its development:

Next she slowly adds the sourdough starter or preferment part of the recipe:

This results in nicely developed dough:



Finally she adds any other bulky ingredients like cheese and onions for a Cheese Onion Batter Bread:



(These three pictures by Liudmila Valls)

This technique works really well especially for one day sourdough bread which is mixed and baked on the same day with a short bulk ferment.

For sourdough bread which requires a long bulk fermentation I would recommend bringing the gluten to less than 2/3 development before adding the rest of the sourdough starter portion. Allow the development of the dough to proceed to just when the gluten strands begin to bond together. Remember with sourdough the gluten continues to develop during the long bulk fermentation time, until after a very long period of time, it finally breaks the gluten down into a liquid. At that point of

course, it is overdeveloped. While using the stronger bread flours with some recipes, you will not need to use the Double Hydration Technique. Ciabatta bread mixed using the Double Hydration technique and using a strong (very high protein flour) bread flour might not obtain the desirable large holes. It might turn out a bit tough as well. If you find yourself with this problem try using up to one half All Purpose flour to weaken the protein level of the flour. Vigorous mixing will incorporate air bubbles which will end up expanding into the holes during baking. Another alternative is to use a longer Autolyse period before final mixing to break down the gluten somewhat (this is when the gluten is too strong).

HANDLING STICKY DOUGH

In the advanced recipe section you will be using some high hydration dough recipes. High hydration dough will be more difficult to handle than you might be used to. Make sure you have a dough scraper and keep your scraper and hands clean and free from excessive dough.

Handle the dough quickly and gently. Keep flour on any of the parts of the dough you will be handling but don't incorporate too much extra flour in the dough itself. Getting raw flour into mature dough can result in grey streaks throughout the finished bread. Don't be afraid of the dough. It is easy to handle once you get used to it. For a Ciabatta dough, pour the dough on a surface covered with plenty of flour, stretch and shape it into a long rectangle, keeping the top free from flour, then flip it over on itself so the sticky top is in the middle of the folded over dough. This will give you your "slipper" shape with flour on the top and bottom. Let the dough proof until almost done and then using the tips of your fingers, dimple the dough. Allow the dough to proof a bit longer and then lift the dough, stretch it gently with a tug along its length and place it on a floured peel. Next bake it. Very wet dough should be baked longer at a slightly lower temperature towards the end of the baking period to allow the center of the dough to get rid of the excessive moisture and give you a crisp, colorful crust.

To shape wet dough, divide and weigh the dough into separate pieces and then shape it into the general form you wish to use. Keep your working surface sprinkled with flour and handle the dough quickly and gently. Keep the outside of the dough covered in flour and try to have the inside sticky part of the dough always turning in towards itself while shaping. In other words, don't sprinkle the top of your piece of dough with flour and then try to fold it over on itself with the floured top in the middle of the shaped loaf. Keep the top portion of the dough sticky, reach under the dough and fold up the bottom of the piece of dough over on itself and pinch the dough on the opposite side. After you are done shaping the dough pieces into the general form you want, let the dough rest for 10 minutes. Then give them a final shaping and place them in floured and/or lined proofing baskets or a couche. For some really wet dough, one shaping is enough. For a round shaped loaf, fold all of the edges to the center, making a ball, then flip the dough over and let it rest for 10 minutes. Then using a push pull circling motion, round the dough into it's final form and place it in a

floured and/or lined round banneton or basket. There are many different ways to shape dough; they are hard to learn about from reading. Shaping dough is much more easily learned by showing. On the internet there are many videos showing methods of shaping dough that can be helpful.

One way to make very wet dough easier to handle, is to use the dough folding technique during bulk ferment. As the bulk ferment progresses and you fold the dough several times, you will notice that it is less sticky, easier to handle and becomes stronger. You can also use water on your hands and working surface to control sticky dough.

LOWER HYDRATION DOUGH

Some of the recipes in the advanced section will be lower hydration dough. They are included in the advanced section because they need more advanced handling techniques. Very wet dough is not the only way to obtain really large holes and an airy crumb. You can also obtain these objectives with very low hydration dough by using the techniques of dough folding and warm bulk

ferments, with a full proof before baking. Some of these kinds of breads also do well with slightly lower oven temperatures, and a longer baking time. Low hydration dough is easier to handle and you can do interesting things with it that you can't do very easily with high hydration dough; like make pretzel bread, which needs a soda water bath, shape twisted loaves, make bagels or bake up really large loaves.

Dough looks, acts and handles differently at different hydration levels. Here are some pictures of dough at different hydrations using only bread flour and water:

100%, 80%, 70% dough:



65%, 60%, 50% dough:



This dough has just been mixed, it has no added salt. Adding salt will stiffen the dough. Dough might look similar at the lower hydration levels when first mixed, but that can be deceptive. This test dough was mixed and set out for the test right away. If you had allowed the dough to bulk ferment for six hours, the dough would have looked different. This 70% or 80% dough looks like you might be able to handle it easily, but if it had fermented for six hours, it would have been much more difficult to handle. As it matures, dough feels less cohesive than when it is first mixed and the gluten softens and stretches. If you use the dough folding technique during bulk fermentation, the dough becomes easier to handle and not so sticky.

STAGGERING LOAVES FOR BAKING

In a commercial bakery many loaves are baked at the same time. The home baker can usually only bake one loaf at a time and therefore will need to stagger the loaves of bread. One way of staggering loaves is to keep the main portion of dough fermenting while you cut off, weigh and shape one loaf at a time. The timing would be whatever the length of baking time is plus the time necessary to reheat the oven between loaves. I usually use a shorter time than is necessary because most loaves tend to be underproofed and under-timing them will give them a longer time to proof. So

shape the first loaf, then maybe half an hour later, shape and start proofing the next loaf, etc. If your dough is refrigerated, take out one loaf at a time for its final proof and then take out the next loaf 30 to 40 minutes later. Staggering the loaves in this way will ensure that only one is ready to be baked at a time. If a loaf is waiting to be baked and looks like it is over-proofing, place it back in the refrigerator for a while to slow it down.

With the advanced sourdough recipes, you will learn to handle difficult or unusual dough. Have fun doing your own experimentation with timing, temperatures and ingredients, after all, each failure is just a step to success.

MOTHERDOUGH STARTERS

What is Motherdough?



I first saw the word “Motherdough” from an article I read about the Boudin Bakery of San Francisco. Their starter is stored in refrigerated containers. They call their starter, kept this way and used for all of their baking, a Motherdough. When I first made up a batch of Motherdough and then baked with it, my response was, “Oh wow this is really amazing!”

Now I use Motherdough in many of my breads and have incorporated it as the main ingredient in several recipes.

Motherdough is a sourdough starter kept at a lower hydration than a more typical sourdough starter (which is usually kept at

100% hydration to 166% hydration) and is more like dough than a batter. Hydration anywhere from 50% – 80 % can be used for a Motherdough. Motherdough is kept in a container in a cool environment. At home you can keep a Motherdough in a refrigerator. It is good to have a small separate refrigerator that you can set to a slightly warmer temperature between 44–48F/6.7-8.9C degrees than the more common refrigerator temperature of 40F/4.4C degrees. However, 40F/4.4C degrees will work for a Motherdough since it is not kept long term.

I decided to experiment with Motherdough by making up a batch of dough at 80% hydration and inoculating it with a vigorous starter that was already established. For my experiments, I used the Northwest Sourdough starter. First I found a nice little 1 gallon container with a lid that did not seal tightly. Then, making sure the regular established starter was well fed and vigorous, I used:

- **9 oz (about one cup) of starter at 166 % hydration. To turn that into an 80% hydration Motherdough, you would need to add:**

- **8 oz water (about one cup)**
- **13.6 oz of flour (about 3 cups if your flour weighs 4.5 oz/cup).**

Mix all of the above ingredients well. That will bring your wet starter to a drier hydration of 80%. Once you have your Motherdough mixed up, let it set out at room temperature for about three hours and then keep it in the refrigerator until it is used. Another variation is to refrigerate it right away and keep it cold from the beginning. A Motherdough starter kept cold will slow down the growth of the yeasts and allows the bacteria a chance to grow. Bacteria will grow at lower temperatures than the yeasts. It also allows more sugars to be available later during proofing and baking, since the yeast gets less time to feast on it.

A Motherdough is best if you let it ferment at least two to three days in the refrigerator, but be sure to use it within 5 days. If you don't use it within 5 days or so, the gluten in the dough will break down completely and turn into a gooey, gluey mass which you do not want to use for making your bread. It cannot be recovered, don't bother trying to use it as your bread will be flat,

dense and the dough will be sticky and sluggish. Motherdough with added salt can be fermented in the refrigerator longer. This salt technique is covered later in this chapter.

If you haven't used your Motherdough within five days, pour all of it out except about ½ cup and then feed it again with 10 oz of flour and 8 oz of water, leave it out for four hours again, then refrigerate. Wait



a couple of days before using. You don't need to leave the Motherdough out each time you feed it unless you want to kick start it for baking sooner.

If I am not planning to use my Motherdough soon, I feed it and immediately place it back into the refrigerator. I try to use Motherdough two or three days after feedings as it is the most vigorous at that time, especially on day 3.

Motherdough kept at lower hydration like 50% - 60 % will take longer to reach its peak in the refrigerator.

Breads made using Motherdough have some wonderful qualities that are lacking in other breads. There is a complexity of flavor, the most wonderful smell and a deep reddish color to the crust that make these kinds of sourdough breads very appealing. They are not usually very sour, but somewhat mild and slightly tangy. The taste is incredible. You would have to try baking with a Motherdough starter to understand. To obtain a sour flavor, using Motherdough, you would need to work on the technique, with a long cool retarding of the dough and a warm up cycle in the final proof. It also helps to have some rye or whole wheat, or use some diastatic malt in the dough to bring out the flavor and sour. The salted Motherdough technique also helps increase the sour tang.

A higher hydration Motherdough that is fairly wet is easier to incorporate into the final dough during mixing and will give a sweeter, milder flavor. To use a high hydration Motherdough, add it to the mixer first before adding the other ingredients.

A lower hydration Motherdough is capable of a greater sour but is harder to work with because of the developed gluten. There are a few different ways to incorporate a low hydration Motherdough (50% - 60 %) into the final dough. You can mix the rest of the dough first keeping out one cup of flour and then after autolysis is over, add the salt. Then add the last cup of flour, mix, and then add chunks of Motherdough to the dough last. Leaving out the last cup of flour allows the dough to be wet enough to dissolve the salt after autolyse, in a low hydration dough.

Another method of mixing Motherdough is to mix up the first part of the dough completely including the salt. Let the dough set for 20 minutes and then add chunks of the Motherdough to the rest of the dough and meld the two doughs together. You don't really need to autolyse when you have a Motherdough in large amounts as part of the dough. This is because the Motherdough itself has been autolysed for a long time in the refrigerator. The easiest way to add Motherdough that is low in hydration to your dough is to break the Motherdough into chunks and put them in your mixer. Then add the liquids, flours and salt, mixing all together at the same time.

MOTHERDOUGH DIRECTIONS

Motherdough Directions
80 % hydration dough
(will make 1pound 0.8 oz/ 476.3 g of Motherdough)

Stir together:

- 166% hydration starter – 4 oz or 113.4 g
- water – 5 oz or 141.8 g
- Bread flour – 7.8 oz or 221.1 g

Let Motherdough set out at room temperature for about three hours. Then refrigerate and let ferment for two or three days. Use for baking.

After using, feed with:

- water – 8 oz or 266.80 g
- Bread flour – 10 oz or 283.50 g

If not used within five days, pour out all but one cup and feed with 8 oz water and 10 oz flour then refrigerate for use in next baking.

If there is too much Motherdough, cut the ingredient amounts in half.

Motherdough Directions
70 % hydration dough
(will make 1 pound 2.2 oz/ 516.0 g of Motherdough)

Stir together:

- 166% hydration starter – 4 oz or 113.4 g
- water – 5 oz or 141.8 g
- Bread flour – 9.2 oz or 260.8 g

Let Motherdough set out at room temperature for about three hours. Then refrigerate and let ferment for two or three days. Use for baking.

After using, feed with:

- Water – 7 oz or 198.45 g
- Bread flour – 10 oz or 283.50 g

If not used within five days, pour out all but one cup and feed with 7 oz water and 10 oz flour then refrigerate for use in next baking.

If there is too much Motherdough, cut the ingredient amounts in half.

Motherdough Directions

60 % hydration dough

(will make 1 pound 4.0 oz/ 567.0 g of Motherdough)

Stir together:

- 166% hydration starter – 4 oz or 113.4 g
- water - 5 oz or 141.8 g
- Bread flour - 11 oz or 311.9 g

Let Motherdough set out at room temperature for about three hours. Then refrigerate and let ferment for two or three days. Use for baking.

After using, feed with:

- Water - 6 oz or 170.10 g
- Bread flour - 10 oz or 283.50 g

If not used within five days, pour out all but one cup and feed with 6 oz water and 10 oz flour then refrigerate for use in next baking.

If there is too much Motherdough, cut the ingredient amounts in half.

Motherdough Directions

50 % hydration dough

(will make 1 pound 6.5 oz or 637.9 g of Motherdough)

Stir together:

- 166% hydration starter – 4 oz or 113.4 g
- water - 5 oz or 141.8 g
- Bread flour - 13.5 oz or 382.7 g

Let Motherdough set out at room temperature for about three hours. Then refrigerate and let ferment for two or three days. Use for baking.

After using, feed with:

- Water - 5 oz or 141.8 g
- Bread flour - 10 oz or 283.50 g

If not used within five days, pour out all but one cup and feed with 6 oz water and 10 oz flour then refrigerate for use in next baking.

If there is too much Motherdough, cut the ingredient amounts in half.

Breads made from Motherdough:



SALT CONTROLLED FERMENTATION

A MOTHERDOUGH VARIATION

Adding salt to cold fermented dough (or any dough) delays fermentation. Salt inhibits the growth of yeast, bacteria and enzymes. Salt inhibits an enzyme called Protease and keeps it from breaking down the gluten. The salt will keep the gluten from liquefying as quickly as it otherwise would. The testing I've done on salt controlled fermentation with Motherdough has been interesting. A 60% hydration Motherdough with no added salt had already started to break down and was very sticky by day two at 44F. Another 60% Motherdough with 2% salt added during mixing was still pliable and smooth on day seven. It took several days for the acidity to be noticeable; also the growth of the yeasts was very slow. This slowing down of the fermentation is really interesting because you can ferment at an extremely slow rate using cold temperatures. This enables you to keep a Motherdough a longer time before throwing it away and it allows a slowed down version of cold fermentation.

The effect on the gluten when using salt controlled fermentation has been positive. It allows me to have 72 hours after mixing, until baking for long fermented types of San Francisco Sourdough bread. I am able to slowly bring the dough up to room temperature and then warm it up even further in my proofing cabinet (dishwasher). I have found that an initial autolyse period before adding the salt seems to encourage the necessary bacteria. The dough should be mixed without the salt, autolysed and then the salt added. You can ferment for a while at warmer temperatures during autolyse or refrigerate it right away. Since it is the Protease enzymes we are trying to inhibit and not the Amylase enzymes which speed along fermentation and help break down starch into sugar, adding some Diastatic malt to a salt fermented Motherdough starter is a way to jumpstart the fermentation but still have the Protease inhibited. Add up to 1 teaspoon (.2 oz/5.7g) of Diastatic Malt per 2 lbs (907g) of dough to experiment with. A recommended amount of salt to use in the dough would be up to .1 oz or 2.8 g (about ½ teasp) per pound of Motherdough. You would need to subtract the amount of salt from the main dough when mixing, the

same would be true if you are adding Diastatic Malt, the amount would need to be subtracted from the final dough if using a recipe calling for Diastatic Malt.

Let's figure out how to add 1.6 % salt to a 60% motherdough. For 1 lb 4 oz of 60% motherdough, which is shown in the 60% table, add:

- **4 oz of your 166% starter**
- **5 oz of water**
- **11 oz of bread flour**
- **.2 oz of salt.**

This would be 1.6 % of the flour weight. To find this percentage:

There would be 1.5 oz of flour in the starter and 11 oz of bread flour. That would give you 12.5 oz of flour. Then multiply .2 (the amount of salt) x 100(%) divide that by 12.5 (the flour) and it equals 1.6%

In my experiments using around 2% salt in 60% Motherdough, I have been able to extend the fermentation time quite a bit. By day 7 the Motherdough is noticeably acid and the dough is still smooth and strong. A Motherdough without salt would be ready

to throw away on day 5 or 6. Since salt slows down fermentation quite a bit, you have to wait longer to use the motherdough as it will not be ready by day 3 like it would be in a saltless motherdough. Using a salted motherdough with very long fermentation may be a way to increase the sour flavor in your bread without the usual breakdown of the gluten. However, you would need to allow the initial pre-ferment or "seed starter" to get really sour. A seed starter is a starter made and soured for first time use. After the first complete dough is mixed up using the sour preferment or seed starter, save some of the dough and allow it to sour for several days before using it to make your next batch of dough. This saved dough is called, "Pate Fermente."

When you make delayed fermented dough, with or without salt, you have CO₂ saturating and dissolved into the dough, so that when the dough comes in contact with a really hot oven and baking stone, the Co₂ quickly expands and creates a somewhat dense crumb, but a crumb full of large open holes. This bread has a very pleasing sweet flavor, open, holey crumb and terrific crust. When you place the dough onto the baking

stone it is uninspiring and a bit flat looking, but within minutes, it has expanded and blown up into a puffy fat loaf. It is amazing to watch this happen in your oven. Here is a picture of Pane Teresa popping in the oven:



DIASTATIC MALT ENZYMES

Another addition to salt controlled, fermented dough is Diastatic Malt. Diastatic Malt is made from sprouted barley which has been dried and powdered. It is full of enzymes that help break down the starch into sugars which the yeasts feed on resulting in the formation of alcohol and carbon dioxide (gas bubbles). In white flour, many of the enzymes that were present in the germ are removed when it is refined. Although some enzymes are usually added back to bread flour, it often isn't enough for producing the sought after, very sour flavored breads. There isn't a problem obtaining a great sour flavor in whole grain breads because of the abundant enzymes available.

If you read the ingredients on the side of a loaf of San Francisco Sourdough bread, you will see that barley flour or malted barley flour (diastatic enzymes) is often added to the bakery bread flour. Bakeries have flour blended to their specifications. The amount of malt flour (diastatic malt) added is controlled by their needs. The bread flour they use is also high in protein to withstand the long fermentation and the

action of the enzymes on the gluten. To produce a sour loaf of bread reminiscent of San Francisco Bread, you will need good strong bread flour and some Diastatic malt powder. The amount of malt added is approximately .5 % of the total flour weight of the recipe. That turns out to be about 1 teaspoon per two pound loaf. If you try to add more than that amount, you could end up with sticky, unmanageable dough. Since some flours have diastatic malt added already, experiment with the amount to use in your baking. If .5% gives you sticky unmanageable dough, cut the amounts down to ½ teaspoon per loaf of bread or maybe .3 % of the total flour weight.

SAN FRANCISCO SOURDOUGH MADE WITH SALT CONTROLLED FERMENTATION:

The recipe for Salt Fermented Sourdough is in the **Advanced Recipe** Section. Here is the method used:

Day 1: Make your seed starter:

The dough is allowed to autolyse before the salt is added , it is fermented in a warm space for a period of time and then refrigerated in covered container.

Day 2: through day 3-4, keep dough refrigerated and take out once each day to knead the dough and fold it over a few times on itself. Then cover it again and refrigerate.

Day 4-5: Take out your salt fermented Motherdough, it should be somewhat bubbly now, and have a nice smell. Break it into small chunks and add it to your mixing bowl. Add the rest of the ingredients and mix up your dough.

Allow dough to ferment for 4-5 hours. Then refrigerate the dough in a covered container until the next evening.

Day 6: Around 5:00 pm in the evening, take out your cold dough and weigh out two pieces at two pounds each. Place the rest of the dough back into the container and refrigerate 3 - 5 days more until you mix your next batch of dough. The two pieces of 2 lb dough should be placed in a covered container and allowed to warm up for an hour then shaped and placed in a cloth lined banneton or basket. Cover the basket with a plastic bag and refrigerate overnight. (Alternately make up one loaf on day six and the second loaf on day 7, the second loaf0

6 will be more sour)

Day 7: Take out the proofing dough staggered 30 minutes apart. Warm up and finish proofing. Bake using the Roasting Pan method for steaming.

Day 8: (Next day) The bread is at it's most sour.

After this initial long 7 days the schedule will look more like this:

Day 1: Take out Pate Fermente which has fermented for 3-5 days (just long enough for

the other bread to get eaten up). Mix dough and bulk ferment six hours. Refrigerate.

Day 2: Take dough out at 7:00pm and shape. Cover dough and refrigerate overnight.

Day 3: Bake. Eat. Yumm!

This timetable can be pushed an extra day with the dough made up and then allowed to ferment and additional day before shaping.

If you count the three days the "Pate Fermente" ferments and then the three days after the dough is mixed until it is baked, you could say it is a long fermented dough!

You can experiment with the Pate Fermente and see how long you can let it ferment to make really sour flavored bread. Once Pate Fermente has started to break down it's gluten, it will look like this:



This is still good to use. It is once the dough begins to look and feel like glue that it is too far gone.

The idea behind this dough is to inhibit the Protease enzymes by adding salt and encourage the Amylase enzymes by using Diastatic Malt. The gluten will not degrade as quickly and will last through very long ferments.

With cold fermented dough and salt controlled fermentation, you can see that Motherdough is an extremely interesting sourdough to work with. The recipe for Salt Fermented Sourdough is in the Advanced Recipes section.

Salt Fermented Sourdough:





MORPHING SOURDOUGH STARTERS

Morphing sourdough starters means to morph or combine two or more different starters in the same dough. To do this you need at least two different kinds of starters, preferably a white starter and a whole grain starter. The starters are used together in the same dough. When two starters are morphed in the same recipe, there is often vigorous activity with the combined starters.



This works especially well when making up a batch of white dough for a hearth breads like, Italian, French or a crusty type of loaf. You would use the regular vigorous white starter and add a percentage of whole wheat or rye or maybe

a spelt starter. You would then have a well developed grain flavor added to your dough and vigorous dough. This also works well when using Motherdoughs. Motherdough is a cool fermented starter kept at a lower hydration than the usual starter. Using part Motherdough and part whole wheat starter is a good morph combination. Another good morphing combination for a batch of sourdough of at least four pounds, is to add 12 oz of liquid starter (166%) and 6 oz of a thicker 100% hydration starter like a rye starter. It is somewhat like making up a batch of sourdough and adding the second starter as an extra for flavor. The thicker starters will bring the prefermented whole grain flavor and extra sour to the dough. As already mentioned, it will also contribute to a reaction with the main starter to produce vigorous activity. I find morphing sourdough starters to be fun and interesting. You can combine or fine tune flavors by adding ripened starters, like Rye, Wheat or Spelt. You can even combine all of the above starters to see what the combination will bring. A whole grain recipe will also benefit from morphing. Adding a motherdough starter to a whole grain sourdough bread, will add not only

vigor, but the enhanced full flavor that motherdough brings to every loaf. Combining perhaps a Rye bread starter with a Whole wheat or Desem starter, will enhance the full flavor of the Rye and bring to the loaf, a complex mingling of Rye and Wheat. The secondary starter is best if fed and allowed to ferment for at least two to three days under cool conditions. When you morph sourdough starters, I find that there is often a frenzy of activity in the morphed starters. However, it seems as if a morphed starter uses up it's oomph quicker too. That usually happens when the starters are combined in large quantities (say 50/50) with each other. If you use a small amount of one starter, say the whole grain starter and you combine it with a white starter in smaller amounts (25/75 etc), you will still have the pre-fermented whole grains added to your dough, some extra activity, but a longer proof as well.

The Morphing technique is a variation of the Grain Preferment Technique. In morphing, use the starters you already have available and which you keep vigorous by regular feeding.

In the Grain Preferment Technique, you make sure to incorporate the whole grains

of the recipe, into a preferment before adding to your final dough.

Pre-fermenting the whole grains allows the full flavor of the grains to be brought out, breaks down the indigestible parts of the grain so it becomes more digestible, and adds to the extensibility of the dough. There is also an increase in enzyme production, which may need to be controlled with the addition of a small amount of salt during pre-fermentation time. Too much enzymatic activity can break down the gluten, causing sticky, unmanageable dough and may cause the sugars in the dough to be used up too quickly. Like all other aspects of sourdough baking, there must be a balance in order to optimize the full potential of the outcome (terrific bread).

Some of the recipes which include the morphing technique are Pane Peal, Rosemary Potato Bread and Austrian Morph.



Rosemary Potato Bread



Pane Pearl



Austrian Morph

ADVANCED RECIPES



ALASKAN SOURDOUGH



Alaskan Sourdough Bread is a slightly sweet, mild bread much like a Shepherd's bread. This recipe makes 4 lbs 6 oz of dough. It should make up two nice sized loaves weighing about 2 lb 3 oz each. This dough is 67 % hydration.

To your mixer add:

Ingredient	Volume 2 loaves	Standard 2 loaves	Metric 2 loaves	Bakers %
Sourdough Starter	2 cups	18 oz	510 g	44.2 %
Water	1 ½ cups	12 oz	340 g	29.4 %
Evaporated Milk	½ cup	4 oz	113 g	9.8 %
Sugar	2 TBSP	1 oz	28 g	2.5 %
Melted Butter	2 TBSP	1 oz	28 g	2.5 %
Bread Flour	7 ¾ cups	2 lbs 2 oz	964 g	83.4 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 6.8 oz	4 lb 6.8 oz	2007 g	173.7%

Total Flour Weight	2 lb 8.8 oz	2 lb 8.8 oz	1155 g	100.0 %
Total Water Weight (hydration)	1 lb 11.4 oz	1 lb 11.4 oz	777 g	67.3%

Mix all ingredients together except salt, just until incorporated (about 2- 3 minutes) and then allow the dough to rest for 20 minutes (autolyse). After autolysis, add the salt. Then mix dough on low speed for about 2 minutes. Allow the dough to ferment for about 4 - 6 hours or until doubled. After bulk fermentation, pour out the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into two pieces. Shape loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). After resting shape loaves into their final shapes and put them into the proofing baskets or lined bowls. Let the dough set out for about 1/2 hour and then put the loaves, still in their baskets, into a plastic bag and into the refrigerator.

In the morning, take out the loaves one at a time about 30 minutes apart, and allow the dough to final proof for 1 - 2 hours and then slash, spray once and cover with a roasting lid which has been preheated in a 425F/218C degree oven. To make the distinctive slash markings, push your thumb into the middle top of the loaf all the way to the bottom.

Then make four slashes around the edge of the hole. Bake for 20 minutes. Make glaze during this time- (see below). After the 20 minutes, take off the roasting lid, being careful, as hot steam can escape. Then turn down the oven to 400F/204.4C degrees and continue baking for about 15- 20 more minutes, turning halfway for even browning (for glazing the crust, see below). Turn oven back up to 425F/218C and put your roasting lid back in for the next loaf.

Cool. Eat with lots of butter.

To glaze the bread, follow the direction for making the glaze when you start baking the first loaf. During the last eight minutes of the bake, brush the glaze all over the crust three times spaced about two minutes apart. Finish the bake, cool, enjoy !

The glaze:

- ❖ 1/2 cup water
- ❖ 3/4 teaspoon corn starch
- ❖ 3/4 teaspoon sugar

To make the glaze, add sugar and cornstarch to the water and boil for one minute, take off burner and cool.

CIABATTA



Ciabatta Loaf made with a traditional starter

**This recipe is started in the evening around 5:00pm:
In your dough mixer add:**

- 18 oz 166% vigorous starter
- 6 oz water
- 3 oz canned milk
- 1 Tablespoon Oil (.5 oz)
- 2.5 teaspoons salt added after autolyse(.5 oz)
- 1 lbs 6 oz of bread flour

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter @ 166%	2 cups	18 oz	510 g	62.6 %
Water	¾ cup	6 oz	170 g	20.9 %
Canned Milk	¼ cup + 2 TBSP	3 oz	85 g	10.4 %
Oil	1 TBSP	0.5 oz	14 g	1.7 %
Bread Flour	4 + ¾ cups	1 lbs 6 oz	623 g	76.5 %
Salt (add after autolyse)	2 ½ teasp	.5 oz	14 g	1.7 %
Total Dough Weight	3 lb 2.0 oz	3 lb 2.0 oz	1417 g	173.8 %

Total Flour Weight	1 lb 12.8 oz	1 lb 12.8 oz	815 g	100.0 %
Total Water Weight (hydration)	1 lb 4.2 oz	1 lb 4.2 oz	573 g	70.3%

You will be able to make about 2 loaves at 1 lb 9 oz each and the finished dough is at 70% hydration.

Mix together all ingredients (except the salt), for about three minutes on low/medium speed in your mixer. Then let dough set for 20 minutes (autolysis). Add the salt and mix the dough for 5 more minutes, using the lowest speed on your mixer.

Place the dough in a folding trough and let dough ferment for 4 hours at room temperature. Once an hour, stir or fold the dough over on itself. After the dough is done bulk fermenting, place in the refrigerator overnight in a covered container. Next morning allow the dough to warm up either at room temperature for two hours or in a proofing box (dishwasher) for one hour at around 80-90F/ 26-32C degrees. When the dough is warmed up pour it onto a very well floured surface. This dough is like a thick batter. Measure out about 1 lb 8 oz of dough for each loaf and pour this sticky lump out onto the heavily floured surface. The dough will be like a thick blob on top of the flour.

Now fold the dough over on top of itself, keeping your hands only on the floured parts of the dough, it will stiffen up somewhat. You do not want to knead this dough because you want to avoid adding too much flour to the wet dough.

Just keep plenty of flour on the surface of the dough to keep it from sticking to the table, if it does stick, peel it off with your pastry scraper. Place dough onto a floured baking sheet or a heavily floured couche. When both loaves are shaped, let proof for about 1 - 1.5 hours.

Once the loaves are nice and puffy, dimple the dough with your fingertips, pressing them into the dough to flatten it somewhat.

Just before putting the dough into the oven, take the loaf and stretch it out a small amount lengthwise, then bake in a preheated oven at 450F/232C degrees for 15 minutes, turn loaves around and turn oven down to 425F/218C for another 15- 18 minutes or until a deep golden brownish red.

You can place your baking sheet directly onto the baking stone, or you can slide the loaves off of the pan and directly onto the stone (if you pan is flat with no sides. If you use a couche, turn out your loaves onto a well floured peel and place into the hot oven directly onto the hot stone.

If you can cover the dough with a roasting lid for the first 12 minutes, that would work even better, however, don't spray the loaves with water, just allow the steam from the dough to do the job. Cool loaves and then slice and serve with lots of butter.

DILL RYE



This is an easy rye bread for those who are hesitant about using rye flour. It has plenty of bread flour but is also higher in hydration so you can actually get a nice holey rye bread. It has a wonderful flavor.

Around 2:00 pm add to your mixer:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Sourdough Starter	2 cups	18 oz	510 g	44.9 %
Water	2 cups	16 oz	453 g	39.9 %
Molasses	2 TBSP	1.5 oz	42 g	3.7 %
Oil	2 TBSP	1 oz	28 g	2.5 %
Rye Flour	3 cups	10.8 oz	306 g	27 %
Bread Flour	5 cups	1 lbs 6.5 oz	637 g	56.2 %
Onion Powder	1/2 teasp			
Onion Flakes - toasted	2 TBSP			
Dill Seeds	2 TBSP			
Caraway Seeds	1 TBSP			

Rubbed Dry Dill	1 TBSP			
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 6.6 oz	4 lb 6.6 oz	2001 g	176.2%
Total Flour Weight	2 lb 8.1 oz	2 lb 8.1 oz	1136 g	100.0 %
Total Water Weight (hydration)	1 lb 11.5 oz	1 lb 11.5 oz	780 g	68.7%

Mix together on a medium speed all ingredients except salt, just until incorporated, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolyse, add the salt and mix dough on low speed for one more minute. Now let the dough bulk ferment for about 4 hours. After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times, then gather into a ball.

Divide the dough into approximately 2 pieces weighing a little over 2 lbs each. Shape and place in bannetons and cover with plastic bags. Refrigerate the dough overnight. In the morning take out the dough one by one 30 minutes apart. Allow the dough to proof for one half to two hours or until done proofing. Preheat oven to 425F/218C degrees.

When ready to bake, turn dough out onto peel and slash. Place dough onto hot baking stone, spray with water all over the dough and cover with preheated roasting lid. Bake at 425F/218C degrees for 20 minutes. After the 20 minutes, take off the roasting lid and set the lid on top of your oven. Turn down the oven to 400F/204C and continue to bake for another 15-20 minutes.

When bread registers 200-205F/93-96C on an instant read thermometer, take out the bread and place on cooling rack. Put the roasting lid back into the oven and heat the oven to 425F/218C before baking next loaf. Cool your Dill Rye completely before slicing. Rye bread is better the next day.

GRIFFIN'S BREAD



This recipe is named after my grandson, Griffin Greenway. It is a lower hydration dough using a warm ferment to bring out the sour flavor and airy crumb. This bread is terrific!

This bread uses a 60% Motherdough. Motherdough needs to be made three to four days in advance. To make the 60% hydration Motherdough, combine the first three ingredients below and then allow the Motherdough to ferment at room temperature for 3 - 4 hours. Then place the dough into a lightly covered container and refrigerate at least 3 days before using.

Substitute 1 oz of whole wheat flour for 1 oz of the bread flour, to the motherdough to raise the ash content of the dough and promote a sour flavor.

60% hydration Motherdough	Standard	Metric	Bakers %
166% Starter	6 oz	170 g	36.9 %
Water	6 oz	170 g	36.9 %

Bread Flour	14 oz	396 g	86.1 %
Total Dough Weight	1 lb 10 oz	737 g	159.9 %
Total Flour Weight	1 lb 0.3 oz	460 g	100%
Total Water Weight (hydration)	9.7 oz	276 g	60 %
After use feed with:			
Water	6 oz	170 g	
Bread Flour	10 oz	283 g	

Use powdered Diastatic Malt which is rich in live enzymes,

To make up Griffin's Bread:

Start this at 12:00 – 1:00 pm

Ingredient	Standard 2 Loaves	Metric 2 Loaves	Bakers %
60% Motherdough	1 lb 5.3 oz	604 g	54.2 %
Water	16 oz	453 g	40.7 %
Bread Flour	1 lbs 10 oz	737 g	66.1 %
Diastatic Malt Powder	.2 oz (about 2 teaspoons)	5.7 g	0.5 %
Salt (add now)	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 0.3 oz	1814 g	163.1%
Total Flour Weight	2 lb 7.3 oz	1112 g	100.0 %
Total Water Weight (hydration)	1 lb 7.9 oz	679 g	61%

Add the Motherdough in chunks to your mixer. Then add the rest of the ingredients including the salt. Mix on medium speed until the ingredients are incorporated. Then allow the dough to rest for 20 minutes to rest. After the 20 minutes rest, mix dough for another 3 minutes.

Then put the dough into a folding trough or large container and bulk ferment the dough in a warm place (80 - 90F/26-30C) for 4 hours.

I use my dishwasher to keep the dough warm. Simply put a thermometer in your dishwasher, turn the dishwasher to the heating/drying cycle for five minutes (use a timer), when the thermometer is between 80 -90 degrees F, turn off the dishwasher and pour a cup of water into the bottom of the dishwasher for humidity.

Then put your dough, which is in the folding trough, into the dishwasher. Make sure to keep a lid on the trough. Fold the dough once each hour (see section on dough folding). Each hour when you fold the dough, check the temperature, and if needed, set your timer and heat the dishwasher again for five minutes, if necessary.

After bulk fermentation, divide the dough into two pieces about 2 pounds each, and then gather each into the general shape you desire. Let dough bench rest for five minutes and then do a final shaping of the dough.

Place the shaped dough into Semolina floured bannetons. Put the bannetons containing the shaped dough into plastic bags and refrigerate overnight for 12 - 15 hours. Next day take out each dough one at a time, staggering by 30 minutes so that they are not both ready to bake at the same time. Allow the dough to proof for about one more hour (it may take longer) in a warm place (80- 90F) until the dough is almost doubled and puffy looking. During this last proofing hour, make sure your oven, baking stone and roasting lid are preheated to 425F/218C degrees.

When the dough is proofed, turn it out onto a semolina floured peel, slash the dough and slide the dough onto your hot baking stone.

Next, spray the dough once, quite well, all over, then using the roasting pan method bake at 425F/218C degrees for 20 minutes. After the first 20 minutes, take off the roasting lid, turn the oven down to 400F/ 204C and let the bread bake another 20 minutes. Turn loaf during the last 10 minutes for even browning.

Dough should register about 200-205F/93-96C internal temperature on a thermometer when done.

Motherdough ready to use:



In the folding trough:







HEARTH FLAXSEED LOAF



This hearty hearth loaf is a mixture of whole grains and seeds and is lightened with bread flour. This is a 67% dough but isn't really that wet because of the whole grains in it.

Start this recipe in the afternoon about 1:00pm.

Before you start, take $\frac{1}{4}$ cup coarse ground whole wheat - 1.5 oz and pour $\frac{1}{4}$ cup boiling water- 2 oz over it, let cool.

Then in your mixer combine:

- ❖ 2 cups active sourdough starter - 18 oz
- ❖ 2 cups warm water - 16 oz
- ❖ 2 TBSP Oil - 1 oz
- ❖ 2 TBSP malt syrup - 1.6 oz
- ❖ $\frac{1}{4}$ cup cornmeal - 1.2 oz
- ❖ $\frac{2}{3}$ cup rye Flour- 2.4 oz
- ❖ 3 cups whole wheat flour - 12.6
- ❖ $\frac{1}{3}$ cups bread flour 1 lb 3.4 oz
- ❖ 4 teaspoons salt (add salt after autolyse) - .8 oz

Process ingredients in your mixer on speed two or medium speed, for about two minutes, until ingredients are incorporated. Then Autolyse for 20 minutes. After Autolyse add salt and mix for another two minutes. Next, bulk ferment for 6 hours at room temperature. While bulk fermenting you can either use a dough folding trough (see Dough Folding) or keep the dough in your mixer and fold the dough once each hour. If you keep your dough in your mixer, turn your mixer on low and spin down the dough once an hour using only three turns of the hook. After the bulk ferment is up add the following ingredients:

- ❖ ¼ cup Flax Seeds - 1.5 oz
- ❖ ¼ cup Millet Seeds - 1.9 oz
- ❖ Coarse ground wheat w/boiling water

Mix the seeds and wheat into the dough well, either by hand or on low speed if you kept your dough in the mixer.

Place dough on rye floured surface, knead a few times (just enough to gather into a ball), divide dough into two pieces. Shape the dough into the general shape you wish it to be and let it rest for 5 - 10 minutes. Then do a final shaping of the loaves and place them into proofing bannetons or baskets lined with a proofing cloth and sprinkled with rye flour. Cover the whole basket with a plastic bag.

Refrigerate overnight. In the morning take out your loaves 40 minutes apart and let them warm up until proofed and ready to bake (1.5 - 3 hours). If you want to put Flax seeds on the top of the crust: beat one egg with one Tablespoon of water, brush this egg mixture over the loaves and sprinkle with Flax seeds. Slash dough. Place dough in a preheated 425F/218C degree oven, onto a hot baking stone. Working quickly...

Spray the dough all over once with water, and then cover the dough with a roasting lid which has also been preheated in the oven. Bake for 20 minutes, then take off the roasting lid and turn down the oven to 400F/204C degrees.

Continue baking for 20 -25 more minutes, turning the loaf once for even browning. The bread should register 200-205F/93-96C degrees on an instant thermometer. For the next loaf, turn the oven back up to 425F/218C degrees and put the roasting lid back in to preheat until the loaf is ready to go in. Bake the same as the first loaf. Cool and enjoy slathered with fresh butter. This bread makes terrific toast and sandwiches.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Mix together in mixer:				
Sourdough Starter	2 cups	1 lb 2 oz	510 g	41.0 %
Water	2 cups	16 oz	453 g	36.5 %
Oil	2 TBSP	1 oz	28 g	2.3 %
Malt Syrup	2 TBSP	1.6 oz	45 g	3.6 %
Cornmeal	¼ cup	1.2 oz	34 g	2.7 %
Rye Flour	2/3 cup	2.4 oz	68 g	5.5
Whole Wheat Flour	3 cups	12.6 oz	357 g	28.7 %
Bread Flour	4 1/3 cups	1 lb 3.4 oz	550 g	44.2 %
Cracked Wheat	¼ cup	1.5 oz	42 g	3.4 %
Boiling Water	¼ cup	2 oz	56 g	4.6 %
Seeds (Millet, Flax)	¼ cup each type seed	3.4 oz	96 g	7.8 %
Salt (add after autolyse)	4 ½ teasp	.9 oz	25 g	2.1 %
Total Dough Weight	5 lb	5 lb	2268 g	182.4%
Total Flour Weight	2 lb 11.9 oz	2 lb 11.9 oz	1198 g	100.0 %
Total Water Weight (hydration)	1 lb 13.7 oz	1 lb 13.7 oz	842.4 g	67.7%

LIGHT ONION RYE



Here is a rye bread for those times you don't want to pre-ferment. This is a higher hydration rye bread to help obtain a holey crumb, it makes approximately 4 lbs.

In your dough mixer add:

- ❖ 2 cups vigorous sourdough starter at 166% hydration - 18 oz
- ❖ 1 ³/₄ cups water - 14 oz
- ❖ 2 Tablespoons Oil - 1.0 oz
- ❖ 1 Tablespoon Malt syrup - 0.8 oz
- ❖ 3 Tablespoons dried onion flakes - .6
- ❖ 2 Tablespoons Caraway seeds - 0.5 oz
- ❖ 1 ¹/₂ teaspoons granulated onion - .1
- ❖ 3 ¹/₂ teaspoons salt - .7 oz
- ❖ 2 cups Rye flour - 7.2 oz
- ❖ 2 cups Whole Wheat flour - 8.4 oz
- ❖ 3 cups Bread flour (approximately) - 13.5 oz

Mix together all ingredients except salt for 2 - 3 minutes until well mixed. Autolyse and then add salt. Mix for one more minute to mix in the salt. Let proof for 4 - 6 hours or until doubled. Pour dough out on lightly floured (Whole Wheat or Rye flour works best) surface and knead into a ball about 4 to 5 kneads.

Separate into two pieces and form each part into a loaf. Place loaves upside down in bowls or baskets lined with a proofing cloth and sprinkled with Rye flour. Cover with a plastic bag and place in the refrigerator overnight. In the morning take out each loaf 40 minutes apart, uncover and let rise (2 - 3 hours or until ready). As each

loaf is done proofing, sprinkle the bottom with flour, turn right side up onto a peel. Then slash the dough while it is still on the peel, slide it into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees. Continue baking for 18 - 25 more minutes or until your bread thermometer reads 200-205F/93-96C. Turn the loaf halfway through the last baking period for even browning. Cool. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five - ten minutes or until the loaf is ready to go in.

Cool and eat with fresh butter.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
166% Starter	2 cups	18 oz	510 g	50.2 %
Water	1 ¾ cups	14 oz	397 g	39.0 %
Oil	2 TBSP	1 oz	28 g	2.8 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.2 %
Toasted Dried Onion Flakes	3 TBSP	.6 oz	17 g	1.7 %
Caraway Seeds	2 TBSP	.5 oz	14 g	1.4 %
Granulated Onion Powder	1 ½ teasp	.1 oz	2.8 g	0.3 %
Rye Flour	2 cups	7.2	204 g	20.1 %
Whole Wheat Flour	2 cups	8.4	238 g	23.4 %
Bread Flour	3 cups	13.5 oz	382 g	37.6 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19.8 g	2.0 %
Total Dough Weight	4 lb 0.8 oz	4 lb 0.8 oz	1837 g	180.7%
Total Flour Weight	2 lb 3.9 oz	2 lb 3.9 oz	1016 g	100.0 %
Total Water Weight (hydration)	1 lb 9.5 oz	1 lb 9.5 oz	722 g	71.0 %

100% WHOLEGRAIN MICHE



100% Wholegrain Miche uses a whole wheat Starter which is at 100 % hydration (ratio = 8 oz water : 8 oz flour) This recipe makes 3 lbs 2.2 oz of dough, enough for one large Miche loaf. The dough is at 70% hydration. This recipe has no white flour in it.

For Preferment:

At 12:00 pm, to a large covered container add:

- ❖ 1 cup whole wheat starter at 100 % hydration - 9 oz/255g
- ❖ 2 cups water - 16 oz/453 g
- ❖ 1 cup Rye flour - 3.6 oz/102 g
- ❖ 3 cups sifted Spring Wheat flour - 12.6 oz/ 357 g - sift the whole wheat flour to remove the bran
- ❖ 1 teaspoon salt - .2 oz/5.7

Ingredients	Volume	Standard	Metric	Bakers %
Whole Wheat or Rye Starter 100% hydration	1 cup	9 oz	255 g	43.5%
Water	2 cups	16 oz	453 g	77.3 %

Rye Flour	1 cup	3.6 oz	102 g	17.4 %
Sifted Whole Wheat Flour	3 cups	12.6 oz	357 g	60.9 %
Salt	1 teasp	.2 oz	5.7 g	1.0 %
Bread Flour	3 cups	13.5 oz	382 g	75.5 %
Total Weight	2 lb 9.4 oz	2 lb 9.4 oz	1173 g	200.0%
Hydration				99.0 %

Cover lightly with a lid and allow mixture to ferment at room temperature
68 – 75 degrees, until 5:00 pm

Then pour your sponge ferment into your mixer or knead in:

❖ 2 cups sifted Wheat flour - 8.4 oz/238 g

Add the wheat flour a bit at a time until it is all incorporated into the dough, use the lowest speed setting on your mixer. After the flour has been incorporated turn off your mixer and allow the dough to autolyse (rest) for 20 minutes. After the autolyse period, turn your mixer back on the lowest speed and add:

❖ 2 teaspoons Salt - .4 oz/11 g

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	141.8%
Whole Wheat Flour sifted	2 cup	8.4 oz	238 g	28.8 %
Salt	2 teasp	.4 oz	11 g	2.1 %
Total Dough Weight	3 lb 2.2 oz	3 lb 2.2 oz	1423 g	171.9%
Total Flour Weight	1 lb 13.2 oz	1 lb 13.2 oz	827.9 g	100.0 %
Total Water Weight (hydration)	1 lb 4.6 oz	1 lb 4.6 oz	583.9 g	70.5 %

Mix in the salt on low speed just until incorporated, about one minutes. Dough will be sticky. You can pour the dough back into the large container and let it ferment until around 9:00 pm. Pour out the dough onto a lightly floured (Rye or Wheat flour) surface and knead a couple of times, then gather into a ball.

Let dough rest for 10 minutes and then do a final shaping. Place the dough into the proofing basket, which is lined with a proofing cloth (Bannetons do not have to be lined). Put basket of dough, covered with a plastic bag, in the refrigerator overnight. Next morning take out loaf and allow to proof 1 - 3 hours or until ready to bake.

When the dough is ready and feels bubbly and springy but not saggy, then take the loaf and sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 450F/232C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204C degrees. Continue baking for about 40 more minutes, turning the loaf once for even browning. To make sure the loaf is done, using your bread thermometer, check to see if it is at 200-205F/93-96C degrees in the center of the loaf.

If the crust seems to be getting too brown while baking, cover the top lightly with a piece of foil. Miche is best if left to cool completely and it improves in flavor and texture as it does so. Eat with plenty of fresh butter and/or cream cheese.

FLEMISH DESEM



If you want to make a really good loaf of 100% Whole Wheat Bread try Desem. Desem is a sourdough made from organic whole wheat. To find out more about Desem and how to make your own Desem, read *The Laurel's Kitchen Bread Book* by Laurel Robertson.

This is my method for baking up Desem:

I keep Desem at 80% hydration in my refrigerator at 44F/ 6.7C. To make up an 80% hydration of Desem, you would keep your Desem or Whole Wheat starter by feeding with 5 oz of flour and 4 oz of water, or using that ratio.

For Desem Preferment:

In the evening, to a large container add:

Ingredients	Volume	Standard	Metric	Bakers %
Whole Wheat or Desem Starter 80% hydration	1 ½ cups	13.5 oz	382 g	67.2%
Water	1 ½ cups	12 oz	340 g	59.7 %
Organic Whole Wheat Flour	3 cups	12.6 oz	357 g	62.7 %

Total Weight	2 lb 6.1 oz	2 lb 6.1 oz	1080 g	189.6%
Hydration				89.6 %

Mix all of the ingredients together and leave at room temperature overnight in a covered container.

Desem Pre-ferment after mixing:



...and the next morning:



In the morning pour your Pre-ferment into your mixer or knead in:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	92.7%
Water	1 ¼ cups	10	283	24.3
Whole Wheat Flour sifted	5 cups	21 oz	595 g	51.1 %
Salt (add after Autolyse)	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 5.9 oz	4 lb 5.9 oz	1981 g	170.1%
Total Flour Weight	2 lb 9.1 oz	2 lb 9.1 oz	1165 g	100.0 %
Total Water Weight (hydration)	1 lb 12 oz	1 lb 12 oz	793.9 g	68.1 %

Desem right after mixing:



Desem after Autolyse and 7 minutes mixing:



Mix all ingredients together on medium speed for about three minutes except salt. Then Autolyse for 20 minutes. After the autolyse period, turn your mixer back on the lowest speed and add the salt. Mix for about 7 more minutes on low speed.

Let dough bulk ferment for 5 - 6 hours or until doubled. Then divide dough into two pieces, pre-shape, bench rest, then do a final shaping.



Place the dough into the proofing baskets, which are lined with a proofing cloth (Bannetons do not have to be lined). Allow to proof 2-2.5 hours in a warm proofing box (80 -90F/26-32C).

When the dough is ready and feels bubbly and springy but not saggy, then take the loaf and sprinkle the top (actually the

bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 425F/218C degree oven onto a hot baking stone, spray the dough once

with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204C degrees. Continue baking for about 20 more minutes, turning the loaf once for even browning. To make sure the loaf is done, using your bread thermometer, check to see if it is at 200-205F/93-96C degrees in the center of the loaf.



PUMPKIN SOURDOUGH



Pumpkin Sourdough uses pie pumpkin or Winter squash. This recipe makes 4 lbs 3.7oz of dough, enough for two nice sized loaves.

The dough is at 70.1% hydration, it is sticky and difficult to work with but the taste is terrific.

For the Pre-ferment:

In the late afternoon around 4:00 - 5:00 pm, to a large covered container add:

- ❖ 1 cup ripe, vigorous starter at 166 % hydration - 9 oz
- ❖ 1 ½ cups water - 12 oz
- ❖ 3 cups bread flour - 13.5 oz

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	53.3 %
Water	1 ½ cups	12 oz	340 g	71.1 %

Bread Flour	3 cups	13.5 oz	382 g	80.0 %
Total Weight	2 lb 2.5 oz	2 lb 2.5 oz	978 g	204.3%
Hydration	1 lb 1.6 oz	1 lb 1.6 oz	499 g	104.3 %

Cover lightly with a lid and allow mixture to ferment at room temperature until around 9:00 - 10:00 pm.

Then put the preferment into the refrigerator overnight.

Next morning around 7:00 am:

- ❖ Put $\frac{3}{4}$ cup - 6.3 oz of Pumpkin or Squash into a blender with $\frac{1}{2}$ cup - 4 oz of evaporated milk and blend the squash until smooth.

Now add the pumpkin milk mixture to your dough mixer and also add:

- ❖ 2 Tablespoon Oil - 1 oz
- ❖ 1 heaping Tablespoon malt syrup or honey - 1 oz
- ❖ 4 $\frac{1}{2}$ cups Bread flour - 20.2 oz bread flour- you can use part all purpose flour
- ❖ 3 $\frac{1}{2}$ teaspoons salt (add after autolyse) - .7 oz

As an alternate:

- ❖ Intead of 1 heaping Tablespoon- use 2 heaping Tablespoons of non diastatic malt syrup or honey - 2 oz in the dough
- ❖ Sprinkle cinnamon on dough when shaping loaves, so the cinnamon is swirled throughout the loaf
- ❖ Add raisins to the dough when shaping the loaves

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	93.0 %
Evaporated Milk	$\frac{1}{2}$ cup	4 oz	113 g	10.8 %
Canned Pumpkin	$\frac{3}{4}$ cup	6.3 oz	178 g	17.0 %
Oil	2 TBSP	1 oz	28 g	2.7 %
Malt Syrup	1 Heaping TBSP	1 oz	28 g	2.7 %
Bread Flour	4 $\frac{1}{2}$ cups	20.2 oz	572 g	54.5 %
Salt	3 $\frac{1}{2}$ teasp	.7 oz	19.8 g	1.9 %

Total Dough Weight	4 lb 3.7 oz	4 lb 3.7 oz	1919 g	182.5%
Total Flour Weight	2 lb 5.1 oz	2 lb 5.1 oz	1051 g	100.0 %
Total Water Weight (hydration)	1 lb 10 oz	1 lb 10 oz	737 g	70.1 %

Mix all of the ingredients until incorporated. Use the low or medium speed setting on your mixer. After the ingredients have been mixed together, turn off your mixer and allow the dough to autolyse (rest) for 20 minutes. After the autolyse period, turn your mixer back on the lowest speed and add the .9 oz of salt.

Let the dough mix on low speed for about four minutes to develop the gluten. Dough will be very sticky. Place the dough back into a dough folding trough if you have one or a large container and let it ferment for four hours until around 11:30 am. If using folding trough, fold the dough about once an hour to strengthen the gluten.

After fermenting for four hours, take the dough and divide it into two pieces. Then using a well floured surface shape and place the loaves into the proofing baskets, lined with heavily floured proofing cloths or use a couche. To stagger the loaves, shape the second loaf 30 minutes after the first loaf, so they can be baked at different times. Allow loaves to final proof, which should take 1 - 2 hours. When there is about an hour until baking time, preheat your oven to 450F/232.2C degrees.

When the dough is ready and feels bubbly and springy, take the first loaf and turn the dough out onto a peel or flat baking sheet. Press pumpkin seeds into the top of the dough and slash if you wish. Slide into the hot preheated 450F/232.2C degree oven, onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven. Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204.4C degrees.

Continue baking for 15 - 20 more minutes, turning the loaf once for even browning. To make sure the loaf is done, using your bread thermometer, check to see if it is at 200-205F/93-96C degrees in the center of the loaf. For the next loaf, turn the oven back up to 450F/232.2C degrees and put the roasting lid back in to preheat. Bake the same as the first loaf. This bread is a light pumpkin colored, airy loaf with crunchy roasted seeds on the top crust. It will make a great Halloween buffet loaf.



SPELT SOURDOUGH



Sourdough Spelt Bread uses a pre-ferment and a Desem or Whole Wheat Starter which is at 100 % hydration (ratio : 4.5oz water/4.5 oz flour) This recipe makes 4 lbs of dough, enough for two large loaves at 2 lb each. The pre-ferment is started in the evening. The dough is at 66.9% hydration.

To a large container add:

- ❖ 2 ½ cups water - 20 oz/567 g
- ❖ 1 cup Desem or Whole Wheat starter at 100% hydration - 9.0 oz/255 g
- ❖ 3 ½ cups Whole Spelt Flour - 12 .2 oz/345.9 g
- ❖ 2 cups Whole Wheat Flour - 8.4 oz/238 g
- ❖ 1 teaspoons of salt - .2 oz/5.7 g

This will produce 3 lbs 1.8 oz of pre-ferment at 97.6 % hydration.

Mix the ingredients well and let the preferment set at room temperature overnight.

Next morning pour the pre-ferment into your mixer and add:

- ❖ 2 Tablespoons Oil - 1 oz/28 g
- ❖ 1 Tablespoon Non Diastatic Malt Syrup - .8 oz/22 g
- ❖ 2 ½ teaspoons salt - .5 oz/14 g
- ❖ 2 2/3 cups Bread flour - 11.9 oz/337 g

Mix the ingredients on a medium speed just until mixed, this takes about two minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, mix dough on low speed for about 4 minutes. Then let the dough bulk ferment (which just means the first rise) for 3 - 4 hours until doubled. After bulk fermentation, pour out the dough onto a lightly floured (Spelt flour) surface and knead a couple of times, then gather into a ball.

Divide the dough into two or three pieces. Stagger the shaping of the loaves 30 minutes apart. Shape loaves into the general shape you wish and then allow the dough to rest for 10 minutes (bench rest). After resting, shape loaves into their final shapes and put them into the proofing baskets, or pans which are lined with proofing cloths if you wish (Bannetons do not have to be lined).

Allow the dough to rise until proofing is done. Proofing is the second raising of the dough. For this recipe it will take around 1.5 - 2 hours. When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet.

Then slash the dough while still on the peel, slide into the hot preheated 450F/232C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven. Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 425F/218C degrees.

Continue baking for 15-20 more minutes, turning the loaf once for even browning. For the next loaf, turn the oven back up and put the roasting lid back in to preheat for five minutes until the loaf is ready to go in. Bake the same as the first loaf. Cool this delicious bread and eat with fresh butter. Sourdough Spelt Bread has a chewy crust and a soft, moist crumb and is great for sandwiches or toast or to eat fresh with cream cheese.



SAN FRANCISCO SHARP



San Francisco Sharp Sourdough uses a very long ferment. It is best to use the San Francisco starter which is very long proofing, but other starters will work as long as they are at least 6 hour proofing starters. This recipe makes about 4 lbs of dough, enough for two nice sized loaves at 2 lbs each.. The dough is at 67.9% hydration. Timing is important in this recipe. Start by making a preferment in the morning at 11.00 am.

For Preferment:

At 11:00 am, to a large covered container add:

- ❖ **1 cup ripe, vigorous starter at 166 % hydration - 9 oz**
- ❖ **1 ½ cups water - 12 oz**
- ❖ **¼ cup whole wheat flour- 1 oz**
- ❖ **3 cups bread flour - 13.5 oz**

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cup	9 oz	255 g	50.3%
Water	1 ½ cups	12 oz	340 g	67.1 %
Whole Wheat Flour	1/4 cup	1 oz	28 g	5.6 %
Bread Flour	3 cups	13.5 oz	382 g	75.5 %
Total Weight	2 lb 3.5 oz	2 lb 3.5 oz	1006 g	198.5%
Hydration				98.5 %

Cover lightly with a lid and allow mixture to ferment at room temperature of 70 - 75 degrees. Let it ferment until 4:00 pm and then

Pour the preferment into your mixer and add:

- ❖ ¾ cup water - 6 oz
- ❖ ¼ cup evaporated canned milk- 2 oz
- ❖ 2 teasp Diastatic Malt powder - .2 oz
- ❖ 4 ⅔ cups Bread flour - 20.9 oz
- ❖ 4 tsp salt -.8 oz (add after autolyse)

Mix all ingredients together including salt until well mixed, this will take about 2 -3 minutes. Allow the dough to rest for 20 minutes. After the rest period, turn your mixer back on the lowest speed mix for another two minutes.

Dough will be sticky. Place the dough back into a folding container and let it ferment until 9:00 pm, folding dough once each hour. Then place the container into the refrigerator overnight. Next morning at 7:00 am take out the container of dough, take off the lid and allow the dough to warm up for two hours until 9:00 am.

Now take half of the dough, shape and place the first loaf into a proofing basket, lined with a proofing cloth, (Bannetons do not have to be lined). Keep the other half of the dough covered with plastic or in a covered container to keep it from drying out. Then 30 minutes later shape the second loaf. Allow both loaves to warm up and do their final proof, this should take 2 - 3 hours, or until the loaf looks about 1 ½ times it's original size. Preheat your oven to 450F/232.2C degrees when there is about an hour left until baking time.

When the dough is ready and feels bubbly and springy, take the first loaf sprinkle the top (actually the bottom) with semolina and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 450F/232.2C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven. Bake for 20 minutes. After 20minutes, take off the roasting lid and turn down the oven to 425F/218C degrees. Continue baking for 15 more minutes, turning the loaf once for even browning. To make sure the loaf is done, using your bread thermometer, check to see if it is at 200-205F/93-96C degrees in the

center of the loaf. For the next loaf, turn the oven back up to 450F/232.2C degrees and put the roasting lid back in to preheat. Bake the same as the first loaf. This bread is best after being cooled for several hours to allow the sourness to develop. The sour tang will develop even up until the next day.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Preferment	All	All	All	91.5 %
Water	¾ cup	6 oz	170 g	15.5 %
½ & ½ milk	¼ cup	2 oz	56 g	5.2 %
Diastatic Powder Malt	2 teasp	.2 oz	5.7 g	.5
Bread Flour	4 2/3 cups	20.9 oz	592 g	53.9 %
Salt	4 teasp	.8 oz	22 g	2.1 %
Total Dough Weight	4 lb 1.4 oz	4 lb 1.4 oz	1854 g	168.6%
Total Flour Weight	2 lb 6.8 oz	2 lb 6.8 oz	1099 g	100.0 %
Total Water Weight (hydration)	1 lb 9.6 oz	1 lb 9.6 oz	726 g	66.0 %



SOUR MALT



If you don't like strong flavors, don't try this bread!

This recipe is started in the evening:

In your dough mixer add:

- 1 cup sourdough starter @ 166% hydration
- 2 ½ cups water - 20 oz (withhold 6 oz of water, see below)
- 1 lbs 13.3 oz of bread flour
- 2 heaping Tablespoons Malt syrup- add after autolyse - 2 oz(withhold the syrup, see below)
- 3 teaspoons salt- add after autolyse- .6 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
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Sourdough @166%	1 cup	9 oz	255 g	27.5 %
Water	2 ½ cups	20 oz	567 g	61.2 %
Malt Syrup	2 TBSP	2 oz	56 g	6.1 %
Bread Flour	6 ½ cups	1 lbs 13.3 oz	830 g	89.6 %
Salt (add after autolyse)	3 teasp	.6 oz	17 g	1.8 %
Total Dough Weight	3 lb 12.9 oz	3 lb 12.9 oz	1726 g	186.3 %
Total Flour Weight	2 lb 0.7 oz	2 lb 0.7 oz	926 g	100.0 %
Total Water Weight (hydration)	1 lb 10.2 oz	1 lb 10.2 oz	743 g	80.2%

You will be able to make 2 loaves at 1 lb 14 oz each. The finished dough is at 80% hydration.

Withhold 6 oz of the water, the malt syrup and the salt. This is so you can use the Double Hydration Method which you can read about in the Advanced section.

Mix together all ingredients (except 6oz of water, malt syrup and the salt) for about three minutes on low/medium speed in your mixer. Then let dough set for 20 minutes (autolyse). Now add the salt and mix the dough for 4 more minutes, using the lowest speed on your mixer. Toward the end of the 4 minutes of mixing, slowly add the 6 oz of water and the malt syrup and mix 1 minute more.

Place the dough in a large covered container and let dough ferment overnight at room temperature. Next morning, weigh the dough into two pieces, you will need a bowl or plate for weighing as it is very wet, sticky dough. Each piece should weigh approximately 1lb 14 oz or so. The dough is sticky with streaks of malt syrup in it. Take the weighed dough and keeping it in the weighing bowl or plate, start pulling up the edges and sides to form a ball. Pull from the outside and pinch to the inside of the ball. The dough is extremely wet and hard to handle.

When it is somewhat shaped into a ball, plop the wet ball of dough into the middle of the cloth lined basket, make sure the proofing cloth is very well floured with semolina flour. Quickly cover the rest of the dough ball with a heavy sprinkling of semolina flour, before it has a chance to spread and come in contact with the cloth on the sides. Proof dough for two hours at room temperature. When the dough has been proofing for one hour, turn on your oven to preheat to 450F/232C degrees and don't forget to preheat your roasting pan.

After the dough has been proofing for two hours (it will not look doubled but rather flat), take one loaf and working quickly, turn the basket upside down and gently plop the dough directly onto the hot stone. Slash and cover with the roasting lid. Don't worry about spraying water; this wet dough won't need it. Bake for 20 minutes and then take off the roasting lid and turn the oven down to 425F/218C degrees. Bake for 15 more minutes turning the loaf a couple of times for even browning. Cool the loaf on a rack. Turn your oven back up to 450F/232C and place the roasting lid back in to preheat for the next loaf.

The crumb is brownish colored with the malt syrup and is extremely sour. This is a loaf to take a risk on!





SALT FERMENTED SOURDOUGH



This is the most authentic, crusty, tangy San Francisco style bread you might ever make. It takes time and effort. Read about Salt Fermented Motherdough in the Motherdough chapter before starting this recipe. You will need to make a salt fermented “seed” Motherdough first; it will take 4-5 days. You only need to make a seed dough once, after that you can keep a little of the dough from the batch each time and save it for the next bake. A piece of dough saved like this is called “Pate Fermente,” and it only needs two to three days fermentation, so you can bake every two days if you like.

The Motherdough and bread are at a medium hydration. You need to have Diastatic Malt powder and a good strong bread flour to make this bread. This method discourages the Protease enzymes and encourages the Amylase enzymes. The Protease breaks down gluten, while the Amylase breaks down starch into sugar.

To start a salted seed Motherdough:

To your mixer add (100% and 166% hydration starters are figured out in the tables below, use whichever one you keep your starter at:

Seed Starter 166% Starter	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	6.1 oz	172 g	39.9 %
Water	6.2 oz	175 g	40.5 %
Bread Flour(1 oz is ww flour)	12.7 oz	360 g	83.0 %
Salt-add after autolyse	.3 oz	8 g	2.0 %
Diastatic Malt Powder	.3 oz	8 g	2.0 %
-Total Weight	1 lb 9.6 oz	725 g	167.4%
Hydration			65.4 %

Seed Starter 100% Starter	Standard	Metric	Bakers %
Sourdough Starter 100% hydration	6 oz	170 g	39.2 %
Water	7 oz	198 g	45.8 %
Bread Flour	12 oz	340 g	78.4 %
Salt-add after autolyse	.3 oz	8 g	2%
Diastatic Malt Powder	.3 oz	8 g	2%
-Total Weight	1 lb 9.6 oz	725 g	167.3 %
Hydration			65.4 %

Mix all ingredients together (except salt), until well mixed, this will take 3 - 4 minutes.
 Place dough in a large covered container; give it enough room to double in size.
 Now place the dough into the refrigerator to autolyse overnight
 Next morning take out your dough, warm up for 1-2 hours and knead in the salt.
 Then place dough in the container and refrigerate for at least three days. Mark the day on the container so you know exactly how many days old it is.
 Take the seed dough out once a day and fold in down on itself a few times. Then place it back into the refrigerator. I use a dedicated refrigerator and the temperature is 46F degrees.

On day three or four, around 3:00 pm add 1 lb 9 oz of the "seed" dough to your mixer by breaking it into chunks. Then add the rest of the following ingredients:

Ingredient	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Seed Starter or Pate Fermente	1 lb 9 oz	708 g	46.2 %
Water	1 lb 9 oz	708 g	46.2 %
Bread Flour	2 lbs 7 oz	1105 g	72.1 %
Salt	.8 oz	22 g	1.5 %
Total Dough Weight	5 lb 9.8 oz	2545 g	165.9%
Total Flour Weight	3 lb 6.1 oz	1534 g	100.0 %
Total Water Weight (hydration)	2 lb 2.9 oz	989 g	64.5 %

Note: If you use high gluten flour, you will have to adjust the amount of water/flour. For Power Flour, I added an extra 3 ounces of water to obtain a similar dough consistency for the salt dough recipe.

You can also substitute 1-2 oz of whole wheat flour to more easily obtain a sour flavor.

Break your seed dough into chunks and add the rest of the ingredients except the flour. Stir the salt into the mixture and then add the flour and mix into a dough.

Allow dough to rest for 20 minutes and then mix for one more minute on low speed or fold dough by hand.

Let the dough ferment in a warm place up to 80F degrees for four hours in a covered container.

Once each hour, stir or fold down the dough.

In the evening when the four hours of fermenting is done, place the dough in a covered container and refrigerate overnight (day one) and all the next day (day two).

Then around 6 pm in the evening of day 2 (if you wait until day 3 the sour will improve), take out your cold dough and allow it to warm to room temperature for two hours.

After warm up period, shape two loaves weighing 2 lbs each.

The rest of the dough is the seed dough for the next batch and should be put into a covered container, marked with the date and refrigerated three to five days, until the next mixing day.

Weigh out the 2 lb pieces of dough, pre-shape, bench rest and then do a final shaping. Then place them into a proofing basket, lined with a proofing cloth (Bannetons do not have to be lined). Cover them in plastic bags and place them into the refrigerator overnight.

Next morning take the loaves out of the oven staggering them 30 minutes apart. Allow the dough to warm up from 2 - 6 hours (the longer you let the dough ferment in the refrigerator, the longer it will take to proof because of the increase in acidity) in a warm place of up to 86F/30C 86F degrees and then bake when the dough is done proofing. It can be hard to tell when it is finished proofing but it should be about 1 ½ times it's original size when done,

feel bubbly and when you press your finger into the side, the indent slowly fills in. Preheat your oven to 450F/232C degrees.

When the dough is ready, take the first loaf, sprinkle the top (actually the bottom) with semolina and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 450F/218C degree oven onto a hot baking stone, spray the dough all over with water quickly, and then cover with a roasting lid which has also been preheated in the oven. Bake for 21 minutes. After 21 minutes, take off the roasting lid and turn down the oven to 425F/204C degrees.

Continue baking for 11-15 more minutes, turning the loaf once for even browning. To make sure the loaf is done, use your bread thermometer and check to see if it is 200-205F/93-96C degrees in the center of the loaf. For the next loaf, turn the oven back up to 450F/218C degrees and put the roasting lid back in to preheat. Bake the same as the first loaf. This bread is best after being cooled for several hours to allow the sourness to develop. This bread will be at it's optimum sour the following day.

If your dough turns out slack and over-fermented, and your bread is flat with a hard crust, you have either used a starter with not enough proofing power, too much Diastatic Malt, your flour may be low in gluten, or you may have proofed too long. Either get a longer proofing starter, or use less Diastatic Malt or obtain a higher gluten flour. You could also shape the loaves in the evening of the first day after bulk ferment and bake the next day instead of waiting the additional day, but the bread won't be as sour.

Each additional day the dough is left to ferment, the sour tang increases, but eventually the dough will break down and you will make bricks. You will also see a compromise in crust and crumb quality.

To make your next batch, allow the dough you put back into the refrigerator to age 2 - 5 days. This dough is called Pate Fermente. With each batch of dough save a reserve of 1 lb 8 oz of the dough for the following batch.

Try to use the old dough(pate fermente) within one week when making each additional batches of dough.

Dough which has been fermented this long is fragile and needs to be handled very gently. The more acidic the dough, the longer it takes to proof, don't be surprised by a three to six hour final proof if your dough is very acidic.

This recipe is still being experimented on by bakers at The Sourdough Forum : <http://teresal.proboards.com>



MORPHED RECIPES



KALAMATA ASIAGO LOAF



Kalamata Asiago Loaf is a one day sourdough so start early in the morning. This recipe will make 3 lbs 6.5 oz/ 1545 g of dough at 68% hydration

To your dough mixer add:

- ❖ **White sourdough starter at 166% hydration - 18 oz/510 g**
- ❖ **Rye Starter at 100% hydration - 5 oz/141 g**
- ❖ **½ cup water - 4 oz/113 g**
- ❖ **½ cup evaporated Milk - 4 oz/113 g**
- ❖ **2 Tablespoons oil - 1 oz/28 g**
- ❖ **5 cups Bread flour -1 lb 6.5 oz/637.9 g**
- ❖ **3 teaspoons salt - .6 oz/17 g**

Use these ingredients when rolling up the dough:

- ❖ **Kalamata Olives -12 oz/340 g**
- ❖ **Asiago Cheese - 8 oz/226 g**
- ❖ **Fresh Rosemary chopped - 1 oz/28 g**

In the early morning, using your dough mixer, mix all of the ingredients in the top list except the salt. This should take about 2 - 3 minutes. Autolyse for 20 minutes. Then add your salt and mix on low speed for about 5 more minutes

The mixing for this dough is longer than for a standard sourdough, because it is a one day dough and won't spend as many hours developing the gluten as usual. After it is done mixing, turn the dough out into a dough folding trough or container.

Allow this dough to bulk ferment six hours and fold it about once an hour. You can actually see the dough get stronger with each folding. After the six hours of bulk fermentation, divide the dough into two pieces weighing about 1 lb 11oz / 765 g each.

Let the dough pieces set for 5-10 minutes. Timed shaping of the loaves 30 minutes apart, so that they won't be proofed at the same time. Next get out the cheese, olives and fresh Rosemary. Drain the olives, cube the cheese and chop the Rosemary leaves.



Stretch the dough piece into a rectangle and spread the olives, cheese and Rosemary on top. Fold the dough over a few times until a roll is formed. Tuck under the ends and place the dough into a couche. When the first loaf has proofed about 2 hours or so, take the dough from the couche, stretch it slightly as you place it on the peel and then dimple the dough with your fingers lightly.



The loaves will puff up high and be almost round, even though you stretched and dimpled them. You will get larger holey pockets in the crumb if you do the stretch and dimple, the dimpling keeps the top layer of crust from separating, since there is no slashing.



Place dough in a preheated 425F/218C degree oven, onto a hot baking stone. Working quickly...

Spray the dough all over once with water, and then cover the dough with a roasting lid which has also been preheated in the oven. Bake for 20 minutes, then take off the roasting lid and turn down the oven to 400F/204C degrees.

Continue baking for 20 -25 more minutes, turning the loaf once for even browning. The interior of the bread should register 200-205F/93-96C degrees on an instant thermometer. Spread butter all over the hot crust. For the next loaf, turn the oven back up to 425F/218C degrees and put the roasting lid back in to preheat until the loaf is ready to go in. Bake the same as the first loaf.

DESEM MORPH



This is a morphed Desem Loaf. Morphing a sourdough means to combine two different starters together in the same recipe.

I keep Desem at 80% hydration in my refrigerator at 44F/ 6.7C. To make up an 80% hydration of Desem, you would keep your Desem or Whole Wheat starter by feeding with 5 oz of flour and 4 oz of water, or using that ratio. To make up an 80% Motherdough starter see the chapter on Motherdough.

In the afternoon around 2:00pm, add to your mixer:

Ingredients	Volume	Standard	Metric	Bakers %
Whole Wheat or Desem Starter 80% hydration	1 cups	9 oz	255 g	24.4 %
Motherdough @ 80% hydration	1 cups	9 oz	255 g	24.4 %
Water	1 ¼ cups	10 oz	283 g	26.7 %
Evaporated Milk	¾ cup	6 oz	170 g	16.0 %
Honey	2 TBSP	1.5 oz	42 g	4.0 %

Oil	2 TBSP	1 oz	28 g	2.7 %
Organic Whole Wheat Flour	2 ¼ cups	9.4 oz	266 g	25.1 %
Bread Flour	4 cups	18 oz	510 g	48.1 %
Total Weight	4 lb 0.6 oz	4 lb 0.6 oz	1831 g	172.7%
Total Flour Weight	2 lb 5.4 oz	2 lb 5.4 oz	1060 g	100.0 %
Hydration	1 lb 8.3 oz	1 lb 8.3 oz	688 g	65.0 %

Mix all of the ingredients together, except salt, on medium speed until incorporated, about 3 minutes. Autolyse for 20 minutes and then add salt. Mix for 3 more minutes on low speed. Bulk ferment in a dough folding container for 5 - 6 hours, folding the dough once every two hours.

After the bulk ferment is over, divide the dough into two pieces and preshape the dough. Bench rest and then do a final shape of the dough.

Place the dough into bannetons, cover with a plastic bag and refrigerate overnight. Next morning let take the dough out one at a time staggered about 30 minutes apart and do a final proofing. Proof for about 2 hours or until the dough looks about 1.5 times it's original size.

When the dough is ready and feels bubbly and springy but not saggy, then take the loaf and sprinkle the top (actually the bottom) with semolina or whole grain flour and turn the dough out onto a peel or flat baking sheet. Then slash the dough while still on the peel, slide into the hot preheated 425F/218C degree oven onto a hot baking stone, spray the dough once with water quickly, and then cover with a roasting lid which has also been preheated in the oven.

Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204C degrees. Continue baking for about 20 more minutes, turning the loaf once for even browning. To make sure the loaf is done, using your bread thermometer, check to see if it is at 200-205F/93-96C degrees in the center of the loaf.



NORTHWEST MORPH SOURDOUGH



Morphing two different starters can be fun. This sourdough bread is a morphing of Whole Wheat Starter and a white (Northwest) starter both at 166% hydration (ratio: 8.3 oz water/5 oz flour) This recipe will make 4 lbs 1.3 oz of dough and is a one day sourdough which means it is mixed and baked on the same day. Start this recipe early in the day to allow sufficient time for fermentation and baking.

To your mixer add:

- ❖ ½ cup vigorous 166% hydration Desem sourdough starter - 4.5 oz
- ❖ 1 cup 166% hydration Northwest starter - 9.0 oz
- ❖ 1 & ½ cups water- 12.0 oz
- ❖ ½ cup evaporated canned milk - 4.0 oz
- ❖ 1 Tablespoon Malt syrup - .8 oz
- ❖ 7&2/3 cups Bread flour - 34 oz
- ❖ 4 teaspoons salt - .8 oz (add after autolyse)

Mix all of the ingredients (except the salt) well in your mixer for about 2 - 3 minutes on low speed or just until mixed. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add salt and then mix dough on low speed for 5 minutes. Breads made with a one day mix and bake formula need to be mixed longer to develop the gluten. Allow the dough to bulk ferment (which just means the first rise) for 4

hours. Stir the dough down with just three turns of the dough hook twice during the 4 hour bulk fermentation. This is to strengthen the gluten strands and line them up, much like folding would do.

After bulk fermentation, pour the dough onto a lightly floured (Whole Wheat flour) surface and knead a couple of times then gather into a ball. Divide the dough into four pieces. Shape the dough into thick ropes which are about 18 inches long and then allow the dough to rest for 5 - 10 minutes (bench rest).

After resting, shape loaves into their final shapes by taking two pieces of the rope shaped dough and twisting them around one another. Tuck the ends in under the dough. Place the loaves into the proofing baskets, or pans which are lined with floured proofing cloths. Stagger the baking of the loaves by putting one loaf in the refrigerator for 40 minutes.

Proof the dough for 1.5 - 2 hours in a warm place at 80F/26C. Either keep the proofing box humid or cover the loaves with moist cloths or plastic bags to keep the dough from drying out. Preheat your oven, baking stone and roasting lid to 425F/218C degrees when you have about an hour left for proofing. When the dough is ready and feels bubbly and springy but not saggy, then taking the first loaf, gently lift it out of the banneton and place it on a floured peel. Slash the dough along the twists and then place on the hot baking stone.

Quickly spray the dough all over with water and then cover with a hot roasting lid. Bake for 20 minutes. After 20 minutes, take off the roasting lid and turn down the oven to 400F/204C degrees.

Continue baking for about 10 more minutes, turning halfway for even browning. Take out your bread and put it on a cooling rack. Then turn the oven back up to 425F/218C and put the roasting lid back in to preheat for 5 - 10 minutes until the next loaf is ready to go in. Cool the bread and eat with fresh butter. Sourdough breads are always at their best the first day baked.

This loaf is very nice sprinkled with sesame or poppy seeds. Make an egg wash of one egg beaten with one Tablespoon of water and spread this over the dough before slashing. Sprinkle the seeds over the egg washed dough and then slash. Continue with the baking.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Whole Wheat Sourdough Starter	½ cup	4.5 oz	382 g	34.5 %
White Sourdough Starter	1 cup	9 oz		
Water	1 ½ cup	12 oz	340 g	30.7 %
Cream or ½ & ½ milk	½ cup	4 oz	113 g	10.2 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.0 %
Bread Flour	7 & 2/3 cups	2 lbs 2 oz	963.9 g	87.0 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 1.1 oz	4 lb 1.1 oz	1845.5 g	166.6%
Total Flour Weight	2 lb 7.1 oz	2 lb 7.1 oz	1107.8 g	100.0 %
Total Water Weight (hydration)	1 lb 8.7 oz	1 lb 8.7 oz	699.2 g	63.1%



PANE PEARL



Pane Pearl is made using a Desem Starter and a Motherdough Starter. This is a great recipe to help use up that extra Motherdough setting in the refrigerator. The evening before baking, make up a preferment by adding together in a large container:

Preferment	Volume	Standard	Metric	Bakers %
Desem Starter 80% hydration	1 cup	9 oz	255 g	64.3 %
Water	1 ½ cups	12 oz	340 g	85.7 %
Bread Flour	2 cups	9 oz	255 g	64.3 %
Total Weight	1 lbs 14 oz	1 lbs 14 oz	850 g	214.3%
Hydration				114.3 %

Mix the ingredients well, cover the container and allow the preferment to set overnight at room temperature. Next morning, pour the pre-ferment into your mixer and add together:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Pre-ferment	All	All	All	75.2 %
Motherdough @ 80%	1 cup	9 oz	255 g	22.6 %
Water	¾ cup	6 oz	170 g	15.0 %
Oil	2 TBSP	1.0 oz	28 g	2.5 %
Bread Flour	4 2/3 cups	1 lb 4.9 oz	592 g	52.4 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 3.7 oz	4 lb 3.7 oz	1919 g	169.7 %
Total Flour Weight	2 lb 7.9 oz	2 lb 7.9 oz	1131 g	100.0 %
Total Water Weight (hydration)	1 lb 10.0 oz	1 lb 10.0 oz	737 g	65.2 %

Mix all ingredients together, except salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, add salt and then mix dough on low speed for about 3 minutes. Then let the dough bulk ferment (first rise) for 4 hours or until doubled. Stir the dough down or fold it once each hour. After bulk fermentation, pour out the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into two pieces. Shape loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). Do a final shaping. Stagger the shaping of each loaf 30 minutes apart. Place loaves in bannetons and let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then slash the dough and slide it onto the hot baking stone.

Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 425F/218C degrees and continue baking for about 10- 15 more minutes, turning the loaf around in the oven, halfway through the last 10-15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf.

RYE MORPH PAN LOAF



This sourdough bread is a morphing of a Rye Starter (Danish) and a white (Northwest) starter both at 100% hydration (ratio: 5 oz water/5 oz flour) This recipe will make 4 lbs 8.9 oz of dough and is a one day sourdough which means it is mixed and baked on the same day. Start this recipe early in the day to allow sufficient time for fermentation and baking.

To your mixer add:

- ❖ 3/4 cup vigorous 100% hydration Rye sourdough starter - 6.7 oz
- ❖ 3/4 cup 100% hydration Northwest starter - 6.7 oz
- ❖ 2 cups water- 16.0 oz
- ❖ 1/2 cup evaporated canned milk - 4.0 oz
- ❖ 2 Tablespoons malt syrup or honey - 1.6 oz
- ❖ 2 Tablespoons melted, cooled butter- 1oz
- ❖ 8 cups Bread flour - 2 lb 4 oz
- ❖ 4 teaspoons salt - .8 oz (add after autolyse)

Mix all of the ingredients (except the salt) well in your mixer for about 2 - 3 minutes on low speed or just until mixed. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add salt and then mix dough on low speed for 5 minutes. Breads made with a one day mix and bake formula need to be mixed longer to develop the gluten. Allow the dough to bulk ferment (which just means the first rise) for 4 hours.

Stir the dough down with just three turns of the dough hook twice during the 4 hour bulk fermentation. This is to strengthen the gluten strands and line them up, much like folding would do. You can also put the dough into a dough folding trough and fold the dough twice during bulk ferment. Dough made with rye flours tend to be sticky.

After bulk fermentation, pour the dough onto a lightly floured surface and knead a couple of times then gather into a ball. Divide the dough into two pieces and let rest for 5 - 10 minutes. Then shape each loaf by stretching the dough into a rectangle the length of your bread pan and then roll up the dough and tuck under the seams. Place the dough into 9" X 5" X 2.5 "greased loaf pans. Since the dough will be a little over 2 pounds each you need the large loaf pans. Spread oil over the top of the loaves to keep the dough from drying out.

Proof the dough for 1.5 - 2 hours in a warm place at 80F/26C. Preheat your oven to 425F-/218C degrees when you have about an hour left for proofing. When the dough is ready and feels bubbly and springy but not saggy, you can slash the dough vertically and fill the slash with warm butter, also spread more melted butter over the top of the loaf. Then place both loaves in the oven and bake for 20 minutes.

After 20 minutes, turn down the oven to 400F/ 204C degrees. Continue baking for about 10 - 15 more minutes, turning halfway for even browning. When the interior of the loaf registers at least 200-205F/93-96C on the thermometer, take out your bread and put it on a cooling rack. Slice when the bread is completely cooled.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Rye Starter	¾ cup	6.75 oz	382 g	31.6 %
White Starter	¾ cup	6.75 oz		
Water	2 cups	16 oz	453 g	37.4 %
Cream or ½ & ½ milk	½ cup	4 oz	113 g	9.4 %
Melted Butter	2 TBSP	1 oz	28 g	2.3 %
Malt Syrup	2 TBSP	1.6 oz	45 g	3.7 %
Bread Flour	8 cups	2 lbs 4 oz	1020 g	84.2 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 8.9 oz	4 lb 8.9 oz	2066.7 g	170.5 %
Total Flour Weight	2 lb 10.7 oz	2 lb 10.7 oz	1211.9 g	100.0 %
Total Water Weight (hydration)	1 lb 11.4 oz	1 lb 11.4 oz	777.6 g	64.2%

ROSEMARY POTATO SOURDOUGH



Rosemary Potato Sourdough is made using a regular Sourdough Starter and a Motherdough Starter. The evening before baking, make up a preferment by adding together:

- ❖ 1 cup vigorous sourdough starter - 9 oz
- ❖ 1 ¼ cups water - 10 oz
- ❖ 2 cups Bread Flour - 9 oz
- ❖ ½ cup Rye Flour - 1.8 - oz

Preferment	Volume	Standard	Metric	Bakers %
Starter 166% hydration	1 cup	9 oz	255 g	63.5 %
Water	1 ¼ cup	10 oz	283 g	70.5 %
Bread Flour	2 cups	9 oz	255 g	63.5 %
Rye Flour	½ cup	1.8	51 g	12.7 %
Total Weight	1 lb 13.8 oz	1 lb 13.8 oz	844 g	210.1%
Hydration				110.1 %

Mix the ingredients well, cover the bowl and allow the preferment to set overnight at room temperature.

Next morning pour the preferment into your dough mixer and then add:

- ❖ 1 cup vigorous motherdough starter @ 80% hydration - 9 oz
- ❖ 1 cup warm water - 8.0 oz
- ❖ ¼ cup dried potato flakes - .6 oz
- ❖ ¼ cup dried milk - .6 oz
- ❖ 2 Tablespoons oil - .9 oz
- ❖ 1 Tablespoon dried whole Rosemary - .2 oz
- ❖ 4 teaspoons salt - .8 oz
- ❖ 4 ¾ cups Bread Flour - 21.3 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Pre-ferment	All	All	All	71.0 %
Motherdough @ 80%	1 cup	9 oz	255 g	21.4 %
Water	1 cup	8 oz	226 g	19.1 %
Oil	2 TBSP	1.0 oz	28 g	2.4 %
Dried Potato Flakes	¼ cup	.6 oz	17 g	1.4 %
Dried Milk	¼ cup	.6 oz	17 g	1.4 %
Dried Rosemary Whole	1 TBSP	.2 oz	5.7 g	.5 %
Bread Flour	4 ¾ cups	1 lb 5.3 oz	703 g	50.7 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 9.1 oz	4 lb9.1 oz	2072 g	174.1 %
Total Flour Weight	2 lb 10 oz	2 lb 10 oz	1190 g	100.0 %
Total Water Weight (hydration)	1 lb 10.7 oz	1 lb 10.7 oz	756 g	63.5%

Mix all ingredients together, except salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, stir in salt and then mix dough on low speed for about 4 minutes. Then let the dough bulk ferment (first rise) for 4 - 6 hours or until doubled. Stir the dough down or fold it once each hour. After bulk fermentation, pour out the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into two pieces. Shape loaf into the general shape you wish and then allow the dough to rest for 5 - 10 minutes (bench rest). Stagger the shaping of each loaf 30 minutes apart. Place loaves in bannetons and let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then slash the dough and slide it

onto the hot baking stone. Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes.

After 20 minutes, remove roasting lid, turn down the oven to 425F/218C degrees and continue baking for about 15-20 more minutes, turning the loaf around in the oven, halfway through the last 15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf.



MOTHERDOUGH RECIPES



BAGUETTES



These Baguettes are made with a regular starter and a Motherdough starter. To make a Motherdough at 80% hydration, check the chapter on Motherdough. This recipe will make three loaves at just under 1 lb/453 g each. Start this recipe around 2:00 p.m.

To your mixer add:

Ingredient	Volume 3 Loaves	Standard 3 Loaves	Metric 3 Loaves	Bakers %
Starter @ 166% hydration	1 cup	9 oz	255 g	32.9 %
Motherdough @ 80% hydration	1 cup	9 oz	255 g	32.9 %
Water	1 cup	8 oz	226 g	29.2 %
Bread Flour	4 ¼ cups	1 lb 3.1 oz	541 g	69.5 %
Salt (add after autolyse)	2 ½ teasp	.5 oz	14 g	1.8 %
Total Dough Weight	2 lb 13.6 oz	2 lb 13.6 oz	1292 g	165.9 %
Total Flour Weight	1 lb 11.5 oz	1 lb 11.5 oz	779 g	100.0 %
Total Water Weight (hydration)	1 lb 1.6 oz	1 lb 1.6 oz	499 g	64.1 %

Mix all ingredients together, except salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, add salt and then mix dough on low speed for about 3 minutes. Let the dough bulk ferment (first rise) for 6 hours or until doubled. Stir the dough down or fold it three or four times during bulk ferment. After bulk fermentation, put the dough into a covered container and refrigerate overnight. Next morning, pour the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into three equal pieces. Shape loaf into the general shape of a baguette and then allow the dough to rest for 10 minutes (bench rest). Continue to roll out and shape baguette until it is as long as you wish. Stagger the shaping of each loaf 30 minutes apart. Place loaves in bannetons and let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then slash the dough and slide it onto the hot baking stone.



Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 15 minutes. After 15 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10- 15 more minutes, turning the loaf around in the oven, halfway through the last 10-15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf.

SEASIDE SOURDOUGH



This bread uses a 60% Motherdough with a long overnight proof. Motherdough can really help you achieve the dark reddish crust similar to Boudin sourdough. Make sure you make up the Motherdough 2 - 3 days before using.

To make up 60% Motherdough, in a large container add together:

Motherdough @ 60%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	4 oz	113 g	32.0 %

Water	5 oz	141 g	40.0 %
Bread Flour	11 oz	311 g	88.0 %
Total Weight	1 lb 4 oz	567 g	160.0%
Hydration			60 %

Leave Motherdough out at room temperature for four hours, then refrigerate for two to three days before using.

If you want to continue to use 60% Motherdough for the next bake, then after using it, feed with 6 oz of water and 10 oz of flour and refrigerate.

On mixing day, in the afternoon, around 12:00 pm:

In your dough mixing bowl combine all of the following ingredients in the order on the list, except the salt, which will be added after autolyse. For an extra sour taste add 2 teaspoons of Diastatic Malt during mixing.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 60%	1 ½ cup	13.5 oz	382 g	34.6 %
Water	2 ½ cups	20 oz	567 g	51.2 %
Whole Wheat Flour	1/3 cup	1.4 oz	39 g	3.6 %
Bread Flour	6 ½ cups	1 lbs 13.2 oz	827 g	74.8 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 0.9 oz	4 lb 0.9 oz	1839 g	166.3 %
Total Flour Weight	2 lb 7.0 oz	2 lb 7.0 oz	1106 g	100.0 %
Total Water Weight (hydration)	1 lb 9.1 oz	1 lb 9.1 oz	710 g	64.2%

Mix until ingredients are well incorporated (about 2 -3 minutes) on medium speed and then let the dough rest (autolyse) for about 20 minutes. After autolysis is done, add the salt and mix the dough for 2 minutes in your mixer on low speed. Pour the dough into a covered dough trough and keep it at 80-90 F (26 - 32 C), in a humid environment (your dishwasher).

Bulk Ferment for five hours. Fold the dough once each hour during the bulk ferment. Place in a covered container and refrigerate overnight. Next morning, take out the dough and uncover it, push it down, cover it again and then allow the dough to warm for 1 hour in a warm humid place (80-90 F / 26 - 32 C).

Then shape loaves. Shape each piece as desired, staggering the shaping 30 minutes apart. Keep dough that is not being shaped in covered container or covered with a damp cloth (keep it in a warm place). When dough shaping is done, place in bannetons, lined baskets or couche. Allow the dough to proof at room temperature for about 2 - 3 hours (it usually takes around 2 hours).

When the dough is done proofing, (push the tip of your finger into the side of the dough, if it feels bubbly, soft and the dent fills in slowly, it is ready) and is about 1 ½ times it's original size, turn dough over onto a dusted peel and slash the top of the dough. Then bake in a well preheated oven for 20 minutes at 425F/218C degrees, using a baking stone and the roasting pan method of baking (this is explained in the baking chapter). After 20 minutes, open the oven and take off the roasting lid (be careful of hot steam). Continue to bake uncovered for another 15-20 minutes, turning the loaf halfway to evenly brown the crust. Cool, slice and enjoy!



PANE PICANTE



Pane Picante is a sharp flavored bread made with a Motherdough starter and San Francisco Starter.

To make an 80% motherdough, add together:

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	5 oz	141 g	38.8 %
Water	7.2 oz	204 g	55.9 %
Bread Flour	11 oz	311 g	85.4 %
Total Weight	1 lb 7.2 oz	657 g	180.1%
Hydration			80.1 %

Combine all ingredients, let set at room temperature 3 - 4 hours, then refrigerate. Feed your motherdough at least once a week to keep it vigorous for other recipe. To feed this starter, add 8 oz water and 10 oz of flour.

Pane Picante is a 70% hydration sourdough bread it is sticky and difficult to handle.

This recipe is started in the afternoon 1:00 - 2:00 pm :

In your dough mixer add:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80%	1 cup	9 oz	255 g	26.4 %
Sourdough starter @ 166% hydration	1 ½ cups	13.5	382 g	34.4 %
Water	1 ½ cups	12 oz	340 g	30.6 %
Oil	2 TBSP	1.0 oz	28 g	2.5 %
Evaporated Milk	3 TBSP	1.5 oz	42 g	3.8 g
Diastatic Malt Powder	1 teasp	.1 oz	2.8 g	.3 %
Rye Flour	½ cup	1.8 oz	51 g	4.6 %
All Purpose Flour	3 ½ cups	11 oz	311 g	28.0 %
Bread Flour	3 2/3 cups	1 lbs 0.4 oz	464.9 g	41.8 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19.8 g	1.8 %
Total Dough Weight	4 lb 3.0 oz	4 lb 3.0 oz	1899 g	170.6 %
Total Flour Weight	2 lb 7.3 oz	2 lb 7.3 oz	1113 g	100.0 %
Total Water Weight (hydration)	1 lb 9.9 oz	1 lb 9.9 oz	735 g	66.0 %

Mix all ingredients, except salt, together until incorporated. This will take about 3 minutes. Let the dough autolyse (rest) for 20 minutes. Add salt and then finished mixing for 4 more minutes. Let the dough bulk ferment until doubled (about 6 hours). Fold the dough once an hour during bulk ferment. After bulk fermentation,

pour dough on a floured surface. Divide the dough into two pieces and then shape the dough into the general shape you wish. Let the dough rest for 10 minutes and then do a final shaping.

Place loaves in bannetons and allow them to rise about $\frac{1}{2}$ hour. Cover the loaves with a plastic bag and refrigerate overnight. In the morning take out the loaves staggered about 30 minutes apart and let proof for $1\frac{1}{2}$ to 2 hours or when loaves are about $1\frac{1}{2}$ times their original size.

Then slash the dough and slide it onto the hot baking stone. Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 425F/218C degrees and continue baking for about 10 - 15 more minutes, turning the loaf around in the oven, halfway through the last 10 - 15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf.



PANE TERESA



Pane Teresa is loosely (there is no commercial yeast) based on the cold dough method described to Peter Reinhart by Phillippe Gosselin for the bread, Pain a l'Ancienne. I basically keep the dough cold. This recipe utilizes a Motherdough starter which needs to be mixed up and fermented for 2 - 3 days before using it.

80% Motherdough:

To make Motherdough, you will be using vigorous sourdough at 166% hydration and turning it into a Motherdough at 80% hydration. Here is the basic recipe for making approximately 1 pound 7.2 oz of Motherdough. Enough for this recipe and some left over to feed and keep going.

- 166% Sourdough Starter – 5 oz @ 166 % hydration
- Water – 7.2 oz
- Bread flour – 11 oz

Mix this together and let the Motherdough ferment for about three hours at room temperature and then put into the refrigerator in a covered container. Let it ferment for at least two - three days in the refrigerator. You will be using 1 pound 4 oz of Motherdough in this recipe. The rest that is leftover can be fed with 10 oz flour and 8 oz of water to keep it going for use in the next recipe; this keeps it at 80% hydration. It needs to be kept refrigerated and fed at least once a week. It is best when used within 3 days of feeding.

After letting the Motherdough ferment in the refrigerator for three days, then in the evening at around 7 pm:

To your dough mixer add:

- ❖ 1 pound 4 oz/567g of the cold motherdough (pull it apart in chunks while adding to your mixer)
- ❖ 2 cups icy cold water - 16 oz/453g
- ❖ 1 Tablespoons oil - .5 oz/14g
- ❖ 5 cups - 22.5 oz bread flour/637g
- ❖ 1 Tablespoon salt - .6 oz/17g

Mix this dough on medium speed for about 5 minutes (the dough is very wet). Then refrigerate the dough right away in a large covered container overnight. Next morning, take out the dough and let it warm up for about 3 hours at room temperature.

Divide dough into two or three pieces, depending on the size loaf you want and shape loaves. These loaves should be somewhat smallish 1 - ½ lbs size is about right. Then place loaves in proofing baskets, lined with proofing cloths which are well sprinkled with Semolina flour. To stagger loaves, I shape one loaf, then put the timer on for 30 minutes and shape the next loaf.

Let loaves proof another two hours at room temperature. The loaves will not look ready to bake and will appear flat. Preheat your oven with baking stone and roasting lid, to 450F/232C degrees for an hour or so before baking(I put the roasting lid in about five minutes before the loaf goes in). The stone needs to be heated thoroughly to get a good oven spring. When the dough is proofed, turn it onto the peel, making sure you are using plenty of Semolina flour to keep the dough from sticking to the peel.

Then slash the dough and slide it onto the hot baking stone. Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 425F/218C degrees and continue baking for about 15-20 more minutes, turning the loaf around in the oven, halfway through the last 15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf. Pane Teresa is a conversation piece with those large holes. It is a chewy, mild bread with a great wheaty flavor. It is best with just butter along with sharp cheese and a glass of wine. This makes 3 lbs 11.6 oz of dough and is 74 % hydration.





ASIAGO CRACKED PEPPER BREAD



These loaves are made with a regular starter and a Motherdough starter. To make a Motherdough at 80% hydration, check the chapter on Motherdough. This recipe will make two loaves at about 2 lbs/ 907g each. Start this recipe in the early morning.

To your mixer add:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter @ 166% hydration	2 cups	18 oz	510 g	45.7 %
Motherdough @ 80% hydration	1 cup	9 oz	283 g	22.9 %
Water	1 ¼ cups	10 oz	226 g	25.4 %
Oil	2 TBSP	1 oz	28 g	2.5

Dry Milk Powder	¼ cup	.6 oz	17 g	1.5 %
Bread Flour	5 ½ cups	1 lb 8.7 oz	700 g	62.7 %
Coarse Corn Meal	¼ cup	1.1 oz	31 g	2.8 %
Rye Flour	1/3 cup	1.2 oz	34 g	3.0 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19.8 g	1.9 %
Total Dough Weight	4 lb 2.3 oz	4 lb 2.3 oz	1879 g	168.4 %
Total Flour Weight	2 lb 7.4 oz	2 lb 7.4 oz	1116 g	100.0 %
Total Water Weight (hydration)	1 lb 9.2 oz	1 lb 9.2 oz	715 g	64.1 %

Mix all ingredients together, except salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, add salt and mix dough on low speed for about 5 minutes. Then let the dough bulk ferment for 4 - 5 hours or until doubled. Stir the dough down or fold it three or four times during bulk ferment. When bulk ferment is finished, pour the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into two pieces. Let rest for 10 minutes. Then stretch dough into a rectangle about the size of a regular piece of paper. Sprinkle 1 teaspoon of cracked pepper and about 4 - 6 oz of chunked Asiago cheese on each loaf, then roll the dough into loaves.

Stagger the shaping of each loaf 30 minutes apart. Place rolled up loaves into bannetons and let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then slash the dough and slide it onto the hot baking stone.

Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10- 15 more minutes or until the internal temperature registers 200-205F/93-96C. Turn the loaf around in the oven, halfway through the last 10-15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/218C degrees again, before putting in the next loaf.

COUNTRY KITCHEN SOURDOUGH



Country Kitchen Sourdough is made using a Motherdough Starter.
Country Kitchen Sourdough recipe makes 4 lbs 3.1 oz of dough at 62.5 % hydration.
It will make 2 nice fat loaves.

The Motherdough needs to be started about three days before mixing:

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	5 oz	141 g	38.8 %
Water	7.2 oz	204 g	55.9 %
Bread Flour	11 oz	311 g	85.4 %
Total Weight	1 lb 7.2 oz	657 g	180.1%
Hydration			80.1 %

To make the Motherdough, combine all the above ingredients and let set out at room temperature for 4 hours. Then put in a covered container and refrigerate for at least 3 days.

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80%	2 cups	1 lb 2 oz	510 g	45.9 %
Water	1 cup	8 oz	226 g	20.4 %
Evaporated Milk	1 cup	8 oz	226 g	20.4 %
Oil	3 TBSP	1.5 oz	42 g	3.8 %
Malt Syrup	2 TBSP	1.6 oz	45 g	4.1 %
Bread Flour	6.5 cups	1 lbs 13.2 oz	827 g	74.5 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 3.1 oz	4 lb 3.1 oz	1902 g	171.2 %
Total Flour Weight	2 lb 7.2 oz	2 lb 7.2 oz	1113 g	100.0 %
Total Water Weight (hydration)	1 lb 8.5 oz	1 lb 8.5 oz	694 g	62.4 %

Break the Motherdough up into chunks and add to your mixer. Add the rest of the ingredients, except salt, and mix together just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolysis, add salt and mix dough on low speed for about 4 minutes. Then let the dough bulk ferment (first rise) for 4 hours or until doubled.

After bulk fermentation, pour the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into two pieces. Shape each loaf into a round ball and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets or couche.

Allow the dough to final proof for 2 - 3 hours (whenever the dough looks about 1 ½ times its size and is spongy/springy) then turn dough out on peel and slash, spray, cover with roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn the oven down to 400F/204C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Bread is done when the internal temperature reaches 200-205F/93-96C .Take out loaf and cool on a rack.

Turn your oven back up to 425F/218C degrees and put the roasting lid back into the oven to preheat before putting in the next loaf.

COASTAL LOAF



Coastal Loaf is made with a motherdough starter at 80% hydration. Make this motherdough starter, let sit at room temperature 3 - 4 hours, then refrigerate. Feed your motherdough at least once a week to keep it vigorous for other recipe. To feed this starter, add 8 oz water and 10 oz of flour.

To make an 80% motherdough, add together:

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	5 oz	141 g	38.8 %
Water	7.2 oz	204 g	55.9 %
Bread Flour	11 oz	311 g	85.4 %
Total Weight	1 lb 7.2 oz	657 g	180.1%
Hydration			80.1 %

Coastal Loaf:

This Coastal Loaf recipe is started in the afternoon 2:00 - 4:00 pm :

In your dough mixer add:

- 1 lb 4 oz of ripe motherdough
- 2 cups water-16
- 2 Tablespoons of oil - 1 oz
- 2 teaspoons Diastatic Malt powder
- 5 cups bread flour - 22.5
- 1 cup whole wheat flour - 4.2 oz
- 3 ½ teaspoons salt - .7 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80%	1 lb 6 oz	1 lb 6 oz	623 g	55.2 %
Water	2 cups	16 oz	453 g	40.2 %
Oil	2 TBSP	1.0 oz	28 g	2.5 %
Diastatic Malt Powder	2 teasp	.2 oz	5.7 g	.5 %
Whole Wheat Flour	2/3 cup	2.8 oz	79 g	7.0 %
Bread Flour	5.5 cups	1 lbs 8.8 oz	703 g	62.3 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 3.6 oz	4 lb 3.6oz	1916 g	169.8 %
Total Flour Weight	2 lb 7.8 oz	2 lb 7.8 oz	1129 g	100.0 %
Total Water Weight (hydration)	1 lb 9.8 oz	1 lb 9.8 oz	730 g	64.7%

Mix up this dough around 2:00 - 4:00pm in the afternoon. Let the dough autolyse (rest) for 20 minutes. Add salt and then finished mixing for 4 more minutes. Let the

dough bulk ferment until doubled (about 4 - 6 hours). Stir down the dough and place in a covered container into the refrigerator overnight. In the morning at 7:00 am take out the dough and let it warm up for one - two hours until soft and bubbly. Pour out on a floured surface and then shape the loaves.

Stagger the shaping of each loaf 30 minutes apart. Place loaves in bannetons and let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then slash the dough and slide it onto the hot baking stone. Next, working quickly, spray the loaf all over with water, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 425F/218C degrees and continue baking for about 15-20 more minutes, turning the loaf around in the oven, halfway through the last 15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/232C degrees again, before putting in the next loaf.



VIENNA WHITE



Vienna White is made using a Motherdough Starter.
 This recipe makes approximately 4 lbs 5 oz of dough at 62.5 % hydration. It will make 3 small loaves at 1 lb 7 oz each. The Motherdough needs to be started about three days before mixing:

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	5 oz	141 g	38.8 %
Water	7.2 oz	204 g	55.9 %
Bread Flour	11 oz	311 g	85.4 %
Total Weight	1 lb 7.2 oz	657 g	180.1%
Hydration			80.1 %

Ingredient	Volume 3 Loaves	Standard 3 Loaves	Metric 3 Loaves	Bakers %
Motherdough @ 80%	1 lb 7 oz	1 lb 7 oz	652 g	54.8 %

Water	2 cups	16 oz	453 g	38.1 %
Bread Flour	6.5 cups	1 lbs 13.2 oz	827 g	69.6 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 5 oz	4 lb 5 oz	1956 g	169.8 %
Total Flour Weight	2 lb 10 oz	2 lb 10 oz	1190 g	100.0 %
Total Water Weight (hydration)	1 lb 10.2 oz	1 lb 10.2 oz	743 g	62.5 %

Mix all ingredients, except salt, together just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolysis, add salt and mix dough on low speed for about 2 minutes. Then let the dough bulk ferment (first rise) for 4 hours or until doubled.

After bulk fermentation, pour the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into three pieces. Shape each loaf into a Vienna shape and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets or couche.



Allow the dough to final proof for 2 - 3 hours (whenever the dough looks about 1 ½ times its size and is spongy/springy) then turn dough out on peel and slash, spray, cover with roasting lid and bake in a preheated 450F/232C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Bread is done when the internal temperature reaches 200-205F/93-96C .Take out loaf and cool on a rack.

. Don't forget to put the roasting lid back into the oven to preheat before putting in the next loaf.

SOURDOUGH MILLET LOAF



Millet Loaf is made with a Motherdough starter. To make a Motherdough at 80% hydration, check the chapter on Motherdough. This recipe will make two loaves around 2 lb/4907g each. Start this recipe around 2:00 p.m.

To your mixer add:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80% hydration	2 cups	18 oz	510 g	47.8 %
Water	2 cups	16 oz	453 g	42.5 %
Oil	2 TBSP	1 oz	28 g	2.7 %

Dry Milk Powder	1/3 cup	.8 oz	22.7 g	2.1 %
Millet Seeds (whole)	½ cup	3.5 oz	99 g	9.3 %
Bread Flour	5 ¾ cups	1 lb 9.8 oz	731 g	68.5 %
Salt (add after autolyse)	3 ½ teasp	.7 oz	19.8 g	1.9 %
Total Dough Weight	4 lb 1.8 oz	4 lb 1.8 oz	1865 g	174.8 %
Total Flour Weight	2 lb 5.7 oz	2 lb 5.7 oz	1067 g	100.0 %
Total Water Weight (hydration)	1 lb 8.0 oz	1 lb 8.0 oz	680 g	63.7 %

Mix all ingredients together, except salt, just until incorporated and then allow the dough to rest for 20 minutes (autolyse).

After autolyse, add salt and mix dough on low speed for about 2 minutes. Then let the dough bulk ferment for 4 - 6 hours or until doubled. Stir the dough down or fold it three or four times during bulk ferment. When bulk ferment is finished, pour the dough onto a lightly floured surface and knead enough to gather into a ball.

Divide the dough into two pieces. Shape into the general shape you want then let rest for 10 minutes. After resting do a final shaping, place dough into bannetons and cover with plastic bags. Refrigerate overnight.

Next morning take out the loaves staggered 30 minutes apart. Let proof for 1 ½ to 2 hours or when loaves are about 1 ½ times their original size. Then place the first loaf on a floured peel and brush the outside with an egg wash (1 egg beater with 1 Tablespoon of water). Sprinkle dough heavily with Millet seeds. Then slash the dough and slide it onto the hot baking stone.

Cover the dough with a roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn down the oven to 400F/204C degrees and continue baking for about 10- 15 more minutes or until the internal temperature registers 200-205F/93-96C. Turn the loaf around in the oven, halfway through the last 10-15 minutes, for even browning.

Take out your loaf and cool on a rack. Put the roasting lid back into the oven and reheat to 450F/218C degrees again, before putting in the next loaf. Millet Loaf is so pretty and is great for making sandwiches or toast.

ONION FOCACCIA



Onion Focaccia is made with a Motherdough starter. See chapter on Motherdough to make up 80% Motherdough. Mix up the dough in the late afternoon around 3 - 4:00 pm. This recipe will make 2 lbs 4.8 oz of dough at 65.4 % hydration, enough for one large 14-16" round Focaccia.

- ❖ 1 cup vigorous Motherdough Starter at 80% hydration - 9 oz / 255 g (see Motherdough section)
- ❖ 1 cup water - 8 oz / 226 g
- ❖ ¼ cup evaporated milk - 2 oz / 56 g
- ❖ 2 Tablespoon Olive Oil - 1 oz / 28 g
- ❖ 3 & 2/3 cup Bread flour - 16.4 oz / 464 g (use half All Purpose flour)
- ❖ 2 teaspoons salt - .4 oz / 11 g

Mix all ingredients together except salt. Mixing will take 3 to 4 minutes. Autolyse for 20 minutes. After the 20 minutes, add the salt and mix the dough for 2 more

minutes. Let this dough set lightly covered at room temperature for five hours. Fold the dough once each hour. Then cover it and refrigerate overnight.

In the morning take out the dough and let it warm up about one hour. Next, roll the dough into a ball and let it set for 10 minutes. Now begin to stretch out the dough gently from all sides and pushing the dough gently outward from the middle until the dough is about 14 inches in diameter.

If the dough fights you, let it rest another 5 - 10 minutes and start stretching and pulling the dough out again. Set the dough on top of a pizza screen or sprinkle a peel with semolina flour and set the dough on top of it. Let the dough rise for one and one half hours.

Spread the top of the dough with Olive oil and then 1 cup grated Parmesan Cheese, one large (about 12 oz when raw) fried, slightly browned onion, and chopped fresh Rosemary leaves. Don't brown the onions too much as the heat from the oven caramelizes them even more.

Bake at 450F/232C degrees for about 10 - 15 minutes or until it looks browned.



PIZZA MOTHERDOUGH



Pizza Dough is made with a Motherdough starter. Mix up the dough in the morning around 10 a.m.. This recipe will make 4 lbs 1.8 oz of dough at 63.9 % hydration, enough for two large 16" round Pizzas.

- ❖ 2 cup vigorous Motherdough Starter at 80% hydration - 18 oz / 510 g (see Motherdough section)
- ❖ 2 cups water - 16oz / 453 g
- ❖ 4 Tablespoon Olive Oil - 2oz / 56 g
- ❖ 1 Tablespoon Malt Syrup - .8 oz / 22 g
- ❖ 6 ¼ cup Bread flour - 28.1 oz / 796 g (can use half All Purpose flour)
- ❖ ½ teaspoon garlic powder
- ❖ 4 teaspoons salt - .8 oz / 22 g

Mix all ingredients together except salt. Mixing will take 3 to 4 minutes. Autolyse for 20 minutes. After the 20 minutes, add the salt and mix the dough for 4 more minutes. Let this dough set lightly covered at room temperature for six hours. Fold the dough once every two hours.

After fermentation is done, divide the dough into two pieces and roll each dough piece into a ball and let it set for 15 minutes (this is important if you want to be able to stretch the dough). Now begin to stretch out the dough gently from all sides and pushing the dough gently outward from the middle until the dough is about 16 inches in diameter.

If the dough fights you, let it rest another 5 - 10 minutes and start stretching and pulling the dough out again. Set the dough on top of a pizza screen/pizza pan or sprinkle a peel with semolina flour and set the dough on top of it. Let the dough rise for about one hour.

Spread the top of the dough with Olive oil, then your favorite sauce and toppings and bake at 550F/287C degrees for 7 - 15 minutes or until it looks browned.

My favorite way to make pizza is to pop the dough with no toppings except olive oil, onto the very hot stone for 3 minutes and let it bubble up. Then while the dough is still only partly baked, I whisk out the dough using the pizza peel, add the cheese and toppings then put the pizza back into the oven to finish baking. The crust bubbles up terrific this way and you never end up with raw dough in the middle of the crust.



BAY BREAD



Bay Bread is made using a Motherdough Starter.
This recipe makes 4 lbs 5.4 oz of dough at 64.4 % hydration. It will make 2 nice fat loaves.

The Motherdough needs to be started about three days before mixing:

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	5 oz	141 g	38.8 %
Water	7.2 oz	204 g	55.9 %
Bread Flour	11 oz	311 g	85.4 %
Total Weight	1 lb 7.2 oz	657 g	180.1%
Hydration			80.1 %

To make the Motherdough, combine all the above ingredients and let set out at room temperature for 4 hours. Then put in a covered container and refrigerate for at least 3 days.

To make Bay Bread, start in the morning around 11:30 am and mix together:

Morning Ferment	Volume 2 loaves	Standard 2 loaves	Metric 2 loaves	Bakers %
Motherdough@ 80% hydration	2 cups	1 lb 2 oz	510 g	86.5 %
Water	1 cup	8 oz	226 g	38.5 %
Rye Flour	½ cup	1.8 oz	51 g	8.7 %
Bread Flour	2 cups	9 oz	255 g	43.3 %
Total Weight	2 lb 4.8 oz	2 lb 4.8 oz	1043 g	176.9%
Hydration				76.9 %

Allow dough to ferment for four hours at room temperature. Fold dough twice during the four hours. After four hours put the Morning ferment into your mixer and add:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Morning Ferment	All	All	All	90.0 %
Water	1 ¼ cups	10 oz	283 g	24.4 %
Oil	1 TBSP	.5 oz	14 g	1.2 %
Malt Syrup	1 ½ TBSP	1.2 oz	34 g	2.9 %
Bread Flour	6.5 cups	1 lbs 13.2 oz	827 g	74.5 %
Whole Wheat Flour	½ cup	2.1 oz	59 g	5.1 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Total Dough Weight	4 lb 5.4 oz	4 lb 5.4 oz	1967 g	169.7 %
Total Flour Weight	2 lb 8.9 oz	2 lb 8.9 oz	1159 g	100.0 %
Total Water Weight (hydration)	1 lb 10.4oz	1 lb 10.4 oz	747 g	64.4 %

Mix all of the ingredients together, including salt, mix together just until incorporated about 3 - 4 minutes and then allow the dough to rest for 20 minutes.

After resting, mix dough on low speed for about 3 minutes. Then let the dough ferment for 4 hours or until doubled.

After fermentation, pour the dough onto a lightly floured surface and knead enough to gather into a ball. Divide the dough into two pieces. Shape each loaf into a round ball and then allow the dough to rest for 5 - 10 minutes (bench rest). After benching shape loaves into their final shapes and put them into the proofing baskets or couche. Put a plastic bag over the loaves and refrigerate them overnight.

Next morning take out the loaves staggered 30 minutes apart and allow the dough to warm up and final proof for 2 - 3 hours (whenever the dough looks about 1 ½ times its size and is spongy/springy) then turn dough out on peel and slash, spray, cover with roasting lid and bake in a preheated 425F/218C degree oven for 20 minutes. After 20 minutes, remove roasting lid, turn the oven down to 400F/204C degrees and continue baking for about 10-15 more minutes, turning halfway for even browning. Bread is done when the internal temperature reaches 200-205F/93-96C .Take out loaf and cool on a rack.

Turn your oven back up to 425F/218C degrees and put the roasting lid back into the oven to preheat before putting in the next loaf.



MOTHERDOUGH WHITE LOAF



You will need some preparation before attempting the Motherdough White recipe because it contains a Motherdough starter which needs several days of cold fermentation before using. To understand what Motherdough is, read the chapter on "Motherdough".

This recipe needs a 70 % Motherdough. Make up the Motherdough 2 - 3 days before making the preferment. To make the Motherdough:

To make about 1.5 lbs of 70% Motherdough follow these directions (this is more than will be needed for the recipe)

3/4 cup of any vigorous sourdough starter at 166 % hydration - 6.7 oz

3/4 cups water - 6 oz

2 & 2/3 (approx) cups bread flour -12.0 oz

Stir well together and let ferment at room temperature for 3 - 4 hours, then refrigerate. Motherdough is best used at day three but it can be used up till day 5, then you need to feed it or throw it out.

This will make enough for the recipe below and some leftover to feed and use again next time.

You will need 1 lb of the Motherdough to make "One Night Sponge Sour", the leftover Motherdough needs to be fed for the next use. To feed the

Motherdough add: (This is to feed a 70 % hydration Motherdough) If your Motherdough is old and you are refreshing it, discard all but 8-9 oz of dough and then feed:

7/8 cups water - 7 oz (use one cup and take out 1/8 of a cup of water)

1/4 (approx) cups flour - 10 oz

Stir well and let set out at room temperature for 3-4 hours, then refrigerate.

Motherdough White is a mild tasting white motherdough with full wheaty flavor. This recipe makes 2 large loaves weighing a little over 2 lb each and is 64.8% hydration.

In the afternoon around 1:00 p.m. add:

Ingredient	Volume 2 loaves	Standard 2 loaves	Metric 2loaves	Bakers %
70% Motherdough	1 ½ cups	13.5 oz	382 g	34.2 %
Water	2 ½ cups	1 lb 4 oz	567 g	50.7 %
Bread Flour	7 cups	1 lb 15.5 oz	893 g	79.9 %
Salt (add after autolyse)	4 teasp	.8 oz	22.7 g	2.0 %
Total Dough Weight	4 lb 1.8 oz	4 lb 1.8 oz	1865.5 g	166.8%
Total Flour Weight	2 lb 7.4 oz	2 lb 7.4 oz	1118 g	100.0 %
Total Water Weight (hydration)	1 lb 9.6 oz	1 lb 9.6 oz	724 g	64.8%

Tear the Motherdough into chunks and then add the other ingredients except the salt. Mix until the ingredients are well incorporated (about 2 -3 minutes) on

low/medium speed and then let the dough rest (autolyse) for about 20 minutes. After autolysis is done add: .8 oz salt /22.7 g

Then mix on low speed for another minute. Then allow the dough to ferment for six hours . You can leave the dough in the mixer and stir it down every couple of hours, or put it into a folding trough and fold every hour and one half. When the six hours is up refrigerate the dough in a large covered container overnight. Next morning take out the dough and warm up for two hours. Then shape the loaves and place into bannetons or lined baskets.

I usually shape one loaf, keep the rest of the dough covered, then come back after 30 minutes and shape another loaf, etc. This staggers the loaves so they don't all have to be baked at the same time. The dough now needs to final proof. It will need to proof for two to three hours in a warm (80 - 86F/26-30C) place. Make sure to preheat your oven to 425F/218C when you have an hour left for proofing your first loaf.

When the dough is done proofing, (push the tip of your finger into the side of the dough, if it feels bubbly, soft and the dent fills in slowly, it is ready). Turn dough over onto a peel or flat baking sheet sprinkled well with Semolina flour or cornmeal. Slash the top of the dough.

Then bake in a well preheated oven for 20 minutes at 425F/218C degrees, using a baking stone and the roasting pan method of baking. After 20 minutes, open the oven and take off the roasting lid (be careful of hot steam). Continue to bake uncovered for another 15-20 minutes.

During the last 20 minutes, turn the loaf at least once to evenly brown the crust (you may not need to do this with a convection oven). Take out your exquisitely beautiful loaf and cool on a rack. Repeat directions for the other loaf.



Ciabatta Loaf



Ciabatta Loaf made with a motherdough starter

To make approximately 1 lb of motherdough at 80 % hydration, mix 4.5 oz of a vigorous 166% hydration starter, add 5 oz of water and 8 oz of bread flour. Mix this well and let it set out for about 4 hours then cover it and refrigerate for 2 - 3 days before using.

Motherdough @ 80%	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	4.5 oz	127 g	46.4 %
Water	5 oz	141 g	51.6 %
Bread Flour	8 oz	226 g	82.5 %
Total Weight	1 lb 1.5 oz	496 g	180.6%
Hydration			80.6 %

This recipe is started in the morning:

In your dough mixer add:

- 1 lb 1.5 oz vigorous, aged motherdough at 80% hydration
- 8 oz water
- 4 oz canned milk
- 1 Tablespoon Oil (.5 oz)
- 1 lbs 2 oz of bread flour
- 2.5 teaspoons salt added after autolyse(.5 oz)

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80%	All	All	All	63.1 %
Water	1 cups	8 oz (set aside 2 oz)	226 g	28.9 %
Canned Milk	½ cup	4 oz	113 g	14.4 %
Oil	1 TBSP	0.5 oz	14 g	1.8 %
Bread Flour	4 cups	1 lbs 2 oz	510 g	64.9 %
Salt (add after autolyse)	2 ½ teasp	.5 oz	14 g	1.8 %
Total Dough Weight	3 lb 0.5 oz	3 lb 0.5 oz	1374.9 g	175.0 %
Total Flour Weight	1 lb 11.7 oz	1 lb 11.7 oz	785.9 g	100.0 %
Total Water Weight (hydration)	1 lb 3.8 oz	1 lb 3.8 oz	560.7 g	71.3%

You will be able to make about 2 loaves at 1 lb 8 oz each and the finished dough is at 71% hydration.

Withhold 2 oz of the water and the salt. Mix together all ingredients (except 2 oz of water and the salt), for about three minutes on low/medium speed in your mixer. Then let dough set for 20 minutes (autolyse). Now add the salt and mix the dough for 5 more minutes, using the lowest speed on your mixer. Toward the end of the five minutes of mixing, slowly add the 2 oz of water.

Place the dough in a folding trough and let dough ferment for 4 hours in a warm environment (75 - 80F/23-26C) degrees).Once an hour, stir or fold the dough over on itself. After the dough is done bulk fermenting, pour dough onto a very well floured surface. This dough is like a thick batter. Measure out about 1 lb 8 oz of dough for each loaf and pour this sticky lump out onto the heavily floured surface. The dough will be like a thick blob on top of the flour.

Now fold the dough over on top of itself, keeping your hands only on the floured parts of the dough, it will stiffen up somewhat. You do not want to knead this dough because you want to avoid adding too much flour to the wet dough.

Just keep plenty of flour on the surface of the dough to keep it from sticking to the table, if it does stick, peel it off with your pastry scraper. Place dough onto a floured baking sheet or a heavily floured couche. When both loaves are shaped, let proof for about 1 - 1.5 hours. Once the loaves are nice and puffy, dimple the dough with your fingertips, pressing them into dough to flatten it somewhat.

Just before putting the dough into the oven, take the loaf and stretch it out a small amount lengthwise, then bake in a preheated oven at 450F/232C degrees for 15 minutes, turn loaves around and turn oven down to 425F/218C for another 15- 20 minutes or until a deep golden brownish red.

You can place your baking sheet directly onto the baking stone, or you can slide the loaves off of the pan and directly onto the stone (if you pan is flat with no sides. If you use a couche, turn out your loaves onto a well floured peel and place into the hot oven directly onto the hot stone.

If you can cover the dough with a roasting lid for the first 12 minutes, that would work even better, however, don't spray the loaves with water, just allow the steam from the dough to do the job. Cool loaves and then slice and serve with lots of butter.



ONE NIGHT SPONGE SOUR



This One Night Sour is part of the Motherdough collection of recipes. You will need some preparation before attempting the Motherdough recipes because a Motherdough starter needs several days of cold fermentation before using. To understand what Motherdough is, read the chapter on "Motherdough".

This recipe needs a 70 % Motherdough. Make up the Motherdough 2 - 3 days before making the preferment. To make the Motherdough:

To make about 1.5 lbs of 70% Motherdough follow these directions (this is more than will be needed for the recipe)

3/4 cup of any vigorous sourdough starter at 166 % hydration - 6.7 oz

3/4 cups water - 6 oz

2 & 2/3 (approx) cups bread flour -12.0 oz

Stir well together and let ferment at room temperature for 3 - 4 hours, then refrigerate. Motherdough is best used at day three but it can be used up till day 5, then you need to feed it or throw it out.

This will make enough for the recipe below and some leftover to feed and use again next time.

You will need 1 lb of the Motherdough to make "One Night Sponge Sour", the leftover Motherdough needs to be fed for the next use. To feed the Motherdough add: (This is to feed a 70 % hydration Motherdough) If your Motherdough is old and you are refreshing it, discard all but 8-9 oz of dough and then feed:

7/8 cups water - 7 oz (use one cup and take out 1/8 of a cup of water)

1/4 (approx) cups flour - 10 oz

Stir well and let set out at room temperature for 3-4 hours, then refrigerate.

One Night Sponge Sour uses 12 oz of Motherdough starter:
 This recipe makes 2 large loaves weighing 2 lb 3 oz each and is 65% hydration.

Make the preferment:

In the evening, mix together in a large bowl or container:

Preferment	Volume	Standard	Metric	Bakers %
Motherdough 70% hydration	1.5 cups	12 oz	340.2	58.4 %
Water	2 cups	16 oz	453.6	77.8 %
Cracked Wheat	¼ cup	1.5 oz	42.5	7.3 %
Bread Flour	2 2/3 cups	12 oz	340.2	58.4 %
Total Weight	2 lbs 9.5 oz	2 lbs 9.5 oz	1176.5	201.9%
Hydration				101.9%

Mix well to incorporate all ingredients. Cover lightly and ferment overnight at room temperature (between 68 - 76F/ 20 -24C)

To make up the dough:

Next morning at 8 - 9 A.M. take out your preferment, pour it into your dough mixer and add:

Ingredient	Volume 2 loaves	Standard 2 loaves	Metric 2loaves	Bakers %
Preferment	Use all	2 lbs 9.5 oz	1176.5 g	100.1 %
Water	3/4 cup	6 oz	170.1 g	14.5 %
Oil	1 ½ Tbsp	.8 oz	22.7	1.9 %
Bread Flour	4 2/3 cup	1 lbs 4.9 oz	592.5 g	50.4 %
Salt (add after autolyse)	4 teasp	.8 oz	22.7 g	1.9 %
Total Dough Weight	4 lb 6.0 oz	4 lb 6.0 oz	1984.5 g	168.9%
Total Flour Weight	2 lb 9.5 oz	2 lb 9.5 oz	1175.2 g	100.0 %
Total Water Weight (hydration)	1 lb 10.9 oz	1 lb 10.9 oz	763.9 g	65.0%

Mix until ingredients are well incorporated (about 2 -3 minutes) on low/medium speed and then let the dough rest (autolyse) for about 20 minutes. After autolysis is done add: .8 oz salt /22.7 g

Mix the dough for 4 more minutes in your mixer on low speed. Let the dough bulk ferment in a warm (80 - 86F/26-30C) covered, for 4 hours. Once each hour, take out the dough and fold it following the directions in the Dough Folding Chapter. After 4 hours shape loaves one at a time by shaping one loaf, and then 30 minutes later, shape the second loaf.

This is to stagger the loaves so they are not both ready at the same time to bake. Keep dough that is not being shaped in covered container or covered with a damp cloth. When dough shaping is done, place the shaped dough into bannetons, lined baskets or a couche. Allow the dough to proof at room temperature for about 1 - 2 hours (this depends on the activity of the dough and how warm your kitchen is).

When the dough is done proofing, (push the tip of your finger into the side of the dough, if it feels bubbly, soft and the dent fills in slowly, it is ready). Turn dough over onto a peel or flat baking sheet sprinkled well with Semolina flour or cornmeal. Slash the top of the dough.

Then bake in a well preheated oven for 20 minutes at 425F/218C degrees, using a baking stone and the roasting pan method of baking. After 20 minutes, open the oven and take off the roasting lid (be careful of hot steam). Continue to bake uncovered for another 15-20 minutes. During the last 20 minutes, turn the loaf at least once to evenly brown the crust (you may not need to do this with a convection oven). Cool, slice and enjoy!



Sourdough Fat Pretzels



Soft Sourdough Pretzels with cracked salt.

These pretzels are simmered in a baking soda, salt solution for a real pretzel flavor!

This recipe utilizes a "motherdough" which is the basic sourdough recipe put into a bowl, covered, refrigerated, and used the next day.

Basic Pretzel Dough :

In mixing bowl combine:

2 cups 80% Motherdough starter- 18 oz

2 cups water-16 oz

2 Tablespoons of oil -1 oz

3 teaspoons salt - .6 oz

6 1/2 cups Bread Flour -29.3 oz

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Motherdough @ 80%	2 cups	18 oz	510 g	45.8 %
Water	2 cups	16 oz	567 g	40.7 %
Oil	2 TBSP	1.0 oz	28 g	2.5 %
Bread Flour	6 ½ cups	1 lbs 13.3 oz	830 g	74.6 %
Salt (add after autolyse)	3 teas	.6 oz	17 g	1.5 %

Total Dough Weight	4 lb 0.9 oz	4 lb 0.9 oz	1839 g	165.1 %
Total Flour Weight	2 lb 7.3 oz	2 lb 7.3 oz	1114 g	100.0 %
Total Water Weight (hydration)	1 lb 8.0 oz	1 lb 8.0 oz	680 g	61.1%

(If you would like to make this dough with a regular starter instead of Motherdough, substitute 2 cups of starter at 166% hydration and add only 10.8 oz of water. That will give you the same hydration and will make 3 lbs 11.7 oz of dough).

Add all ingredients except salt. Mix for 3 - 4 minutes. Let dough set for 20 minutes and then add salt. Mix for 2 more minutes. Let the dough proof for about 4 hours, turning the dough or folding it once each hour. Then put into a covered large container and refrigerate overnight.



Next day, take the dough when you ready and form the pretzels. Divide the dough into about 16 pieces at around 4 oz each. Roll into snakes about 18- 20 inches long using a sparing amount of flour to keep them from sticking. Shape into pretzel shapes.



Then they need to proof for 1 ½ to 2 hours on a well oiled sheet. When your pretzels have ½ hour they are finished proofing, get a large pan that will hold 3 quarts of water with room to spare. Bring the water to a low boil and add ¾ cup of baking soda and 1 Tablespoon of salt. The water will boil furiously when the soda is added but will settle down. Simmer as many of the pretzels as will fit comfortably in your pan for 30 seconds on each side. Drain and transfer to a well greased pan. Beat one egg with 1 Tablespoon of water and brush on top of the pretzels, sprinkle with rock salt that you have crushed or margarita salt.

Bake in a hot 400F/204C degree oven for around 20 minutes or until nice and brown, turning the pan after 10 minutes for even browning. Remove immediately from pan because they will stick. This recipe will make around 16 large, soft pretzels. Serve with cream cheese or cheddar cheese and mustard. To reheat the next day, put into a hot oven for a few minutes as they are somewhat soggy by the next day from the salt.

(#ADH_128)



PRETZEL SOURDOUGH BREAD



This recipe makes about 4 lbs of dough. The dough is divided into two 2 lb loaves for the recipe.

The Motherdough is added to some water and flour the night before baking to make this preferment:

- ❖ **1 cup vigorous Motherdough @ 80% hydration - 9 oz/255 g**
- ❖ **1 ½ cups water - 12 oz/ 340 g**
- ❖ **4 ½ cups bread flour - 1 lb 4.2 oz /572.7 g**

This will give you 2 lbs 9.2 oz/ 1168 g of pre-ferment at 63.5 % hydration, it will be thick and you may need to get in there with your hands to mix it well. After mixing the ingredients well, cover the bowl and allow the preferment to set overnight at room temperature.

Next morning tear off chunks of the preferment and add to your dough mixer. Then add:

- ❖ **1/3 cup + 2 teaspoons water - 3 oz/85 g**
- ❖ **½ cup evaporated milk -4 oz/113 g**
- ❖ **1 Tablespoons oil - 1 oz/28 g**
- ❖ **1 Tablespoons Malt syrup - .8 oz/22 g**
- ❖ **3 ½ teaspoons salt - .7 oz/19.8 g**
- ❖ **3 cups Bread Flour - 13.5 oz/382 g**

This will make 4 lb 0.2 oz/1820 g of dough at 60.1 % hydration

Additional items you will need are:

- ❖ Large flat pan like a roasting pan
- ❖ A toaster oven rack or small baking rack
- ❖ Some hanger wire for making handles on the rack
- ❖ 2 gallons of water
- ❖ 2 cups of baking soda
- ❖ 1 Tablespoon of Salt
- ❖ 1 egg beaten with 1 Tablespoon of water for the egg glaze
- ❖ Flaked salt or crushed rock salt

Mix all ingredients including salt together just until incorporated using a low speed on your mixer and then allow the dough to rest for 20 minutes (autolyse). This is a stiff dough.

After autolysis, mix dough on low speed for 4 more minutes. Then let the dough bulk ferment for 4 hours. Fold dough once each hour. After bulk fermentation, pour the dough onto a lightly floured surface and knead just enough to gather into a ball. Divide the dough into two pieces. Shape dough into a French type loaf and then allow the dough to bench rest for 5 – 10 minutes. After resting, shape loaves into their final shapes and put them into the couche or lined, floured banneton. Allow the dough to final proof for 2 – 2.5 hours (until the dough looks about 1 ½ times its original size). Preheat your oven to 400F/204.4C degrees.





When the dough is almost done proofing, bring to a simmer in a large flat pan (I used a roaster pan over two burners) about 2 gallons of water. Add 2 cups of baking soda and 1 Tablespoon of salt to the water. Find something that will allow you to lower the proofed dough into the simmering water and take it back out.

A very large slotted spatula would work or get a rack from your toaster oven and add handles to it. A small baking rack would also work if you get some wire from a coat hanger and bend it to make handles for the sides. When the dough is ready, lower the dough into the simmering water, rack and all, and let it simmer for 15 seconds on each side.

It will float in the water so turn it over after the first 15 seconds. Take the dough out and place it on a baking sheet that has been greased. Then spread the whole outside of the dough with an egg wash (1 egg beaten well with one Tablespoon of water) Next sprinkle the top with flaked salt. You can also use rock salt that has been pounded into smaller pieces. Slice x's into the top of the dough.

Then using the same technique, process another loaf and put it onto the same baking sheet as the first loaf. Place the pan into a hot 400F/204.4C degrees oven. Bake for 30 - 35 minutes or until the dough looks dark reddish brown and registers an internal temperature of 200-205F/93-96C. Turn your loaves halfway through the bake for even browning.

Cool and be prepared to eat some terrific bread. This bread is best eaten fresh. If you have to store it overnight, store it in a paper bag as the salt will leach out moisture and make the crust soggy. Next day it makes great sandwiches and toast. By day three it is inedible. Pretzel bread is great with sharp cheese and butter or mustard. It also makes great sandwiches with pastrami and salami. (Next whole page #ADH_135)



SPECIALTY RECIPES



SOFT SWEET DOUGH

A HINT:

Sourdough sweet dough recipes can be a little tougher in the crust and crumb than a yeasted bread. This is because of the long fermentation needed for wild yeast. Over the years I have found adding potatoes, milk and other ingredients will help soften the dough. However, since this book was finished, I have found during my experiments, that adding around 1 oz of sourcream per pound of dough will result in a very nice soft dough. Of course I did not have time to go back and edit this book, but I wanted to let you know of this technique for producing a softer dough. When you add the sourcream it will change the hydration of your dough, so add a little less water or more flour to make up for it.

SWEET DOUGH



This recipe will make about four pounds of sweet dough, the kind used for the Hawaiian Coffee Ring or Cinnamon Raisin Rolls. Use All Purpose flour or a mixture of AP flour and Pastry flour for extra softness of the roll. This recipe will make two large Hawaiian Rolls weighing about 2 lbs / 907 g each. Or two pans of Cinnamon Rolls.

With just a small amount of honey added, the dough is not too sweet. For extra sweetness double the honey. This recipe uses a pre-ferment, so the night before baking, stir together in a large container:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	2/3 cups	6 oz	170 g	38.8 %
Water	1.5 cups	12 oz	340 g	77.6 %
All Purpose Flour	3 cups	13.2 oz	374 g	85.4 %
Total Weight	1 lb 15.2 oz	1lb 15.2 oz	884 g	201.9%
Hydration				101.9%

Let this mixture set lightly covered overnight at room temperature.

Next morning, pour the preferment mixture into your mixer and then add in order:

Ingredient	Volume 2 Rolls	Standard 2 Rolls	Metric 2 Rolls	Bakers %
Preferment	All	All	All	80.9 %
Water	1/3 cup	2.6 oz	73 g	6.7 %
Evaporated Milk or Cream	1/3 cup	2.6 oz	73 g	6.7 %
Honey	1.5 TBSP	1.5 oz	42 g	3.9 %
Vanilla Extract	1 TBSP	.5 oz	14 g	1.3 %
Melted Butter	2 TBSP	1 oz	28 g	2.6 %
Mashed Potatoes	½ cup	4 oz	113 g	10.4 %
Bread/All Purpose Flour	5 ¼ cups	1 lbs 7.1 oz	654 g	59.9 %
Salt (add after autolyse)	1 TBSP	.6 oz	17 g	1.6 %
Total Dough Weight	4 lb 3.6 oz	4 lb 3.6 oz	1916 g	175.3%
Total Flour Weight	2 lb 6.6 oz	2 lb 6.6 oz	1093 g	100.0 %
Total Water Weight (hydration)	1 lb 8.4 oz	1 lb 8.4 oz	693 g	63.4%

Mix together the preferment and the additional ingredients on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another two minutes, then put the dough into a folding trough or large container and bulk ferment the dough in a warm place for 3 to 4 hours.

Fold the dough once an hour. After bulk fermentation, divide the dough into two pieces of about 2 pounds each, and then gather each into a ball. Let dough rest for five minutes.

To make Hawaiian Coffee Ring, roll out each piece of dough into a circle shape about 16- 18 inches across. Spread the Coconut filling (below) across each rolled out circle of dough and then taking one edge, roll up the dough, coil slightly into a circle and place in an oiled/greased round pan or glass baking dish/pie dish. Spray some cooking oil or brush on butter or oil on the surface of the roll to keep it from drying out. When ready to bake, make several slashes deeply into the roll, slashing down into at least two layers.



To make Cinnamon Raisin Rolls, roll out each two pound piece of dough into a large rectangle. Spread melted butter over the whole surface of the dough. Then sprinkle cinnamon and sugar evenly across the dough. Then spread raisins/chopped walnuts over the dough. Starting at one edge, roll the dough into a roll shape. Then either cut the rolls off in slices and lay flat on a greased pan, or lay the roll on a greased pan, slash almost all the way through and then lay the roll over on it's side like this:



(#SR_6 and #SR_7)

Allow the dough to proof for about 1 to 1.5 hours in a warm place 70-80F /21-26C until the dough is about almost doubled and puffy looking. Bake at 375F/190C degrees for about 30 - 35 minutes. Turn the rolls a couple of times for even browning during baking. Brush with butter while the rolls are still hot, then cool

before glazing. The center of the dough should register about 195F - 200F on instant thermometer when done.

Coconut filling:

Coconut Filling	Volume	Standard	Metric
Butter	3/4 cup	6 oz	170 g
Cream or ½ & ½ milk	1/3 cup	2.6 oz	73 g
Sugar white or brown	1 ½ cups	10.5 oz	297 g
Shredded Coconut	2 ¼ cups	7.4 oz	209 g
Chopped Nuts	¾ cup	3 oz	85 g
Cinnamon	1 ½ teasp	.12 oz	3.4 g
Vanilla	1 TBSP	.5 oz	14 g

For the coconut filling, add all above ingredients to a medium sized saucepan and bring to a boil over medium heat while stirring. As soon as the mixture boils, take off heat and cool before using.

Glaze:

- ❖ 1.5 cups powdered sugar
- ❖ 1 teaspoon vanilla
- ❖ Cream or half and half milk

Add powdered sugar and vanilla into a bowl and slowly add milk until the desired consistency, stirring well. Twirl glaze on top of Coconut Roll once the roll is cooled. To add holiday decorations on top of the rolls, use nut halves and sliced glazed fruits to decorate and add color.



TERESA'S SOURDOUGH DOUGHNUTS



This recipe makes about 20 doughnuts at around 3 oz each.
Feed your starter in the morning and then in the evening mix together in a large container:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	½ cup	4.5 oz	127 g	42.9 %
Water	1 cup	8 oz	226 g	76.3 %
All Purpose Flour	2 cups	8.8 oz	249 g	83.9 %
Total Weight	1 lb 5.3 oz	1 lb 5.3 oz	603 g	203 %
Hydration				103 %

This will make a batter-like preferment or sponge. After mixing the ingredients well, cover the bowl and allow the preferment to set overnight at room temperature.

Next morning pour the preferment into your dough mixer and then add

Ingredient	Volume 20 doughnuts	Standard 20 doughnuts	Metric 20 doughnuts	Bakers %
Preferment	All	All	All	63.4 %
Water	1/2 cup	4 oz	113 g	11.9 %
Evaporated milk	1/2 cup	4 oz	113 g	11.9 %
Sugar	1/2 cup	3.5 oz	99 g	10.4 %
Malt Syrup	1 TBSP	1 oz	28 g	3.0 %
Vanilla Extract	1 TBSP	.5 oz	14 g	1.5 %
Oil	1 TBSP	.5 oz	14 g	1.5 %
Mashed Potatoes	1/4 cup	2 oz	56 g	6.0 %
All Purpose Flour	5 1/4 cups	1 lbs 7.1 oz	654 g	68.8 %
Salt	1 Tbsp	.6 oz	17 g	1.8 %
Total Dough Weight	3 lb 12.5 oz	3 lb 12.5 oz	1715 g	180.1%
Total Flour Weight	2 lb 1.6 oz	2 lb 1.6 oz	952 g	100.0 %
Total Water Weight (hydration)	1 lb 4.6 oz	1 lb 4.6 oz	584 g	61.3%

Additional items you will need are:

- ❖ Doughnut cutter
- ❖ Many sheet pans or long couche
- ❖ Glaze , powdered sugar, or icing for toppings
- ❖ 1/2 - 3/4 gallon of oil and a heavy bottomed pan (oil should be 3-4 inches deep)
- ❖ frying thermometer
- ❖ racks for cooling and icing
- ❖ Slotted lifter

Mix all ingredients together just until incorporated using a medium speed on your mixer and then allow the dough to rest for 20 minutes. This is a stiff dough at around 61% hydration but it will feel softer because of the syrup and sugar in the dough.

After resting the dough, mix on low speed for another minute. Then let the dough bulk ferment (first rise) in a warm place (70-78 F/ 21-25 C degrees) for 4 hours. After

bulk fermentation, pour out the dough onto a lightly floured surface and knead just enough to gather into a ball. Divide the dough into two pieces and put one of the pieces into a covered bowl. Let the other piece rest for about 5 minutes and then roll it out into a circle of dough which is about $\frac{1}{2}$ inch thick.

Using a doughnut cutter, cut out doughnuts and place the doughnuts on a floured surface (a couche or a floured tea towel works great). After using up the first half of the dough, take out the other piece from the bowl and make up the rest of the doughnuts the same way. Allow the doughnuts to final proof for 1.5 hours (just until not quite doubled but soft when you press in a finger).



When the doughnuts are almost done proofing, bring $\frac{1}{2}$ to $\frac{3}{4}$ of a gallon of cooking oil to a temperature of around 370 -375F / 187-190C degrees F. I used a large thick clad bottomed pan that held the heat well. Use a frying thermometer to make sure the temperature stays around the 370 - 375F/ 180 -192C F mark. Drop in a few doughnuts and fry for about 2 $\frac{1}{2}$ minutes turning the doughnuts halfway through.

Remove the doughnuts with a slotted spoon and drain on a rack. Then while still warm but no longer hot, dip the doughnuts in glaze (see below) or shake in a bag of powdered sugar. If icing will be used wait until the doughnuts are cool. Fry all of the doughnuts until you are completely done. Don't be surprised if they disappear while you are frying them.

Glaze: (enough for half of the doughnuts)
Stir together:

- ❖ 3 Tablespoons hot water
- ❖ 1 teaspoon vanilla extract
- ❖ 2 cups powdered sugar

As a variation, twist the dough by hand and fry. Coat with powder sugar or a cinnamon sugar mixture. Another variation would be to frost with chocolate frosting, vanilla frosting and/or sprinkle with confetti candy.



EGG BAGELS



This recipe makes approximately 4 lbs 2 .6 oz of dough at 59.9 % hydration for thirteen large bagels.

Feed the starter in the evening on the day before mixing the dough. Next morning mix together in your mixer:

In your mixer add:

- ❖ 2 cups sourdough starter - 18 oz at 166% hydration
- ❖ 1 cup water - 8oz
- ❖ 3 large eggs - 5.2 oz
- ❖ 2 Tablespoon Oil - 1 oz
- ❖ 1 Tablespoons non diastatic malt syrup or honey - .8 oz
- ❖ 1/4 cup Gluten Flour (get this at the health food store)- 1.2 oz
- ❖ 7 cups of Bread flour - 1 lb 15.5 oz
- ❖ 3 1/2 teaspoons salt - .7 oz

Mix all of the ingredients including salt on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to rest for 20 minutes. After resting, mix dough on low speed for about four more minutes. This is a stiff dough. Allow the dough bulk ferment for 4 - 6 hours until doubled.

Turn the dough down at least twice during the bulk ferment which helps develop and line up the gluten strands. To do this hit the start button and let the hook stir the dough about twice around the bowl on the lowest setting. Or alternately, pour out the dough, when done mixing, into a covered rectangular dough folding container and fold the dough twice during bulk ferment.

After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times, then gather into a ball. Divide the dough into approximately 13 pieces weighing about 5 oz each. Shape bagels by first shaping into a 5 oz ball and then by punching a hole through the middle and twirling around your fingers to stretch the hole bigger. Set the bagels onto a baking sheet which has been sprayed with pan spray.

When all of the bagels are shaped, put a cotton cloth over the bagels and spray the cloth with water so it is damp. By the time you are done with shaping the last bagel the first pan has probably been proofing 1/2 hour. Let it proof another hour and 1/2 (about 2 hours altogether) and then in a large skillet bring about 2-3 inches of water to a boil(around 3 quarts), adding 1 Tablespoon of Malt Syrup, 1 Tablespoon of salt and 1 Tablespoon of baking soda to the water.

When water mixture is gently boiling, carefully drop in two or three bagels at a time, boil gently for one half minute on each side (add more water to the boiling mixture when necessary).Remove with a slotted spoon and place on a greased baking sheet.

As soon as the baking sheet is filled with bagels that have been boiled, brush on an egg glaze (made with one beaten egg + 1 Tablespoon water), and sprinkle with favorite topping (toasted dried onion flakes, poppy seeds, sesame seeds, etc). If you don't want a topping you will still want to use the egg glaze as it will make the bagel shiny. Bake the bagels in a 400F/204C degree oven for about 20 -22 minutes or nicely browned. Turn baking sheet halfway through the bake for even browning.

Ingredient	Volume 12 Bagels	Standard 12 Bagels	Metric 12 Bagels	Bakers %
Starter @ 166%	2 cups	18 oz	510 g	45.6%
Water	1 cup	8 oz	226 g	20.3 %
Large Eggs-beaten	3	5.2	147 g	13.2
Oil	2 TBSP	1 oz	28 g	2.5 %

Malt Syrup	1 TBSP	.8 oz	22 g	2.0 %
Gluten Flour	¼ cup	1.2 oz	34 g	3.0 %
Bread Flour	7 cups	1 lb 15.5 oz	893 g	79.8 %
Salt	3 ½ teasp	.7 oz	19 g	1.8 %
Total Dough Weight	4 lb 2.4oz	4 lb 2.4 oz	1882 g	168.2%
Total Flour Weight	2 lb 7.5 oz	2 lb 7.5 oz	118.9 g	100.0 %
Total Water Weight (hydration)	1 lb 7.6 oz	1 lb 7.6 oz	670 g	59.9 %



SOURDOUGH ONION BAGELS



This recipe makes approximately 4 lbs 2 .6 oz of dough at 59.7 % hydration for twelve large bagels.

Feed the starter in the evening on the day before mixing the dough. Next morning mix together in your mixer:

In your mixer add:

- ❖ 2 cups sourdough starter - 18 oz at 166% hydration
- ❖ 1 ¼ cups water - 10 oz
- ❖ 1 Tablespoon Oil - .5 oz
- ❖ 2 Tablespoons non diastatic malt syrup or honey - 1.6 oz
- ❖ ¼ cup Gluten Flour (get this at the health food store)- 1.2 oz
- ❖ 6 ⅓ cups of Bread flour - 1 lb 12.4 oz
- ❖ 2 heaping Tablespoons of toasted dried onion flakes - 0.6 oz

- ❖ 1 ½ teaspoons granulated onion powder - 0.2 oz
- ❖ 3 ½ teaspoons salt - .7 oz

Mix all of the ingredients including salt on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, mix dough on low speed for about four more minutes. This is a stiff dough. Now let the dough bulk ferment (which just means the first rise) for 4 - 6 hours until doubled.

Turn the dough down at least twice during the bulk ferment which helps develop and line up the gluten strands. To do this hit the start button and let the hook stir the dough about twice around the bowl on the lowest setting. Or alternately, pour out the dough, when done mixing, into a covered rectangular dough folding container and fold the dough twice during bulk ferment.

After bulk fermentation, pour out the dough onto a lightly floured surface and knead a couple of times, then gather into a ball. Divide the dough into approximately 12 pieces weighing about 5 oz each. Shape bagels by first shaping into a 5 oz ball and then by punching a hole through the middle and twirling around your fingers to stretch the hole bigger. Set the bagels onto a baking sheet which has been sprayed with pan spray.

When all of the bagels are shaped, put a cotton cloth over the bagels and spray the cloth with water so it is damp. By the time you are done with shaping the last bagel the first pan has probably been proofing 1/2 hour. Let it proof another hour and 1/2 (about 2 hours altogether) and then in a large skillet bring about 2-3 inches of water to a boil (around 3 quarts), adding 1 Tablespoon of Malt Syrup, 1 Tablespoon of salt and 1 Tablespoon of baking soda to the water.

When water mixture is gently boiling, carefully drop in two or three bagels at a time, boil gently for one half minute on each side (add more water to the boiling mixture when necessary). Remove with a slotted spoon and place on a greased baking sheet.

As soon as the baking sheet is filled with bagels that have been boiled, brush on an egg glaze (made with one beaten egg + 1 Tablespoon water), and sprinkle with favorite topping (toasted dried onion flakes, poppy seeds, sesame seeds, etc). If you don't want a topping you will still want to use the egg glaze as it will make the bagel shiny. Bake the bagels in a 400F/204C degree oven for about 20 -22 minutes or nicely browned. Turn baking sheet halfway through the bake for even browning.

Ingredient	Volume 12 Bagels	Standard 12 Bagels	Metric 12 Bagels	Bakers %
Starter @ 166%	2 cups	18 oz	510 g	49.5 %
Water	1 ¼ cups	10 oz	283 g	27.5 %
Oil	1 TBSP	.5 oz	14 g	1.4 %
Malt Syrup	2 TBSP	1.6 oz	45 g	4.4 %
Gluten Flour	¼ cup	1.2 oz	34 g	3.3 %
Bread Flour	6 1/3 cups	1 lb 12.4 oz	805 g	78.1 %
Toasted Onion Flakes	2 TBSP	0.6 oz	17 g	1.6 %
Granulated Onion Powder	1 ½ teasp	0.2 oz	5.7 g	.5 %
Salt	3 ½ teasp	.7 oz	19 g	1.9 %
Total Dough Weight	3 lb 13.2 oz	3 lb 13.2 oz	1735 g	168.3%
Total Flour Weight	2 lb 4.4 oz	2 lb 4.4 oz	1031 g	100.0 %
Total Water Weight (hydration)	1 lb 5.7 oz	1 lb 5.7 oz	615 g	59.7 %



SOURDOUGH ENGLISH MUFFINS



English Muffins are griddled, they are fun to make. This recipe will make about 16 muffins.

In the morning mix together in your mixer:

Ingredient	Volume 18 muffins	Standard 18 muffins	Metric 18 muffins	Bakers %
Sourdough Starter 166% hydration	2 cups	18 oz	510 g	61.5 %
Water	1 cup	8 oz	226 g	27.3 %
Evaporated Milk	½ cup	4 oz	113 g	13.7 %

Melted Butter	2 TBSP	1 oz	28 g	3.4 %
Bread Flour/AP flour	5 cups	22.5 oz	637 g	76.9 %
Salt (add after Autolyse)	2 ½ teasp	.5 oz	14 g	1.7 %
Total Weight	3 lb 6.8 oz	3 lb 6.8 oz	1553 g	187.2%
Total Flour Weight	1 lb 13.3 oz	1 lb 13.3 oz	829 g	100.0 %
Total Water Weight (hydration)	1 ob 7.5 oz	1 ob 7.5 oz	665 g	80.2 %

Mix together the ingredients on a medium speed for three minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another four minutes.

Proof dough for four hours, in a warm place (75-80F/23-26C) Fold the dough once each hour.



(#SR_23)

When the dough is done bulk fermenting, pour it out onto a very well floured surface. The dough will be very wet. Make sure you have the top and the bottom covered with plenty of flour. Roll the dough out to about 1/2 inch.

Use a wide mouth jar band or a clean tuna fish can with the lid removed as a cutter, and cut out English muffin shapes.



(#SR_24)

Place cut dough on a baking sheet which has been covered with a proofing cloth and sprinkled well with flour/Semolina. Let rise for one and one half hours, preheating griddle and oven when the proofing hour is almost done.

Cook English muffin dough on the hot (325- 350 degree) griddle for 6 minutes on each side, checking to make sure your muffin isn't getting brown too fast. Adjust heat if necessary. After both sides have been griddled, pop the muffins into the preheated hot 375F/ 190C degree) oven for another 6 minutes and serve with real butter. Cook the remaining dough the same way. This recipe makes approximately 16 English muffins.

Alternately you could turn the griddle heat down and cook the muffins slower on both sides until the muffins are done, avoiding baking in the oven.

(next page large #SR_25)



FOCACCIA 166



This Focaccia is made with a regular starter at 166% hydration. It is a light bubbly dough. Mix up the dough in the morning as it is a one day dough. This recipe will make 4 lbs 3.2 oz of dough, enough for two large 14" round Focaccia. The dough is at 63.5 % hydration.

- ❖ **2 cups vigorous Starter at 166% hydration -18 oz / 510g**
- ❖ **1 ¼ cup water - 10 oz / 283 g**
- ❖ **½ cup evaporated milk - 4 oz / 113 g**
- ❖ **3 Tablespoon Olive Oil - 1.5 oz / 42 g**
- ❖ **7 1/3 All Purpose flour - 2 lbs 1.0 oz / 935 g**
- ❖ **½ teaspoon garlic powder**
- ❖ **3 ½ teaspoons salt - .7 oz / 19 g**

Mix all ingredients together except salt. Mixing will take 3 to 4 minutes. Autolyse for 20 minutes. After the 20 minutes, add the salt and mix the dough for 3 more minutes on low speed. Let this dough set lightly covered at room temperature for six hours. Fold the dough every two hours.

When dough is done bulk fermenting, divide it into two pieces and roll each piece into a ball and let them set for 10 minutes. Now starting with one piece, begin to stretch out the dough gently from all sides and pushing the dough gently outward from the middle until the dough is about 14 inches in diameter. Shape second piece.

If the dough fights you, let it rest another 10 - 15 minutes and start stretching and pulling the dough out again. Set the dough on top of a pizza screen/pan or sprinkle a peel with semolina flour and set the dough on top of it. Let the dough rise about for one hour.

Spread the top of the dough with Olive oil and then 1 cup grated Parmesan Cheese, and your choice of topping. Pre heat your oven to 450F/232C degrees with a baking stone.

Bake at 450F/232C degrees for about 10 - 15 minutes or until it looks browned.





FRENCH GRILLED SOURDOUGH BREAD



The dough needs to be started the day before you plan to grill. The recipe for the dough is at the end of this recipe page.

Roll out a piece of heavy duty foil about 18" wide by 24 inches long. Grease the foil, and then sprinkle with corn meal. The cornmeal is used to keep the dough from sticking to the foil and it helps the crust to be crispy. Next sprinkle your favorite mixture of spices and seasonings on top of the cornmeal.

The ones used here were for the Hot n Spicy loaf:

- Garlic salt
- Cracked black pepper
- Parsley
- Red hot pepper flakes
- Dried onion flakes
- Grated fresh Parmesan cheese





For the Italian Style loaf:

- Sesame seeds
- Parsley flakes
- Mixed Italian seasonings
- Garlic Salt
- Grated fresh Parmesan cheese
- Your choice of how liberal to sprinkle!

Roll out your dough in the shape of a French bread loaf, about 18 inches long by about 3 inches wide. The dough weighs about 1.5 lbs. Place the dough in the middle of your prepared foil and flatten dough slightly so the loaf is about an inch high. Bring the side edges of the foil to the top over the dough and fold the foil over on itself a couple of times to seal it. Turn up the edges to seal the side edges. Flatten the folded pieces against the sides so they lay flat. When you are making this envelope for the dough, keep in mind to give enough space so the dough can double inside. Set aside and let rise for about 2 hours.



French Grilled Sourdough

In your mixer combine:

- 1 ½ cups starter - 13.5 oz/ 382 g
- 1 ¼ cups water - 10 oz/ 283 g
- 2 TBSP oil - 1 oz/ 28 g
- 1 TBSP Malt Syrup - .8 oz/ 22.7 g
- 5 ¼ cups bread flour- 23.6 oz/669 g
- 2.5 teaspoons salt - .5 oz/ 14.2 g



(ADSALT AFTER AUTOLYSE see below)

Process ingredients in mixer for about 3 minutes at medium speed. Then Autolyse for 20 minutes. After Autolyse, add salt and mix for 3 more minutes. Let dough bulk ferment for four hours.



After bulk ferment, place dough in container, cover and refrigerate overnight. Next day take the dough out of the refrigerator about three hours before grilling time. Let dough come to room temperature, for one hour. Then knead dough on a lightly floured surface a couple of times and divide in half.

Let the dough rest while you are preparing the tin foil

wraps as described above. Then roll the dough into the shape of a French loaf of bread about 18 inches long and around 3 inches wide. Place bread in the middle of the prepared foil and flatten dough slightly so it is about 1 inch thick. It will be about 4 inches in width now. Wrap foil up around bread dough as described. Let



proof for about 2 hours at room temperature. Place foil wrapped bread with the seam side up onto a medium hot griddle, close lid and barbeque for 11 minutes on one side. Turn and barbeque for 11 minutes on the other side. Unwrap (be careful, very hot!) one side and take a peek, if it looks done and smells great, take it off, open up the foil and cool. Right off the barbeque, the bread is a bit soft, but as it cools it crisps up. Butter liberally and ...eat!



HAWAIIAN LOAF



This recipe will make about four pounds of pineapple sweet dough, it is a sticky dough. Use half All Purpose flour for extra softness of the bread. This recipe will make two large Hawaiian Rolls weighing about 2 lbs / 907 g each.

Use a 20 oz can of crushed pineapple. Drain the juice you need for the pineapple juice measurement. Then using a slotted spoon, take out what you need for the crushed pineapple. The leftover pineapple and juice will be used for the topping.

In the morning, add to your mixer:

Ingredient	Volume 2 loaves	Standard 2 loaves	Metric 2 loaves	Bakers %
Starter @ 166%	2 cups	18	510g	53.0 %
Pineapple juice	1/2 cup	4 oz	113 g	11.8 %
Orange juice	1/2 cup	4 oz	113 g	11.8 %
Brown Sugar	½ cup	3.3 oz	93 g	9.7 %
Coconut Extract	1 TBSP	.5 oz	14 g	1.5 %
Crushed Pineapple somewhat drained	½ cup	4.8	136 g	14.1 %
Oil	2 TBSP	1 oz	28 g	2.9 %
Dried Milk	1/3 cup	.9 oz	25 g	2.6 %
Mashed Potatoes	½ cup	4 oz	113 g	11.8 %
Whole Wheat Flour	1/3 cup	1.4 oz	39 g	4.1
Bread/All Purpose Flour	5 ¾ cups	1 lbs 9.8 oz	654 g	76.0 %
Salt (add after autolyse)	1 TBSP	.6 oz	17 g	1.8 %
Total Dough Weight	4 lb 4.3 oz	4 lb 4.3 oz	1936 g	201.1%
Total Flour Weight	2 lb 2.0 oz	2 lb 2.0 oz	963 g	100.0 %
Total Water Weight (hydration)	1 lb 7.1 oz	1 lb 7.1 oz	655 g	68.1%

Mix together the ingredients on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another five minutes, and put the dough into a folding trough or large container and bulk ferment the dough in a warm place for 6 hours. Fold the dough once an hour. Make your Pineapple topping during bulk fermentation time (see below).

After bulk fermentation, divide the dough into two pieces. Use a greased 8 "flat round baking dish and place one piece of the dough into each dish. **Bring the dough up from the sides and pinch into a boule shape, then spoon the topping over the two breads.**

Allow the dough to proof for about two hours in a warm place 70-80F /21-26C until the dough is almost doubled and puffy looking. Bake at 400F/204C degrees for up to 50 minutes (small loaves will take less time). Turn the bread a couple of times for even browning during baking. The center of the dough should register about 195F/90C - 200F/93C on instant thermometer when done.

Pineapple Topping:

Pineapple Topping	Volume	Standard	Metric
Rest of Pineapple and juice in can	rest	rest	rest
Orange Juice	½ cup	4 oz	113 g
White Sugar	½ cup	3.5 oz	99 g
Shredded Coconut	1 packed cup	4.5 oz	127 g
Butter	1 TBSP	.5 oz	14 g
Coconut Extract	1 ½ teasp	.22 oz	6 g
Cornstarch	1 TBSP	.5 oz	14 g

For the Pineapple topping, add all above ingredients to a medium sized saucepan and bring to a boil over medium heat while stirring. Boil for one minute and then take off heat. Cool before using.



JERKY ROLLS



This is a small sized Peppered rolls great for Barbeques.
Makes approximately 12 or so Jerky Rolls.

This dough is a bit sticky but fun to work with. Early in the morning to your mixer add:

Ingredient	Volume 18 Rolls	Standard 18 Rolls	Metric 18 Rolls	Bakers %
Starter @ 166%	2 cups	18 oz	510	57.2 %
Water	1 1/8 cups	9 oz	283	28.6 %
Oil	2 TBSP	1 oz	28 g	3.2 %
Malt Syrup	1 TBSP	.8 oz	22 g	2.5 %
Bread	5 1/2 cups	24.7 oz	700 g	78.5 %
Salt (add after autolyse)	3 teasp	.6 oz	17 g	1.9 %
Total Dough Weight	3 lb 6.1 oz	3 lb 6.1 oz	1533 g	171.9%

Total Flour Weight	1 lb 15.5oz	1 lb 15.5 oz	892 g	100.0 %
Total Water Weight (hydration)	1 lb 4.5 oz	1 lb 4.5 oz	580 g	65.1 %

Mix together the ingredients on a medium speed for three minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another five minutes.

Proof for another three hours in a warm place (80F/26C).

Pour dough out onto a floured surface. Roll out to about ½ " thick. Cut slices about 2 - 2.5 " thick.



Place rolls on greased baking sheet and cover with a damp cloth. Let proof 1.5 - 2 hours until about doubled and puffy looking. Then brush on egg wash and sprinkle with hot red pepper and cracked black pepper or spices of your choice (Egg wash, take one egg and one Tablespoon of water and beat together well). Bake in a preheated 400F/204C for 20 -22 minutes, turning the pan halfway through the bake for even browning.



SOURDOUGH KAISER ROLLS



Sourdough Kaiser rolls are so chewy and tasty. They make great sandwiches. This recipe makes about 18 rolls.

In the evening make a sponge, add to a large container:

Preferment Sponge	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	2 cups	18 oz	510 g	72.7 %
Water	$\frac{3}{4}$ cup	6 oz	170 g	29.6 %
Evaporated Milk	$\frac{3}{4}$ cup	6 oz	170 g	29.6 %
Bread Flour	3 cups	13.5 oz	382 g	66.6 %
Total Weight	2 lb 11.5 oz	2 lb 11.5 oz	1233 g	214.6%
Hydration				114.6 %

Cover and let Sponge ferment overnight at room temperature. Next morning pour the sponge into your mixer and add:

Ingredient	Volume 18 Rolls	Standard 18 Rolls	Metric 18 Rolls	Bakers %
Starter @ 114.6 %	All	All	All	104.6 %
Oil	3 TBSP	1.5 oz	42 g	3.6 %
Beaten Eggs	1 large + 2 egg whites	3.9 oz	110 g	9.4 %
Malt Syrup	1 ½ TBSP	1.2 oz	34 g	2.9 %
Bread Flour	4 ¾ cups	21.3 oz	603 g	51.2 %
Salt (add after autolyse)	4 teasp	.8 oz	22 g	1.9 %
Total Dough Weight	4 lb 8.2 oz	4 lb 8.2 oz	2046 g	173.7%
Total Flour Weight	2 lb 9.6 oz	2 lb 9.6 oz	1178 g	100.0 %
Total Water Weight (hydration)	1 lb 10.7 oz	1 lb 10.7 oz	757 g	64.3 %

Mix together the ingredients on a medium speed for three minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another five minutes.

Proof for another three hours in a warm place (80F/26C).

Pour dough out onto a lightly floured surface. Cut off and weigh out pieces weighing 4 oz each. Roll each piece into a 12 inch long rope. Make sure the rope of dough is lightly dusted with flour for shaping. Tie each piece of rope into a knot and then take the piece from the bottom and push it into the top hole, take the leftover piece on the top and fold it to the bottom:





Place rolls on greased baking sheet and cover with a damp cloth. Let proof 1.5 - 2 hours until about doubled and puffy looking. Then brush on egg wash and sprinkle with sesame or poppy seeds (Egg wash, take one egg and one Tablespoon of water and beat together well). Bake in a preheated 400F/204C for 20 -22 minutes, turning the pan halfway through the bake for even browning.

PISTOU ROLLS



These rolls have chopped Basil in them as well as on top in the Pistou sauce.
In the afternoon, in your mixer, add together:

Ingredient	Volume 16 Rolls	Standard	Metric	Bakers %
Sourdough Starter 166%	2 cups	18 oz	510 g	48.6 %
Water	1 cup	8 oz	226 g	21.6 %
Evaporated Milk	½ cup	4 oz	113 g	10.8 %
Olive Oil	3 TBSP	1.5 oz	42 g	4.0 %
Bread Flour	6 ¾ cups	1 lb 14.3 oz	859 g	81.7 %
Salt (add after autolyse)	3.5 teasp	.7 oz	19 g	1.9 %
Chopped Fresh Basil	4 – 5 large leaves	.4 oz	11 g	1.1 %
Total Dough Weight	3 lb 14.9 oz	3 lb 14.9 oz	1783 g	169.7%
Total Flour Weight	2 lb 5.1 oz	2 lb 5.1 oz	1050 g	100.0 %
Total Water Weight (hydration)	1 lb 7.2 oz	1 lb 7.2 oz	658 g	62.7%

Mix together on a medium speed all ingredients, except salt, just until incorporated, this takes about three to four minutes. Then allow the dough to autolyse (rest) for 20 minutes.

After autolysis, add the salt and mix dough on low speed for two more minute. Now let the dough bulk ferment (which just means the first rise) for about 6 hours.

After bulk fermentation, put dough in large container and refrigerate overnight. Next morning take out the dough and let it warm up to room temperature for about 2 hours. Then divide the dough into 16 pieces at 3.9 oz each. Shape rolls into small batard shapes. Place on greased baking sheets and let proof for about 1 - 1.5 hours or when the dough increases in size about 1 1/2 times.

While proofing, make up the Pistou sauce:

To a blender add:

Olive Oil - 1/2 cup- 4 oz

Basil Leaves - fresh - 1 oz

Fresh garlic 3 cloves - .6 oz

Pulse blend the above ingredients until smooth but not completely liquefied (you can still see shredded leaves in the sauce).

When rolls are done proofing, make a vertical slash and fill with Pistou Sauce then sprinkle with fresh grated Parmesan cheese.

Preheat oven to 400F/218C degrees. When dough is done proofing, make a vertical slash and fill each slash with Pistou sauce then sprinkle the dough with grated Parmesan cheese. Spray a mist of water all over the rolls and then bake for about 15 minutes. Turn pan around for even browning and continue to bake for another 10 - 15 minutes or until the roll's interior registers 200-205F/93-96C on an instant read thermometer. Take out the rolls and place on cooling rack. Cool. Slice in half and eat with your favorite filling.



BLEU CHEESE PULL-APART LOAF



Delicious Pull Apart Loaves. This recipe makes 2 loaves.

In the morning mix together in your mixer:

Ingredient	Volume 2 loaves	Standard 2 loaves	Metric 2 loaves	Bakers %
Sourdough Starter 166% hydration	2 cups	18 oz	510 g	50.0 %
Water	¾ cup	6 oz	170 g	16.7 %
Evaporated Milk	¾ cup	6 oz	170 g	16.7%
Melted Butter	2 TBSP	1 oz	28 g	2.8 %
Bread Flour	6 ½ cups	29.2 oz	827 g	81.2 %
Salt (add after Autolyse)	3 ½ teasp	.7 oz	19.8 g	1.9 %
Total Weight	3 lb 12.9 oz	3 lb 12.9 oz	1726 g	169.3%
Total Flour Weight	2 lb 4.0 oz	2 lb 4.0 oz	1019 g	100.0 %
Total Water Weight (hydration)	1 ob 7.4 oz	1 ob 7.4 oz	664 g	65.2 %

- *When the dough is done bulk fermenting, you will need 12 - 16 oz of crumbled bleu cheese and about 6 oz of melted butter.*

Mix together the ingredients on a medium speed for three minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another four minutes.

Proof dough for another four to six hours until doubled, in a warm place (80F/26C).

Pour dough out onto a lightly floured surface. Cut the dough into two pieces. Cover one piece of dough with a damp cloth. Then using a rolling pin, roll out the other piece of dough into a rectangular shape about 11 X 19 this is only approximate, you want the dough about 1/4 " to 3/8 " thick.

Have 6 oz of melted butter ready and using about 1/2 of the melted butter, brush it on the piece of rolled out dough. Using your pastry blade, cut the dough into sixteen pieces. Then sprinkle the Blue Cheese over the dough. Using your pastry blade or a spatula, stack and pick up four pieces at a time and place upright in a greased bread pan.

Fill the whole pan up with all sixteen pieces of dough, pushing the dough in the pan a bit to fit in all of the pieces. Next, do the same to the other piece of dough you have covered with a damp cloth. When you are finished with both, cover them with a damp cloth and proof until the dough looks doubled or is very puffy looking, about 2 - 3 hours. Bake in a preheated oven at 400F/204C for 35 - 40 minutes or nice and deep golden brown. Turn the loaves halfway through the baking. Cool, turn out loaves and pull apart to serve.





Walnut Fig Bread



Walnut Fig bread has Cardamom in the dough for an exotic flavor. This recipe uses a preferment, so the night before baking, stir together in a large container:

Preferment	Volume	Standard	Metric	Bakers %
Sourdough Starter 166% hydration	1 cups	9 oz	g	55.6 %
Water	1.5 cups	12 oz	340 g	74.1 %
All Purpose Flour	1 cup	4.4 oz	124 g	27.2 %
Whole Wheat Flour	2 cups	8.4 Oz	238 g	51.9
Diastatic Malt Powdered	2 teasp	.2 oz	5.7 g	1.2

Total Weight	2 lb 2.0 oz	2 lb 2.0 oz	963.9 g	210.1 %
Hydration				108.9%

Let this mixture set lightly covered overnight at room temperature.

Next morning, pour the preferment mixture into your mixer and then add in order:

Ingredient	Volume 2 Rolls	Standard 2 Rolls	Metric 2 Rolls	Bakers %
Preferment	All	All	All	84.4%
Water	1/2 cup	4 oz	113 g	9.9 %
Evaporated Milk or Cream	½ cup	4 oz	113 g	9.9 %
Malt Syrup	1 rounded TBSP	1 oz	28 g	2.5 %
Cardamom	1 ½ teasp	.15	4.3 g	0.4%
Oil	1 TBSP	.5 oz	14 g	1.2 %
All Purpose Flour	5 ½ cups	1 lbs 8.1 oz	680 g	59.6%
Salt (add after autolyse)	4 teasp	.8 oz	22 g	2.0 %
Walnuts (add later)	2 cups	7 oz	198 g	17.4 %
Dried Figs halved (add later)	2 cups	12 oz	340 g	29.8 %
Brown Sugar (add later)	2/3 cup	3.4 oz	96 g	8.4 %
Total Dough Weight	4 lb 4.4 oz	4 lb 4.4 oz	1939 g	169.8%
Total Weight with figs and walnuts:	5 lbs 7.4 oz	5 lbs 7.4 oz	2477.8 g	217.0 %
Total Flour Weight	2 lb 8.3 oz	2 lb 8.3 oz	1141.8 g	100.0 %
Total Water Weight (hydration)	1 lb 10 oz	1 lb 10 oz	737.8 g	64.6%

Mix together the preferment and the additional ingredients, except salt, walnuts and figs on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to rest for 20 minutes. After resting, add the salt and mix the dough for another three minutes, then put the dough into a folding trough or large container and bulk ferment the dough in a warm place for 4 hours.

Fold the dough twice during bulk ferment time. After bulk fermentation, divide the dough into two pieces of about 2lbs 2 oz each, and then gather each into a ball. Let dough rest for ten minutes.

After the resting period, take each piece of dough and pull it out into a 12" diameter circle. Take one cup of halved figs and walnuts per loaf and spread out over the circle of dough, sprinkle 1/3 cup of brown sugar -1.7 oz over the figs and walnuts. Then take the edges of the dough and begin folding to the middle of the circle until the edges meet. Pinch the edges together and then put the loaf with the seam side down in a lined, floured proofing basket. Slash deeply around the top of the loaf and press a half fig into each slash. Slash an x in the center of the loaf and press a walnut piece into the x slash. Make the second loaf the same way. Spray the top of each loaf with spray oil and proof in a warm place for 2 - 3 hours in a warm place 70-80F /21-26C until the dough is about almost doubled and puffy looking. It may take a while since the loaf is heavy with nuts and fruit.

Bake at 400F/204C degrees for about 20 minutes. Then turn down the oven to 350F/176C and bake for 20 more minutes. Turn the loaves a couple of times for even browning during baking. Brush with butter while the loaves are still hot, then cool. The center of the dough should register about 195F - 200F on instant thermometer when done.



Raisin Walnut Cranberry Loaf



This delicious recipe was inspired by Ray Glaze of Shaw Island, Wa. It will make about four pounds of dough at 63% hydration. The honey and spices will slow down the raising time of the dough so make sure to give it extra time. Start this recipe in the afternoon around 1:00 pm

In the afternoon, add to your mixer:

Ingredient	Volume 2 Loaves	Standard 2 Loaves	Metric 2 Loaves	Bakers %
Starter @ 166%	2 cups	18	510g	45.3 %
Water	¾ cup	6 oz	170 g	15.1 %
Evaporated Milk	¾ cup	6 oz	170 g	15.1 %
Oil	3 TBSP	1.5 oz	42 g	3.8 %
Eggs	1 large	1.8 oz	51 g	4.5 %

Honey	3 TBSP	2.2 oz	62 g	5.5 %
Add to the dough- Cinnamon or Pumpkin Spice	1 TBSP	.2 oz	5.7 g	.5 %
All Purpose Flour	3 cups	13.2 oz	374 g	33.2 %
Whole Wheat Flour	1 ½ cups	6.3 oz	178 g	15.8 %
Bread	3 cups	13.5 oz	382 g	33.9 %
Salt (add after autolyse)	1 TBSP	.6 oz	17 g	1.5 %
Total Dough Weight	4 lb 5.3 oz	4 lb 5.3 oz	1964 g	174.3%
Total Flour Weight	2 lb 7.8 oz	2 lb 7.8 oz	1127 g	100.0 %
Total Water Weight (hydration)	1 lb 9.1 oz	1 lb 9.1 oz	712 g	63.2%

Mix together the ingredients on a medium speed just until mixed, this takes about three to four minutes. Then allow the dough to rest for 20 minutes.

After resting, add the salt and mix the dough for another 2 minutes. Put the dough into a folding trough or large container and bulk ferment the dough in a warm place for 6-7 hours. Fold the dough once every two hours (three times).



After bulk fermentation, place the dough into the refrigerator overnight. Next morning let the dough warm up for two - three hours in a warm place (dishwasher or proofing cabinet). If you warm it up at room temperature it will take a bit longer.



Divide dough into two pieces and roll each piece out into a rectangle measuring 8" x 20" With a pastry brush, spread evaporated milk over the surface. Then sprinkle a mixture of cinnamon and sugar over the surface. Sprinkle it however heavily you prefer. I like to go light on the sugar and heavy on the cinnamon. Next spread

raisins, chopped cranberries and chopped walnuts over the surface. Then roll up the dough and place into a greased bread pan.



Allow the dough to proof for 2 -2.5 hours in a warm place 70-80F /21-26C until the dough is about almost doubled and puffy looking. Bake both loaves at 375F/190C degrees for up to 50 minutes. Turn the bread a couple of times for even browning during baking. The center of the dough should register about 195F/90C - 200F/93C on instant thermometer when done. Take loaves out of pans to cool. Pour icing glaze over the top when cooled.

Glaze:

- ❖ 1.5 cups powdered sugar
- ❖ 1 teaspoon vanilla
- ❖ Cream or half and half milk

Add powdered sugar and vanilla into a bowl and slowly add milk until the desired consistency, stirring well. Twirl glaze on top of Coconut Roll once the roll is cooled. To add holiday decorations on top of the rolls, use nut halves and sliced glazed fruits to decorate and add color.

Variation: Leave out the cranberries for a Cinnamon Raisin Loaf, or substitute blueberries instead of the cranberries. Figs and pecans also make a great variation.



SOURDOUGH GLOSSARY

Acetic acid	An organic acid produced by a lactobacilli bacteria
All purpose flour	A blend of wheat flours with protein level around 9-11 %
Amylase Enzyme	Amylase enzymes present in dough break down starch into sugars. Amylase is present in larger amounts in sprouted grains and whole grains
Artisan Bread	Handcrafted bread made by an skilled baker
Baguette	A French style loaf which originated in Austria it has a long shape with an optimum amount of crust to crumb ratio
Bakers Blade	A dough scraper with a blade usually around 6" x 4" same as a bench scraper or pasry blade.
Bakers percentage	A method of measurement where the ingredients are figured as a percentage of the flour weight
Baking sheets	Flat sheets for baking, like a cookie pan or a flat pan with no sides. Common sizes are full size, 18" x 26" and half size 18" x 13" pans sized to fit a full sized bakery oven
Baking stone	A flat stone used on the bottom of the oven to simulate a masonry oven, usually for baking bread or pizza
Banneton	Willow or cane basket used for proofing dough
Barm	A starter made from brewers grain by-products or foam
Batard	A bread shaped like a regular French bread, shorter than a baguette and much wider
Bench scraper	A tool in a rectangular shape with one edge used as a scraper or divider and the other edge as a handle, usually 4" x 6" with a handle on one side. Same as a bakers blade or a pastry blade.
Biga	A lower hydration dough cultured with commercial yeast and used as a seed for building dough

Boule	A loaf of bread shaped as a ball or in the round
Bread flour	A flour made with higher protein levels of 10 - 12 % , used for making bread. It usually is enriched and has malt and dough enhancers added. Can be bleached or unbleached.
Bread thermometer	A thermometer which has a long point which is thrust into a loaf of bread to measure the interior temperature, usually reads at least to 220 degrees F
Brotform	Same as Banneton , German variation of word Banneton A cane or rush basket used for proofing dough.
Bulk ferment	First rising or fermentation of dough after mixing
Carbon dioxide - CO ₂	Gas by-product of fermenting yeasts and bacteria
Chef (when used for a leaven)	French word for a culture used as a seed for the first stage of dough building
Cob	A rustic round shaped loaf
Commercial or Bakers yeast	A modern variation of yeasts derived from brewers yeast, which is fast acting and has a long shelf life
Couche	A long, heavy linen or canvas cloth used to hold dough while it is proofing, with folds to separate the loaves
Crumb	The interior structure of a baked item is called it's crumb
Crust washes or glazes	Finishes for bread crust, egg glaze, sugar glaze, cornstarch wash, are some of the finishes for a particular look and texture for the crust. Glazes may be applied before, after or during baking.
Culture	A stable mixture of yeast and bacteria propagated in a water/flour mixture
Desem	Flemish sourdough starter made with whole wheat flour
Diastatic malt	Usually made from sprouted, barley which is dried at a low temperature to keep the enzymes active.
Docking	Poking holes in dough to control over rising or bubbling up of dough
Dough	A mixture of liquid, flour and often some type of leaven
Dough Scraper	Same as a bench scraper
Extensible	A dough is extensible when it has the ability to stretch

	easily
Fermentation	When carbohydrates are converted into alcohol, acids and gasses as a result of yeasts, bacteria and enzyme activity
Foccacia	A type of flat bread usually with toppings
Gluten	A protein including gliadin and glutenin which form the weblike structure of bread which traps the gasses formed during fermentation
Grain Ferment Method	Pre-ferment method of treating wholegrains to break down and soften the indigestible portions before making dough
Hooch	The liquid that rises to the top of a high hydration culture
Hydration	The amount of water to flour ratio by weight
Instant read thermometer	A digital thermometer used for instant readout of temperature usually with a probe and digital readout
Lactic Acid	An organic acid tolerant to lower Ph levels which contributes to the flavor of bread
Lactobacilli	A bacteria present in sourdough cultures which produces organic acids
Lame	A French word for a tool with an attached razor used for slashing dough
Leaven	A substance used to produce carbon dioxide for raising dough
Levain	A French type of pre-ferment used to make bread
Masonry oven	A baking oven made with stone, brick or concrete and heated by fire, electricity or gas
Motherdough	Cool fermented sourdough starter from 50-80% hydration
Natural Leaven	The wild yeasts and bacteria present in fruits and grains used to raise dough
Non diastatic malt	A malted grain powder or syrup in which the enzymes are no longer active
Old dough	A piece of fermented dough saved to be used in a subsequent batch of dough
Pastry blade	Same as a dough scraper or baker's blade

Pate Fermente	Same as Old dough
Poolish	A Polish wet preferment usually made with a small amount of commercial yeast
Pre-ferment	A mixture of flours/grains and liquids fermented before adding to the main dough
Proofing	Second raising of dough after shaping
Proofing Cloth	A cloth used to line baskets or bread molds for holding dough while it proofs
Proofing test	A test used to see if a leaven is still viable
Protease	An enzyme in dough activated by the addition of water to flour, which helps to degrade or break down the strands of gluten making the dough more extensible
Rack	Cooling racks are used to cool baked goods.
Refresh	To feed a sourdough starter/culture water and flour
Retard	To cool down a dough and slow it's fermentation
Retarder	A temperature controlled environment for cooling dough
Roasting Pan Method	A method of baking that keeps steam next to the loaf
Sauerteig	A German term for sourdough
Scoring	Decorative and useful slashing or slicing in the dough before baking, used so the dough can expand in an expected manner
Slashing	Cutting or slicing dough to allow dough to expand while baking
Sourdough	A natural leavening or wild yeast fermented dough
Sourdough starter	A stable culture of yeasts and bacteria in a water/flour mixture used to leaven dough.
Sponge	A type of pre-ferment usually around 100% hydration
Starter	Same as Sourdough Starter
Straight mix	A method of mixing dough with the minimum amount of stages.
Stretch and fold method	A hand stretching and folding method of developing dough
Torpedo	A loaf shaped somewhat like a skinny football with pointed ends.

Vigorous or active starter	A healthy stable culture of wild yeasts and bacteria
Wild yeast	Yeasts found in the natural environment
Yeast	A fungi which reproduces by budding, it's fermentation causes CO ₂ as a by-product which raises dough

About the Author

I have been baking for 40 years. At the age of ten, I was baking and selling cupcakes to the neighbors. I became the mother of ten children and so I had plenty of reasons to bake.

My interest in real sourdough began in the Summer of 2004 when my daughter challenged me to bake “real” sourdough, because “Nobody can bake real sourdough at home.”

Taking up her challenge, I had no idea that it would lead me to my own sourdough business, called Northwest Sourdough, a blog and a forum all about sourdough.

Northwest Sourdough's bread was featured on KNOE TV's What's Cooking with Diane Cage in April of 2006.

Northwest Sourdough is mentioned in the resource section of Peter Reinhart's award winning new book, "Artisan Breads Every Day".

I am now working on a new book called: "100% Sourdough" which is exclusively 100% starter levain using only 100% wild yeast.

It's been fun, Teresa



End of Part 3

“Discovering Sourdough” is comprised of three parts. The first section is Part 1- Beginning Sourdough. The second section is Part 2- Intermediate Sourdough. The final section is Part 3 - Advanced Sourdough.

Contact me at: northwestsourdough@gmail.com

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Have fun baking!