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Artisan Breads at Home

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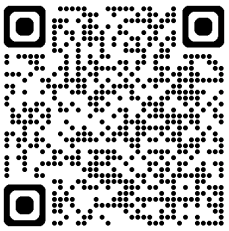

PRODUCTION ASSIGNMENTS

SOUR: IN A CATEGORY OF ITS OWN

Sour (some people call it "sourdough starter") is a preferment that you make yourself without using commercial yeast. You mix the flour and water, let it capture wild yeast in the air, and utilize the yeast present in the flour. This is the way bakers made bread for millennia, all the way back to ancient Egypt. Commercial yeast wasn't invented until the mid-nineteenth century, shortly after Louis Pasteur confirmed that yeast existed. So, what does sour mean to you? Why bother if there are so many other preferments you can make using commercial yeast? As good as those preferments are, the flavor and texture of bread made with sour (the French call it *levain*) is incomparable. And like all the things you have learned about bread up to now, it just takes some extra time and persistence.

Some bread books instruct you to establish a "chef" or a "mother" (a sourdough base that takes a week to ten days) before spending another week or so making a sour to use in your bread. For these recipes, there is really no need to get that complicated. You will need to develop a "base sour" using bread flour a week before you want to use it to bake bread. This requires only about fifteen minutes of your time each day. You will have to mix flour and water together the first day, stir it the next, then take some of the mixture the third day and feed it with more flour and water, and continue in this fashion until you've reached day seven.

It pays to be consistent in the type of flour you use to build your base sour. Calculate the total amount of flour you will need and make sure you have enough of the flour at the beginning to complete all seven days of feedings while you are establishing the sour. If you change the type of flour during this process, it can alter the results. You will also want to make enough of the sour, so you have some left over after you've made your bread. This way, you will have a piece of the sour to feed and keep alive for future batches of bread.

Later in this section, you will learn how to convert your white sour base to another type of sour using other flours. If you want to make a rye sour, for example, you can take your white sour base (after it has been established with seven days of feedings) and turn it into a rye sour by feeding it for two to three more days with rye flour. You can also do this with whole wheat; durum flour; or mixtures of rye and whole wheat, or durum and whole wheat.

Whatever type of sour you are making, you need to pay attention to the ambient temperature. You are looking for a moderate room temperature in the low 70s. If your room temperature is warmer than 80°F, you will need to adjust the

temperature of the water to compensate. You can either use lower temperature water, or, after feeding the sour, place it in the refrigerator and take it out after two hours.

Now it's time to make your white sour base!

HOW TO BUILD AND DEVELOP A SOUR
TO ESTABLISH A WHITE SOUR BASE:

Day One

Ingredient	Ounces	Grams
Flour, bread	4.0	113
Water, 85°F	4.0	113

Day 1: Mix equal amounts of flour with water (at 85°F) until the mixture is homogenous. Use a bowl big enough for the mixture to double in size. The bowl should be glass or stainless steel, since these, unlike plastic, are less likely to retain odors. (You may use plastic if the vessel is fresh and reserved for this purpose.) Once you have finished mixing and have scraped down the bowl to make it look tidy, cover it, and let it sit at room temperature for 18 to 24 hours. The goal during this time is for the enzymes to break down the starches in the flour into sugars. Any wild yeast present on the flour or in the air will begin feeding on these sugars.

Day 2: Uncover your bowl and you will notice that something is happening. You will probably see that your mixture is still wet, but the aroma will have changed from a floury smell to something riper. You will probably see some bubbling. You should not be seeing streaks of mold: If you are, throw it out and start over. If everything looks good, use a clean hand or utensil to mix it together again. (If any foreign bacteria get into the dough, this can change the sour and overtake it.) By mixing the sour, you are moving around the food for the yeast, incorporating air and expelling gas, as well as equalizing the temperature and strengthening the structure. There is no need to feed your starter today. Scrape anything off the sides of your bowl into the mix, cover, and let it sit for another 18 to 24 hours so it has more time to develop acidity and flavor.

Day Three

Ingredient	Ounces	Grams
Water, 85°F	4.0	113
Mix from Day 2	4.0	113
Bread flour	4.0	113

Day 3: When you uncover your bowl today, you will notice an even greater change. It should be very bubbly, and smell pleasantly fermented. Your wild yeast is ready for a new supply of food. Use a scale to weigh the amount of mixture you need and discard the rest. (Yes, this may seem like a waste, but you don't want your starter to take over your kitchen, so you must throw some out along the way to keep its size in check.) Next, you will place equal parts of fresh water (at 85°F) and your starter mixture from the previous day into a clean mixing bowl. Once you have blended these together, add an equal part of flour to the mix and blend with your hands until it's homogenous. Scrape down the sides of your bowl, cover, and let it sit for another 18 to 24 hours.

Day Four

Ingredient	Ounces	Grams
Water, 85°F	3.0	83
Mix from Day 3	6.0	170
Bread flour	3.0	85

Day 4: What will you find in the bowl today? The mixture should look different from the one you left the previous day. It should be bubbly, still somewhat soupy, and smell pleasantly fermented, but with a stronger aroma than the previous day. Today when you feed the starter, your proportions will be different: a ratio of water, starter and flour that is 1:2:1. Why? You want to give the wild yeast a chance to take off. Keep the water warm at 85°F. Once you have blended the ingredients, the mixture will be looser than what you saw yesterday. Scrape down the bowl, cover, and let it sit for another 18 to 24 hours.

Days Five to Seven

Ingredient	Ounces	Grams
Water, 55°F	6.0	170
Mix from Day 4	3.0	85
Bread flour	9.0	255

Days 5 to 7: When you prepare to feed your starter on Day 5, you will notice it has become very aromatic and bubbly. It is sitting higher in the container than

what you saw the previous day. The smell will be very strong.

From this stage onwards, when you feed your starter, you will be using a ratio of 2:1:3 (two parts water, one part sour and three parts flour) For example:

Water	4 oz.
Sour	2 oz.
Bread flour	6 oz.

You may save as little as 8 oz. of the starter but may refresh as little as you require for the bread you want to make, as seen in the amounts given in the preceding example. The remaining sour would then be discarded. Also, your water should now be at 55°F. The water must be cooler to slow down fermentation to build flavor and acidity. You want to level off the starter and let it work itself into the proper balance and range of both acidity and leavening.

Place the water (at 55°F) and the previous day's mix in a bowl and stir it together until dissolved. Add the flour and mix until homogenous. Scrape the bowl down, cover, and let it sit in a place that is at moderate room temperature (68°F to 72°F). After feeding, the sour will be stiffer today, more like a dough. For the next several days, due to the fermentation activity, your starter will look over-fermented and broken down when you uncover thecontainer.

MY STARTER'S READY—WHAT NOW? MAINTAINING AND BAKING WITH A SOUR

Once you have established your sour (meaning you have fed your starter for seven days and it has been fermenting for about 18 hours since the last feeding), you are ready to make bread with it. Your recipe will tell you what to do.

Alternatively, you can decide to keep the sour going until you are ready to bake. How do you do this? There are several options. Some people like to keep a sour at room temperature, feeding it once a day with a 2:1:3 ratio (2 parts water, 1 part sour, 3 parts flour). But you may also give the sour another feeding and place it immediately in the refrigerator until needed. In this case you will need to "refresh" it when you are ready to bake. Two questions may come to mind here:
1. Why put it immediately in the refrigerator?
2. What does it mean to "Refresh?"

Answer 1: If you were to place the sour in the refrigerator after it had fermented for 18 hours without feeding it (i.e., your Day 7 feeding was completed and the sour had fermented for a day), it would be over fermented when you went back to use it and it would not work because the yeast would

have eaten all of the available food and there would be no yeast activity to leaven your bread.

Answer 2: To "refresh" a sour simply means that you feed the sour again for several days, so it comes back up to strength. Again: Once you establish your sour, you either bake with it or keep it alive. When you are ready to refresh, remove the sour from the refrigerator and let it come to room temperature for one day. Then start a "Day 5" feeding for two or three days.

HOW TO FEED (OR REFRESH) A WHITE SOUR BASE

Do this once a day if you are keeping your sour at room temperature (this is then "feeding" the sour). Or, if your sour is in the refrigerator (this step is then "refreshing" your sour), remove it and allow it to come to room temperature for one day, then feed it for two to three days, as directed. It should appear as it did on Days 5 to 7 when you were building your starter. (Or, for slightly less sour, as per the specific bread formula you are making, you may follow the instructions for a Day 5 to 7 feeding. Also, you may choose an alternate sour feeding recipe, as the recipe you wish to use dictates.)

Think about when you will need to use a refrigerated sour and plan ahead. You want it to be refreshed 18 to 24 hours before you plan to bake bread, so you will need to allow for one day of the sour coming to room temperature, and two to three days of feedings (plus 18 hours of fermentation after the last feeding)—this means that you'll need to plan ahead four or five days. If you want to just keep the sour alive, put it immediately in the refrigerator after the last feeding without letting it ferment again. Then refresh it at least once every three weeks or a few days before you are ready to use it to bake bread.

Whether you are feeding or refreshing your sour, you will know it is ready when it appears and smells as it did when you finished first developing it. If you are feeding a sour to maintain it and are not baking, you will have to throw away a portion of it, but you always want to save a minimum of 8 oz to maintain the health of your starter and for ease of refreshing for baking.

Let's say the following is your recipe for refreshing your sour. (This recipe will depend on the instructions in the recipe for the bread you intend to bake.)

1. Put the water in a clean stainless steel or ceramic bowl (or use a fresh plastic container reserved for this purpose). The container should be big enough for the starter to double in size. Weigh out the portion of sour specified in the recipe (in this case, 5 ½ oz.), and put it into the bowl with the water. Dissolve it in the water, using a clean hand to break it up. Measure the amount of base you need

to feed the sour and discard the leftover portion of the sour you are not using for the feeding. As mentioned earlier, it may seem like a waste, but you don't want to keep more sour than you need. It can quickly grow to much more than you can realistically use. Do not pour the unneeded sour mixture down your kitchen sink, though, because it will clog the drain. You can scoop the extra sour into a bag and throw it out, or if you have a compost heap, you could put it in there.

2. **Add** the flours to the bowl with the sour and water and mix by hand until you have a homogenous mass.

3. **Scrape** down the bowl, cover it, and label it with the time so you can be sure of how long it has been fermenting when you come to check on it. Leave it out at room temperature to ferment for 18 hours. If you are not making bread after 18 hours, give it one more feeding, then place the sour in the refrigerator immediately after that feeding. It bears repeating: **Sours need to be refreshed at least once every three weeks**.

CHANGING A WHITE SOUR BASE INTO AN ALTERNATE TYPE

Once you have your white sour base, you can alter its characteristics by simply changing the type of flour you use at the next feeding. You can think of these flours not only by what they contain (rye, whole wheat, durum, or white bread flour) but by what they will do for your bread's entire makeup.

White bread flour provides the type of acid found in milk: lactic acid, which among other things provides flavor to your bread. This acid is milder in flavor than what you find in rye flour.

Rye contains some lactic acid too, but also a healthy dose of acetic acid—the kind you find in vinegar, which will provide more and different flavors but reduce the fermentation and therefore the volume of the bread. Like rye, whole wheat contains both acetic acid and lactic acid, but the balance swings more toward lactic acid, which results in a milder, sweeter flavor than rye, but less volume than white bread. Whole wheat is more acidic than white flour, but less so than rye. Durum will give you a mild lactic flavor like wheat, but a sweet finish with a crispy crust due to other characteristics in the flour. Think about breads you've eaten that were made with these flours and how they differed. If you want a specific attribute in your final bread, you can feed your white sour base with the type of flour that will help provide those characteristics. You can also use combinations of flours to make a more complex flavor and acidity profile.

Once you've decided on an alternate sour to create from your white sour base, use the same flour type and texture when you feed it each day. Coarser flours may absorb less liquid or ferment more slowly than finely ground flours, so

you'll need to change the ratios accordingly. If you are using rye flour to feed a white sour base, for example, you will need to add more water and a small amount of salt. Rye absorbs water more readily and ferments faster, so you need the salt to slow down the fermentation.

CREATING A RYE SOUR FROM A WHITE SOUR BASE

Rye Sour

Ingredient	Ounces	Grams
Water, 60°F	7.5	213
White sour	2.5	71
Medium rye flour	7.5	213
Salt	0.1	3

When feeding a rye sour, it is best to use a stand mixer instead of your hands because the rye sour is very sticky and thick.

1. **Put** the water and sour in the bowl of a mixer, and blend with the paddle attachment for 1 minute on the slowest speed.
2. **Add** the rye flour and salt, then mix an additional 3 minutes on the slowest speed. Make sure to scrape down the bowl.
3. **Place** the mixture in a stainless-steel bowl or ceramic container that is big enough for it to double in size. Cover and label. Leave the sour out at room temperature to ferment for 18 hours.

Remember, if you are not going to use rye sour now to bake bread, you have two options. You may feed it once a day and keep it at room temperature. Or you may give it one more feeding, then place it in the refrigerator immediately after that feeding without fermenting at room temperature. Then, once every three weeks it needs to be refreshed.

CREATING A WHITE WHEAT SOUR FROM A WHITE SOUR BASE

Feeding your sour with 100% whole wheat is not recommended, as this tends to create too much acidity in the sour. Rather, if you substitute 25 to 30% of the bread flour listed in the feeding instructions with whole wheat, you will have a sour that complements your bread nicely. You will not have to adjust the water.

SOUR Q & A

Confused about how to establish a sour and keep it alive? Here are some basic questions and answers.

How long does it take to establish a sour?

It takes seven days to establish a sour starter base, using nothing more than flour and water that capture wild yeast from the air. You keep the sour at room temperature the whole time. Once you have completed the seven-day feeding schedule and your sour has fermented for 18 hours after the last Day 7 feeding, your sour is ready for making bread**.**

What if I'm not ready to bake when the sour is ready?

If you do not want to use the sour right away, you can keep it alive by feeding it once a day at room temperature. It will thrive if you feed it and care for it each day. If you are not using the sour to bake bread each day, you will have to discard a portion of it so that the sour starter does not get too large.

You can also choose to refrigerate the sour. Assuming your sour has fermented for 18 hours after the last Day 7 feeding, you will need to feed the sour one more time and then put it immediately in the refrigerator. Refrigerating it right away will prevent the sour from becoming over fermented. It can stay in the refrigerator for up to three weeks before it needsto be fed again.

What happens after three weeks? And what if I want to use the sour before then?

You must refresh the sour before you use it again, or once every three weeks if you simply want to keep the sour going indefinitely. If you don't refresh when you want to bake bread, the sour will be sluggish and won't work well. If three weeks have passed and you don't refresh the sour, the wild yeast in the starter will die.

What does "refresh" mean?

Refreshing a sour simply means that you are speeding up the fermentation to bring back a starter to the correct activity after dormancy under refrigeration by giving the yeast more food. You let the sour come to room temperature for a day, then feed it for two to three days at room temperature before either using it to bake bread, or immediately refrigerating it after the last feeding. You can keep the sour going indefinitely if you remember to refresh it at least once every three weeks.

It takes a lot of flour to establish a starter. Can I cut down the recipe and use less flour?

Not when you are establishing the white sour base. You must use the amount listed or it won't work. Once your sour is established, however, you can choose to keep a smaller portion of it alive. Scale down the feeding recipe, accordingly, using the 2:1:3 ratio of water to sour to flour.

Can I use an alternate flour when establishing my sour starter base?

White bread flour is the easiest flour to use to establish your sour base. Other flours, such as whole wheat, rye, and durum, tend to have different hydration needs. You can, however, use 25% of an alternate flour (with white bread flour making up the other 75% of the flour total) for every day of the feedings, without having to alter the water in the recipe. Or you can establish your white sour base, then alter it by feeding it with a different flour.

What if I run out of flour when I am trying to establish my sour base? Can I use a different flour?

You should make sure you have enough flour on hand before you start the process, or at least try to purchase the same flour if you run out. Changing the type of flour you use to feed your starter alters the equation. If the new flour requires more or less hydration and you don't make the proper adjustments, you may not get the result you want.

What if the sour looks moldy?

Throw it out and start over again.

SOURDOUGH BREAD

Crafting sourdough bread, given the proper time and care, is a truly rewarding experience. No other bread has the character and depth of this naturally fermented loaf. From the creation of the leavener to the development of the dough's complex flavor, everything about the way this bread is made contributes to its exceptional taste and texture.

Yield: 3 loaves at 450grams
FDT: 78°F | **Bulk fermentation:** 120 minutes| **Final fermentation:** 60 minutes
Retard: overnight | **Rest:** 60 to 75 minutes| **Bake:** 450°F and 35 to 45 minutes

Ingredient	Ounces	Grams	Bakers %
Water, 80°F	16.3	462	66.5%
White Sour (recipe follows)	9.6	272	39.2%
Malt syrup	0.2	6	0.8%
Bread flour	22.8	646	93.1%
Whole-wheat flour	1.7	48	6.9%
Salt	0.7	20	2.9%
Total	51.3	1454	209.4%

1. **Make** the dough the day before you want to serve the bread. Put the water, sour and malt in the bowl of a mixer fitted with a dough hook. Mix for 1 minute on low speed, to break up the sour. Add the flours and mix on low speed for 2 minutes, making sure to scrape down and flip the dough over. Cover the dough in the bowl and let it sit for 15 minutes.
2. **Add** the salt and mix for 2 minutes on low speed, making sure to scrape down and flip the dough over. Mix for 2 minutes on medium speed, making sure to scrape down and flip the dough over. The dough should be a little sticky, but with good gluten development. Place the dough in a lightly oiled bowl large enough for it to double in size and cover it with plastic wrap.
3. **Allow** the dough to rest and ferment in a warm place for 60 minutes, until when lightly touched the dough springs back halfway.
4. **Fold** the dough in the bowl- four times. Let the dough rest again and ferment for 60 minutes, until when lightly touched the dough springs back halfway.
5. **Divide** the dough into 3 pieces at 450 grams. Round each dough piece against the tabletop. Place them on a lightly floured surface and cover. Allow it to rest and ferment for 10 minutes.
6. **Line** a baking tray or round baskets with white cloth napkins or kitchen towels. Dust the cloth with flour.

7. **Shape** each piece of dough round again and place the loaf seam- side up on the cloth and then bring the cloth up between each loaf on the tray. Cover the shaped dough pieces and allow the dough to rest and ferment at room temperature for 60 minutes, then refrigerate the dough overnight. (This is called retarding the bread, to help slow down fermentation and develop more flavor and acidity.)
8. **Twenty minutes** before baking, preheat the oven to 475°F with a baking stone. Ten minutes before baking the loaves, place a tray filled with 3 cups of warm water below the baking area in the oven to help produce steam.
9. **Uncover** the dough directly from the refrigerator and place each piece seam-side down on an oven peel lined with parchment paper. Spray each loaf with water then score each loaf ¼- to ½-inch deep and spray each loaf again.
10. **Transfer** the loaves and parchment paper to the baking stone and immediately reduce the temperature to 450°F. Bake for 12 minutes. Remove the steam tray and parchment paper and rotate each piece, then continue baking for another 20 to 30 minutes, until the crust has a deep color and doesn't give when pressed. Baking times will vary.
11. **Remove** the bread from the oven and place it on a cooling rack.

WHITE SOUR BASE FEEDING

This sour will help to produce a mild flavor and aroma and give your bread the best volume or most leavening.

Yield: 18 oz.

Ingredient	Ounces	Grams	Bakers %
Water, 60°F	5.9	167	64.8%
White sour starter	3.0	85	33.0%
Bread flour	8.4	238	92.3%
Whole-wheat flour	0.7	20	7.7%
Total	18.0	510	197.8%

1. **Put** the water and sour starter in the bowl of a mixer fitted with a dough hook and mix on low speed for 1 minute to break up the sour. Add the flours and mix for 3 minutes on low speed, making sure to scrape down and flip the sour over. The sour should be a little sticky with good gluten development. Place the sour in a lightly oiled bowl large enough for it to double in size and cover.
2. **Leave** the sour at room temperature for 18 to 20 hours to ferment. It is then ready to be used.

Notes:
Make sure you never use **all** your sour for baking, or you will have to start over.

The sour feeding can also be mixed by hand until totally homogenous. Place the sour in container and cover.

FOCACCIA / HAND MIX

Yield: 2 loaves 500 gram.
FDT: 80°F | **Biga:** 12 to 14 hours |**Bulk fermentation:** 60 to 70 minutes
Final fermentation: 20 to 30 minutes | **Bake:** 475° 25 to 28 minutes

Ingredient	Pounds	Grams	Bakers %
Biga			
Bread Flour	0.39	178	24.0%
Water, 55°F	0.23	104	14.0%
Yeast, instant dry	pinch	0.1	0.01%
Final Dough			
Bread flour	1.24	564	76.0%
Water, 86°F	0.98	444	59.9%
Olive Oil	0.10	44	6.0%
Yeast, dry	0.01	3	0.3%
Malt	0.001	4	0.5%
Salt	0.04	17	2.3%
Biga	0.62	282	37.9%
Total	3	1361	183.3%
Total	1%	1.6364	

1. **Prepare** the biga the day before you want to serve the focaccia. Put the water in a bowl. Mix the flour and yeast together, add to the water, and mix by hand until homogenous. You want the biga to have no flour lumps or hard areas. The biga will be stiff and will resemble dough. Cover with plastic wrap and allow it to remain at room temperature for 8 to 10 hours prior to mixing before using. After this, the biga will have fermented and risen, and there will be bubbles on it. It should not have collapsed in the center.
2. **To make the dough,** use a bowl large enough for the final dough. Add 90% of the water to the bowl, reserving the rest for later (see "Basic Double Hydration Technique," below). Add the malt and biga, then break the biga up by hand into little pieces for 5 minutes. Add the flour, yeast and salt to the bowl while mixing by hand. Work the mixture with your hands for about 5 minutes, making sure to scrape and squeeze the dough with your fingers to help break it down. The dough should have some structure at this point. Start adding the remaining 10% of water in thirds until it is all incorporated, making sure the dough has absorbed the water before adding more. At the end, the dough will be weak and lacking in structure, but this is fine. Cover and leave in the same bowl that you mixed in. Allow it to rest and ferment in a warm place for 20 to 30

minutes.

3. **Carefully** dip your hands in water and fold the dough from all four sides. Let the dough rest and ferment for 30 minutes, until the dough springs back halfway when lightly touched.
4. **Fold** the dough again and let the dough rest and ferment for another 10 minutes, until the dough springs back halfway when lightly touched.
5. **Line** a baking tray with parchment paper or use a disposable pan and oil the sides and bottom. Prepare a small container of olive oil, pastry brush, and semolina flour.
6. **Slowly** turn the dough out onto an oiled space on the table. Using your bench knife, divide the dough into 500-gram pieces. You can change the weight of the dough depending on the size and shape of the pan or mold being used. Lightly shape the dough round and place the bottom into the semolina flour. Then take the dough and put it onto the lined tray. Leave even space between each piece of dough.
7. **Allow** the dough to rest for 10 minutes.
8. **Once** rested, lightly handle the dough to flatten out and keep the round shape. Allow to final ferment for an hour and half lightly covered with plastic wrap. Again, this is subject to the pan size.
9. **When** dough is proofed, dip fingertips in olive oil and stipple the top of each dough. Make sure to touch the bottom of the tray through the dough. Cover with roasted onions**.**
10. **Bake** at 450°F for 20 minutes. Once out of the oven, brush with more olive oil and sprinkle with fresh chopped rosemary and flaked sea salt.

Basic Double Hydration Technique

As you learned in the previous section, brioche is a very strong, enriched dough that requires a specialized mixing technique because of its high fat and sugar content.
Another category that requires special handling is that of delicate and viscous doughs, ciabatta being a good example. These doughs benefit from the "double hydration" mixing method—or adding the water in two stages.

Focaccia—an extremely wet dough—can be mixed by hand and is often made with the preferment biga. Preferments were discussed earlier in this chapter, but to review: You create the preferment (in this case, a biga) ahead of time, mixing a portion of the recipe's flour, water and a little bit of yeast. Then you let it sit and ferment for a while. Biga has less water with a ratio of flour to water that is 2:1. When it's time to mix the bread, you add the rest of the recipe's flour, salt and yeast to the biga. If, however, you added the entire amount of water in a recipe to the biga all at once for something like focaccia—that has a

high-water content— the dough would end up far too soupy and lacking any gluten structure. How can you develop the gluten in such a bread if the wheat proteins are just floating around? This is where the “double hydration” technique comes into play.

In this example, we make focaccia using a biga:

1. **Start** mixing your dough with clean hands. Add 80% of the recipe’s water to the biga, then add the rest of the ingredients. Holding back 20% of the water will help the dough to have more cohesion at first and will allow the gluten to develop its structure as you mix.
2. **Once** the dough has reached the improved stage of gluten development (where it holds together well but is not strong enough to hold a translucent window), you can add the remaining 20% of the water in the recipe, but not all at once. Add the remaining water one third at a time, squeezing the dough gently while mixing. Focaccia is a delicate dough and should not be worked too much. Once you have incorporated all the water, it is time for bulk fermentation, and you proceed along with the rest of your bread-making steps.

CINNAMON-ROLL DOUGH

Cinnamon is a wonderful addition to a dessert, not just for its flavor but also for its medical benefits. It can help control blood sugar levels and protect against heart disease. It is also beneficial as a preservative.

Yield: 4 to 5 loaves at 28 oz. (will vary depending on mold)
FDT: 82°F |**Bulk fermentation:** 55 to 70 minutes |**Final fermentation:** 75 to 90 minutes
Bake: 375°F and 35 to 40 minutes

Ingredient	Pounds	Grams	Bakers %
Cinnamon Filling (recipe follows)	4.6	130	•
Dough			
Milk, whole, 80°F	.45	808	43.3%
Eggs	0.20	372	19.9%
Butter, soft	0.18	323	17.3%
Malt syrup	0.00	8	0.4%
Bread flour	1.03	1867	100%
Yeast, instant dry	0.01	16	0.9%
Sugar	0.12	210	11.3%
Salt	0.01	24	1.3%
Total	2	3629	194.4%
1% Garnish	1.0290		
Egg wash	as needed		

1. **Make the cinnamon filling** the day prior and store it in the refrigerator. When ready to start mixing the bread, remove the cinnamon filling from the refrigerator and leave it at room temperature for 60 minutes. Place into a Kitchen Aid to make sure the filling is nice and smooth with no lumps.
2. **Make the dough:** Put the milk, eggs, and malt in the bowl of a mixer. Combine the flour with the yeast and add to the bowl, then add the sugar and salt. Place the butter on top of the flour prior to mixing. Place the bowl on a mixer fitted with a dough hook and mix for 4 minutes on low speed, making sure to scrape down and flip the dough over twice during this process. Mix for another 4 minutes on medium speed, scraping down the bowl and flipping the dough over twice during this process. Place the dough in a lightly oiled bowl large enough for it to double in size and cover it with plastic wrap.
3. **Rest** the dough and ferment in a warm place for 45 to 60 minutes, until

when lightly touched the dough springs back halfway.

4. **Place** the dough on a lightly floured work surface and roll it out about 1 ½ inches thick. Transfer the dough to a tray with parchment and cover with plastic wrap. Place it into the cooler for a minimum of an hour or overnight.
5. **Roll** the dough out to ½ in thickness and try to stay as long and rectangular in shape as you can (not too wide). Spread a thin layer of the cinnamon filling around the entire surface. Less is more. Roll the dough towards yourself and check that the seam is on the bottom of the roll. Then cut the roll to the size of your loaf pan. Cut the dough into 3 and braid it or cut it in half and twist. Place the final shaped dough into your greased pan with the seam down.
6. **Egg wash** each loaf and cover with lightly oiled plastic wrap. Allow the dough to rest and ferment in a warm place for 75 to 90 minutes, until when lightly pressed the dough springs back halfway.
7. **Preheat** the oven to 425°F about 20 minutes before the end of final fermentation.
8. **Uncover** the loaves and egg wash a second time.
9. **Transfer** the loaves to the oven and immediately reduce the temperature to 350°F. Bake for 20 minutes. Rotate the loaves and bake for an additional 20 to 30 minutes, until golden brown. This may take longer depending on your oven size and the size of the loaf.
10. **Remove** the bread from the oven and immediately release it from the pan. Place the loaves on a cooling rack.

Variations:

Pumpkin: Substitute ½ of the milk with pumpkin purée.

Lemon: Add 45 g of lemon zest to the dough.

CINNAMON FILLING

This filling is fitting for almost any coffee cake or enriched bread. It may also be used as a filling for other yeasted pastries.

Yield: 32 oz

Ingredient	Pounds	Grams	Bakers %
Butter, melted	0.73	331	100.0%
Brown sugar	0.70	316	95.5%
Pastry flour	0.10	44	13.2%
Cinnamon	0.10	44	13.2%
Honey	0.08	36	10.8%
Eggs	0.30	138	41.7%
Vanilla extract	0.01	2	0.8%
Total	2	907	274.3%

1. **Put** the melted butter and brown sugar in the bowl of a mixer fitted with a paddle attachment. Mix for 2 minutes on low speed, making sure to periodically scrape down the bowl.
2. **Combine** the flour, cinnamon, and honey, then add to the bowl of the mixer and continue mixing for 2 minutes on low speed, continuing to scrape down the bowl.
3. **Combine** the eggs and vanilla in a separate bowl, then add to the butter mixture and mix for 2 minutes on low speed, continuing to scrape the bowl periodically.
4. **Transfer** to a container to cool at room temperature for 60 minutes. Cover and refrigerate overnight. You can make it ahead and store it in the refrigerator for up to a month or make the morning of use but make sure to cool thoroughly before use.

EGG WASHING

A classic example of egg-washed bread is challah. Think about this bread's beautiful, glossy braid; its deep brown color; its moist richness and tender crust. The appearance and texture of the challah's crust are due in part to egg washing.

When you egg wash a loaf of bread, you usually do it twice: once after the bread is shaped, to seal it while it is fermenting, and a second time right before the bread goes into the oven. (Remember to cover your shaped and fermenting dough after the initial egg wash. Whether you are using plastic wrap or going with something reusable, spray the wrap with oil so it won't stick to the dough.) In general, breads that are egg washed are not misted before baking, and they are not scored. You can apply seeds to bread that is egg washed. Let's say you are making sunflower rolls. Egg wash the rolls after you form them. Egg wash again after the rolls have proofed, then sprinkle the seeds on top before baking.

A good rule of thumb for making egg wash is to use one whole egg plus one yolk. This gives a better shine due to the additional fat from the yolk. Add a little salt to the egg wash to help break down the proteins in the eggs, which will make the egg more homogenous (the addition of salt will also change the egg wash's color to a deep orange, like orange juice). Add a little water to the wash to make it more pliable. Finally, strain the egg wash through a sifter to remove any parts of the egg that didn't incorporate.

The egg wash can be kept at room temperature for the time you are using it. Make sure not to keep your brush in the egg wash. Set the brush aside on a saucer or spoon rest between applications. After you are finished, wash the brush well and allow it to dry out fully.

BAGUETTE WITH POOLISH

Baguettes made with a preferment have a more open structure and more flavor.

Yield: 3 loaves 350 grams.
FDT: 82°F | **Poolish**: 12 to 14 hours

Ingredient	Ounces	Grams	Bakers %
Poolish			
Water, 55°F	7.2	204	31.4%
Bread flour	7.2	204	31.4%
Yeast, instant dry	0.01	0.3	0.04%
Final Dough			
Water, 85°F	9.7	275	42.4%
Malt syrup	0.2	5	0.8%
Poolish	11.7	332	51.1%
Bread flour	15.7	445	68.6%
Yeast, instant dry	0.1	3	0.6%
Salt	0.5	14	2.3%
Total	37.9	1074	165.8%

Method

1. **Mix** the poolish the day before you want to mix the final dough. Put the water in the bowl of a mixer. Combine the flour and yeast, add to the water, and mix on low speed for 2 minutes, or until homogenous. The poolish will be soft and fluid (equal parts flour and water). Leave the poolish in the bowl or in an airtight container with room for it to expand and grow. Leave at room temperature for 10 to 12 hours.
2. **To make the dough,** put the water and malt in the bowl of a mixer, then add the poolish and malt syrup. Place the bowl on a mixer fitted with a dough hook and mix for 2 minutes on low speed to break down the poolish. Place the flour into the mixer and mix till homogenous. Cover with plastic wrap and allow to Autolyse for 20 minutes minimum.
3. **Place** the yeast and salt on top in separate spots in the mixer. Mix the dough for 4 minutes, making sure to scrape it down and flip over the dough. Can add more water at this time (double hydration). Then mix for 2 minutes on medium speed, making sure to scrape down and flip over the dough. The dough should be a little sticky, but with good (improved) gluten development. Place the dough in a lightly oiled bowl large enough for it to double in size and cover with plastic wrap.
4. **Allow** the dough to rest and ferment in a warm place for 45 to 60 minutes, until when lightly touched the dough springs back halfway.

5. **Gently fold** the dough to help with degassing of CO2 and for strength. Once folded, cover with plastic wrap, and allow to ferment for 30 minutes.
6. **Line** a baking tray with a white cloth napkin or kitchen towel or couche. The cloth will need to be floured unless seeds are being applied to the loaf.
7. **Place** the dough on a lightly floured work surface and divide it into 350-gram pieces. Pre shape each piece into a 6-inch oblong. Allow it to rest again for 10 minutes before final shaping.
8. **Final shape** into 10 to 12-inch-long baguettes- you can shape to 18 inches if you prefer. This can be done by taking the ends on the left and right of each piece and bringing them together, so they just meet in the center of the loaf. Then bring the top of each loaf over halfway and tuck in. Then bring the top of the loaf over all the way to the bottom and close the seam tightly. Place the loaves seam-side up on the work surface, cover lightly with plastic wrap, and let it rest for 10 minutes.
9. **Apply** seeds, brush, or spray each loaf with water and then roll the top and sides in seeds. Place the loaves seam-side up on the tray with the cloth. Cover the loaves with any additional cloth, then lightly cover with plastic wrap. Allow the dough to rest and ferment in a warm place for 40 to 50 minutes, until when lightly touched the dough springs back.
10. **Twenty minutes** before the end of the final fermentation, preheat oven to 500°F with a baking stone. Ten minutes before baking, place a tray filled with 3 cups of warm water below the baking area in the oven to produce steam.
11. **Place** the loaves lengthwise on the back of a baking tray lined with parchment paper by flipping them onto a piece of thick cardboard, then sliding them onto the tray. Keeping the seam on the bottom, spray the top and sides of each loaf with water. Let sit for 5 minutes, then score the top of each loaf with a razor, cutting ¼–½-inch deep. Spray the loaves with water again. This will add steam in the oven and will allow the loaves to expand.
12. **Transfer** the loaves to the baking stone with parchment paper or keep on the tray, score it, and immediately reduce the temperature to 475°F. Bake for 12 minutes. Remove the parchment paper and steam tray, rotate the loaves, and bake for 8 to 10 minutes more. This will allow the loaves to finish baking and a crust to form. If at the end of the baking the crust isn't thick enough, turn the oven off and leave the bread in the oven with the door cracked open for 4 to 6 minutes.
13. **Remove** from the oven and place the loaves on a cooling rack.

Note: If you don't have enough room to bake all loaves at once, place the loaves in the refrigerator for 15 minutes. This is called "retarding," and the cooler temperature of the refrigerator slows down the yeast's rate of fermentation. You will then bake the loaves you had at room temperature first, and the one from the refrigerator after the first loaves are finished.

CHEDDAR-ONION RYE ROLLS

Sweetly caramelized onions and sharp Cheddar cheese make this rye bread a delightfully savory snack. Rye flour mixed with wheat flour keeps the texture of the bread light; bake the dough in loaf form for exciting sandwich bread or shape it into rolls for a punchy accompaniment to dinner or a lunchtime bowl of soup.

Yield: 24 rolls at 55 grams
FDT: 82°F|**Bulk fermentation:** 45 minutes | **Final fermentation:** 35 to 40 minutes
Bake:
350*F 14 to 16 minutes

Ingredient	Pounds	Grams	Bakers %
Onions, caramelized	0.28	126	20%
Water, 80°F	0.78	352	56%
Vegetable oil	0.02	11	1.8%
Molasses	0.02	11	1.8%
Malt syrup	0.01	3	0.5%
Bread flour	1.06	479	76.2%
Rye flour, medium	.33	149	23.8%
Yeast, instant dry	0.01	4	0.6%
Sugar	0.02	11	1.8%
Salt	0.04	16	2.6%
Cheddar cheese, grated	0.28	126	20%
Rye Sour	0.16	72	11.5%
Total Weight	3	1361	216.7%
1% =	1.3846		
Garnishes			
Cheddar cheese, grated	1.0	453	

Method

1. **Sauté** the onions with a small amount of oil or butter until caramel brown in color. Set aside to cool. This can be done a day ahead if needed. Do not use olive oil- a neutral oil is best.
2. **Put** the water, oil, molasses, malt, and rye sour in the bowl of a mixer. Combine the flour and yeast and add to the bowl, then add the sugar and salt. Using the Straight Dough Method of mixing, place the bowl on a mixer fitted with a dough hook. Mix for 4 minutes on low speed, making sure to scrape down and flip the dough over twice during this process. Mix for 4

more minutes on medium speed, making sure to scrape down and flip the dough over. At this point, the dough should be slightly strong with full gluten development. Add the onions and all the cheese and mix for 1 minute on low speed, making sure to scrape down and flip the dough over once during this process. Place the dough in a lightly oiled bowl large enough for it to double in size and cover with plastic wrap.

3. **Allow** the dough to rest and ferment in a warm place for 30 to 45 minutes, until when lightly touched the dough springs back halfway.
4. **Place** the dough on a lightly floured work surface and divide into 2-ounce pieces. Round each piece of dough against the tabletop and place the dough pieces seam- side down in 4 rows of 3 on 2 baking trays lined with parchment paper. Cover the tray lightly with lightly oiled plastic wrap and allow the rolls to rest and ferment in a warm place for 30 to 40 minutes, until the dough springs back halfway when lightly touched.
5. **Twenty minutes** before the end of final fermentation, preheat the oven to 375°F.
6. **Uncover** the rolls and spray them with water. Score the tops by making one cut across each center using a sharp razor blade held at a 90-degree angle to the top of the roll. Spray the rolls with water again and sprinkle the tops with cheese.
7. **Transfer** the rolls to the oven and immediately reduce the temperature to 350°F. Bake for 12 minutes, then rotate the tray and bake for another 4 to 6 minutes, until golden brown.
8. **Remove it** from the oven and place the baking tray on a cooling rack.

Variation: Pan Loaves
After step 3…

1. **Place** the dough on a lightly floured work surface and divide into two 28-oz. pieces. Pre-shape the dough pieces by rounding them against the tabletop. Place them seam- side up on the work surface, cover with plastic wrap, and allow to rest and ferment for 15 minutes.
2. **Shape** each round into a 12-inch oblong. Place each loaf in a well-oiled loaf pan seam-side down and lightly cover with plastic wrap. Allow the dough to rest and ferment in a warm place for 60 to 75 minutes, until when lightly touched the dough springs back halfway.
3. **Twenty minutes** before the end of final fermentation, preheat the oven to 375°F. Fifteen minutes before baking the loaves, place a tray filled with 3 cups of warm water below the baking area in the oven to help produce steam.
4. **Spray** the loaves with water. Allow the dough to sit uncovered for 5 minutes, then score each loaf directly down the middle from end to end, using a sharp razor held at a 90-degree angle to the bread. Spray the

loaves with water again and garnish the tops by sprinkling with salt and cheese.

5. **Place** the loaves in the oven and immediately reduce the temperature to 400°F. Bake for 15 minutes, then remove the steam tray, rotate the pans, and bake for an additional 20 to 25 minutes, until golden brown.
6. **Remove** from the oven, immediately remove the loaves from the baking pans, and place the loaves on a cooling rack.

Semolina Dough

Yield: 2 Loaves (about 500 g)
FDT: 78°F | **Bulk fermentation:** 45 minutes total | **Final fermentation:** 30-40 minutes
Score & Bake: 500°F drop to 460°F 16 minutes, vent 8 minutes

Ingredient	Pounds	Grams	Bakers %
Biga			
Durum	0.19	85	16.7%
Semolina	0.19	85	16.7%
Water	0.21	94	18.3%
Yeast, dry	0.000	0.0	0.01%

Final Dough			
Durum	0.19	85	16.7%
Semolina	0.19	85	16.7%
Bread flour	0.38	170	33.3%
Olive oil	0.05	21	4.2%
Water	0.58	264	51.7%
Malt Syrup	0.01	3	0.5%
Yeast, dry	0.01	2	0.5%
Salt	0.02	11	2.2%
Biga	0.58	264	51.7%

Total weight wanted	**2**	**907**	**177.4%**
1%	1.1271		

Method

1. Pre-ferment: Make 18 hours before final dough.
2. Mix 4 minutes on speed 1. Autolyse for 15 minutes. Add yeast and salt. Mix 4 minutes on 1st speed. Add water if needed.
3. Mix 1 minute on 2nd speed.
4. Bulk ferment: 30 minutes / FOLD / 15 minutes.
5. Divide into 700 grams for long batard.
6. Pre-shape: round.
7. Intermediate fermentation: 15 minutes
8. Set up a half sheet tray with sesame seeds and a half sheet tray with a wet handy wipe.
9. Shape: baguette. Transfer to a floured couch, seam down.
10. Final fermentation: 30 to 40 minutes.
11. Bake in hearth oven at 500°F/460°F for 16 minutes. Vent for 8 minutes. Cool.

TIME AND TEMPERATURE FORM

Bread	*Liquid Temp.*	*Flour Temp.*	*Room Temp.*	*Taste*	*F.D.T.*	*B.F. Time*	*Fold Time*	*Divide*	*Shape Time*	*Bake Time*

Weights and Measures

Weights and Measures Equivalencies		
Dash	=	less than ⅛ teaspoon
3 teaspoons (tsp.)	=	1 Tablespoon (½ fl. oz.)
2 Tablespoons (Tbsp.	=	⅛ cup (1 fl. oz.)
3 Tablespoons	=	¼ cup (2 fl. oz.)
8 Tablespoons	=	½ cup (4 fl. oz.)
16 Tablespoons	=	1 cup (8 fl. oz.)
2 cups	=	1 pint
2 pints (pt.)	=	1 quart (approximately 1 liter)
4 quarts (qt.)	=	1 gallon (gal.)

Scoop Sizes		
#	**Approximate Weight**	**Measure**
30	1 ¼ oz.	2 1/5 Tbsp.
24	1 ½ oz.	2 2/3 Tbsp.
20	1 2/3 oz.	3 1/5 Tbsp.
16	2 to 2 ½ oz.	¼ cup
12	3 oz.	3/8 cup
10	4 oz.	2/5 cup
8	5 oz.	½ cup

Metric Weights and Measures Equivalencies		
1 gram (g)	=	1/28 oz. (or 0.035 oz.)
½ ounce (oz.)	=	14 g
1 ounce	=	28.35 g (approx. 30 g)
2 ounces	=	56 g (approx. 60 g)
4 ounces	=	110 g
6 ounces	=	170 g
8 ounces	=	225 g
12 ounces	=	340 g
1 pound (16 oz.)	=	450 g
1 kilogram (kg)	=	2.21 lb.
1 liter (L)	=	33.92 fl. oz.

TEMPERATURE EQUIVALENCIES		
250 °F	**very cool**	130 °C
300 °F	**low**	150 °C
350 °F	**moderate**	180 °C
400 °F	**hot**	200 °C
450 °F	**very hot**	230 °C

METRIC CONVERSION TABLE		
To change	**To**	**Multiply by**
Ounces (oz.)	Grams (g)	28.35
Pounds (lb.)	Kilograms (kg)	.45
Teaspoons (tsp.)	Milliliters (mL)	5
Tablespoons (Tbsp.)	Milliliters (mL)	15
Fluid Ounces (fl. oz.)	Milliliters (mL)	30
Cups	Liters (L)	.24
Pints (pt.)	Liters (L)	.47
Quarts (qt.)	Liters (L)	.95
Gallons (gal.)	Liters (L)	3.8
Temperature (°F)	Temperature (°C)	5/9 after subtracting 32°

Example: 9°F above boiling equals 5°C above boiling

Baker's "Cheat Sheet" Glossary

By: Lisa Kirschner

Ash: The powdery, incombustible residue left after burning matter.

Average flour value: Value composed of four factors: color of flour, loaves per barrel, size of loaf, and quality of bread as applied to any given shipment of flour.

Bake: To cook by dry heat in a closed place, such as in an oven.

Bakers Percentages: Baker's use percentages based off the Flour. Flour is the largest ingredient used for bread making. Flour is always 100%. Other ingredients are based off this percentage.

Biga: a pre-ferment that is more flour than water with yeast. Mix 10 to 15 hours prior to the final mixing.

Bench Scrapper: Small metal tool that is straight and sharp at one end. Used to divide/cut the dough.

Bleeding: Term applied to dough that has been cut and left unsealed at the cut, thus permitting the escape of air and gas.

Bolting: Sifting of ground grain to remove the bran.

Bowl scrapper: A spatula or flexible dull-edged knife used to scrape batter or dough from bowl sides.

Bran: Skin or outer covering of the wheat berry removed during milling.

Bread dough: The uncooked mass of ingredients used to make bread.

Bread: The accepted term for food of flour, sugar, shortening, salt, and liquid made light by the action of yeast.

Brioche: A light sweet dough, baked in large or small molds.

Buns: Small cakes of bread dough, sometimes slightly sweetened or flavored.

Carbon dioxide: A colorless, tasteless, edible gas obtained during fermentation or from the combination of soda and acid.

Cardamon: Angular, aromatic seeds of herb grown in India and Ceylon, and having anise-like taste. Used whole or ground in pickling, breads, cookies, and many Scandinavian desserts.

Clear flour: Flour made from middlings after patent flour is taken.

Couche: A flax linen that is used to help the dough to hold its shape during proofing.

Croissant: Rich crescent-shaped French roll usually served at breakfast.

Danish pastry: A flaky yeast dough having butter rolled into it and filled with almond, cheese, jam or other filling.

Divider: A machine to cut dough automatically into a required size.

Dough Temperature: Temperature of dough at different stages.

Doughnut: A round cake, usually with a center hole, made of yeast or baking powder dough and cooked in a deep fat fryer.

Dry milk: Milk from which water has been removed by drying.

Dry yeast: A dehydrated form of yeast.

Dusting: Distributing a film of flour on pans or a workbench.

Egg wash: A mixture of eggs and water (or milk) in equal parts applied to an unbaked product by brush to produce a glazed effect and to give the product a rich brown color.

Enriched bread: Bread made from enriched flour or containing federally prescribed amounts of thiamin, riboflavin, iron, and niacin.

Enzyme: A minute substance produced by living organisms, which has the power to bring about changes in organic materials.

Fermentation: The chemical changes of an organic compound due to the action of living organisms as yeast, producing the formation of the leavening gas, carbon dioxide.

Fillings: Sweet creams, jams, etc. spread between baked layers in cakes, rolls or shaped into yeast-raised items.

Firing: Process of heating an oven with fuel.

Flour: Finely ground meal of grain (wheat, rye, etc.)

Fold: The method of lapping dough over on itself after it reaches right fermentation. This helps to expel CO2 gases, build structure, redistribute food for yeast, and equalize the temperature of the dough.

Formula: In baking, a recipe that provides ingredients, amounts to be used, and the method of combining them.

French doughnuts: Doughnuts made of Pâte á Choux.

Fritters: Doughnuts made from cream puff paste and fried in hot deep fat fryer. Fruit-filled drops of heavy cake batter fried in deep fat.

Germ: That part of seed (such as in grain) from which the new plant grows.

Gliadin: The part of gluten that gives it elasticity.

Gluten: The protein part of flour which gives structure to bakery products by enabling flour to expand around air or gas and to hold the texture so formed, the determining quality factor.

Glutenin: The part of gluten which gives it strength.

Graham flour: Unbolted wheat meal.

Greasing: Spreading a film of fat on a surface.

Hardness of water: An indication of mineral salts in greater amount than is found in soft water.

Hearth: The heated baking surface or floor of an oven.

Honey: A sweet syrup substance made by bees from flower nectar.

Hot-cross buns: Sweet, yeast-raised buns with raisins added, marked on top with a cross in dough or a frosted cross. Lenten favorite.

Humidity: Amount of moisture in the air.

Hydrogenated oil: Oil treated with hydrogen to give a type of shortening.

Hygrometer: An instrument to determine the degree of humidity.

Leavening: Raising or lightening by air, steam, or gas (carbon dioxide).

Makeup: Method of mixing ingredients or handling of dough.

Malt extract: A syrupy liquid obtained from malt mash.

Meal: Coarsely ground grain; unbolted wheat flour.

Middlings: Coarse particles of ground wheat made during rolling of the grain in flour mills.

Milk bread: White bread in which all liquid is milk, or which contains not less than 8.8 parts (by weight) of milk solids for each 100 parts of flour (by weight). This is a federal standard that is rigidly enforced.

Mix: The combined ingredients of batter or dough.

Mixing bowl: A concave, hemispherical container for mixing.

Molder: A machine that shapes dough pieces for various shapes.

Oatmeal: A meal made by grinding oats.

Pate Ferment: Old dough ("Pate" referring to "dough" and "Ferment" referring to "old")

Poolish: Equal parts of flour and water with yeast. Mixed 10 to 15 hours ahead of final mixing.

Pre-Ferments: This is used to start the fermentation of dough ahead of the mixing time. There are 4 main pre-ferments that are most common: Poolish, Biga, Sponge, White Sour, Pate Ferment.

Proof box: Box or cabinet equipped with shelves; it also permits the introduction of heat and steam; used for fermenting dough.

Proofing period/Final Fermentation: The time during which dough rises.

Pumpernickel: Coarse, somewhat acid rye bread.

Rounding: Shaping of dough pieces to seal ends and prevent bleeding.

Salt: Sodium chloride; used for flavor and dough control.

Scale: An instrument for weighing.

Scaling: Apportioning batter or dough according to weight.

Score: To score is to make incisions forming a pattern on cakes or pies.

Shrink: To shrink is to roll out paste and allow it to rest before baking to prevent shrinkage.

Sifting: Passing through fine sieve for perfect blending and to remove foreign or oversize particles.

Sponge: Mixture of flour, water and yeast that is made the same day as the final dough. Made at least 30 minutes prior to mixing.

Straight flour: Flour containing all the wheat berry except the bran and seeds; termed 100% extraction flour.

Thermometer: An instrument for measuring temperature.

Wash: A liquid brushed on the surface of an unbaked product (may be water, milk, starch solution, thin syrup or egg).

Whole wheat: Unbolted wheat meal.

White Sour: Also known as the following: Liquid Levain, Starter, Madre, Baby. It is a ratio of 1:1:1 or baker's preference. Ratio is flour: water: starter and no yeast added.

Yeast: A microscopic fungus (plant) which reproduces by budding and causes fermentation and the giving off of carbon dioxide. There is Fresh, Instant, and Active Dry forms of yeast.

These materials were developed at the Culinary Institute of America.

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Artisan Breads at Home Kirschner Spring v.260.docx