How to prepare rye sourdough starter

Step-by-step photo tutorial
How to Prepare Sourdough Starter from Scratch

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Sourdough starter (natural levain) is a symbiotic microbial ecosystem of wild yeasts and lactic acid bacteria that have colonized the mixture of flour and water and it is used for rising bread.

Harmony is reflected in the metabolic versatility of bacteria and wild yeasts. The bacteria break down complex sugars (e.g. starch or maltose) into simple sugars (e.g. glucose) that yeast can metabolise. Yeast produces carbon dioxide and ethanol and the by-products of bacteria digestion are the lactic and acetic acid.

Carbon dioxide leavens the dough and the lactic and acetic acids flavor the starter and the dough with a rich complexity of flavors, giving a bread awesome and a slightly sour tang.

**The activity of your starter will largely depend on these factors:**

- the temperature of the environment and water (your starter will ferment and rise faster in the warm environment and slower in cold environment)

- the percentage of whole grains (whole grain flours boost the activity of your starter)

  - the freshness of the flour (fresh (freshly milled) flours ferment faster)

  - the stiffness - water to flour ratio (stiff starters ferments slower)

  - the quantity of sourdough starter (larger quantities ferment slower)
day 1: MIX FLOUR AND WATER

To start a whole rye mother sourdough starter, mix 30 g of whole rye flour with 30 g of water (1:1 ratio of flour and water). The batter will be quite stiff. Cover a jar with a lid (don’t tighten it completely) and place it to a warm place (25-27°C; e.g. warm oven) for 24 hours. You can also leave the jar in a cooler place; however, it would take longer for the starter to rise (36-48 hours). I usually mix the starter in the afternoon when I am home, so I can have more control over it if necessary. You can use any other flour to start your starter. I use rye flour because it ferments really fast and it is easy to maintain.
After 24 hours you will notice how the rye starter has risen (doubled in volume). There will be many bubbles at the side and at the bottom of the jar - photo below. The smell of the starter should be sweet and pleasant. If after 24 hours there aren’t any bubbles, you might leave your starter to ferment longer or you might just feed it and see if it rises. Punch down your starter with a spoon and mix 20 g of whole rye flour and 20 g of water into the batter. Keep the sides of the jar clean. Leave the starter to ferment at the room temperature.
If making a sourdough starter for the first time, it might be interesting for you to observe how the starter rises after the first feeding. The photo below shows our rye starter 2.5 hours after the first feeding. If your starter is also rising fast, put it in the fridge overnight, so it won’t get over-fermented. A warm place is only needed at the beginning. When starter gets active and stronger, it can thrive in the fridge as well, but it will take more time to rise.
Next morning (after 12 hours) take your rye starter out of the fridge. What you might notice is that the starter has collapsed on itself (photo below) and that is OK—it only means your starter was very active and thus produced a lot of bubbles that couldn’t hold all the weight. It is time for the second feeding. If the surface has dried out, take it off, otherwise just add 15 g of whole rye flour and 15 g of water. Mix well.
After the second feeding you will have 130 g of sourdough starter (i.e. 65 g of flour and 65 g of water).
... OBSERVE AGAIN.

The rye starter will keep rising, the photo below shows the situation 3.5 hours after the second feeding. Take a teaspoon and look how fluffy the inside of the starter looks like.
To know your starter is really alive (besides seeing bubbles and starter rising in volume), try to put a teaspoon of starter into a glass of water. If starter floats in the water, that indicates it is full of carbon dioxide which will also help your bread to rise properly.
You can also make a starter using different flours. To make a starter using other flours, I took a heaping teaspoon of rye starter and mixed it with 20 g of whole grain spelt flour and 20 g of water (photo below). Let it ferment at the room temperature.

If your starter is active and rises after each feeding, it is ready to be used in any recipe (follow the recipes on mydailysourdoughbread.com to check the quantities of starter needed).

And that’s it - well done! Let’s start baking!

Read on below to find other useful general tips, tips on maintainance, and troubleshooting.
Relax and don’t over-complicate. Your sourdough starter is a very simple and a very resilient thing – it won’t resent you if you forgot to feed it at the very exact time every day. Yeasts and bacteria love you anyway – you feed them and they feed you back!

You only need flour and water and a little bit of warmth to start a sourdough starter, no raisins, honey or pineapple juice needed.

If possible, use organic flours to avoid having and consuming pesticides that are present in conventionally grown and stored grains.

If possible, use a wide mouth and a see-through (glass or plastic) container (a jar or a bowl) to prepare a sourdough starter. Using a see-through container will make possible for you to observe the development of your starter and a wide mouth container will ease its maintainance (feeding and mixing).

If you would like to have a bread with subtle and mild sour taste, use fresh, active and young starter.

If preparing sourdough starter for the first time and if having no experience with any other fermented foods (vegetables, homemade yogurt, kefir, ...), you may find the smell of sourdough starter unusual and odd. Don’t let the slightly sour and yeasty smell discourage you from keeping the starter alive in the first days - if you see bubbles and if the starter has rised it means you are on the right path to prepare an active sourdough starter.

Over time, you will find and adopt your own approach and rhythm of preparation and taking care of the starter that will best suit your starter, schedule, your environment and taste.
You have successfully prepared your first sourdough starter. It is alive, active and it rises (doubles in volume) after each feeding. You might have used some of your sourdough starter to make bread or in any other recipe and now it is the time to take care of it, so it will serve you for a long time and you will be able to bake other sourdough goodies as well.

A frequency of feeding of your sourdough starter (the number of feedings and a quantity of flour your starter is fed with) depends mainly on how often and how much you bake (every day, once per week, once per month, 2 loaves per day, one loaf per week ...). It also depends on how active your sourdough starter is.

**Maintainance and feeding routine of my sourdough starter goes likes this:**

- I usually bake once ot twice per week, so I keep my mother sourdough starter in a fridge most of the time (and especially in the summer).
  - I take it out one day before I plan to mix the dough.
  - When I take it out, I first scrape off and discard (compost) the upper third of the starter and then I feed it once to make it active before using it to make another starter or before mixing it directly into the dough.
  - If I use my sourdough starter to make another starter (using different flour), I usually feed it with small quantities of flour (25 g of flour and 25 g of water).
  - If I mix my sourdough starter directly into the dough, I feed it with as much to get to the quantities of the starter the recipe calls for.
  - Keep at least one tablespoon of your sourdough starter after you have used it to prepare another starter or to mix it into a dough. Feed it, leave it at the room temperature for some time so it starts to rise and then put it in the fridge until the next baking. If you plan to bake the next day again, you might leave your starter at the room temperature. In that case, make sure it doesn’t get over-fermented.
Observe and notice how the starter goes through several stages of activity (and smell) after being fed:

1. Just after the feeding and up to several hours, your starter will look inactive (depending on the stiffness of your starter, the flour it was fed with and the environment temperature). It will have the smell of flour.

2. After some time, you will notice first bubbles at the side or at the bottom of the jar or on the surface - this is a sign of your starter rising. The starter will start developing pleasantly yeasty and sour smell.

3. After some more time has passed, your starter will reach the peak - the maximum height and puffiness (it usually doubles in volume). The smell should be mildly sour and still pleasantly yeasty. The starter will stay in this stage for some time. However, try to use it as soon as possible to prevent having over-fermented and sour starter.

4. As the yeasts and bacteria will start running out of the food, gluten will start to weaken, the starter will start falling. It’s smell will start getting more acidic.

5. Eventually, the starter will collapse into itself (depending on the temperature the starter is stored at).

How to take care of the starter if you are on vacation?

If you will not bake for weeks (you don’t have time for baking or you are on vacation), feed your starter with larger quantities of flour (150 g or more) and make it more stiff (add more flour than water). Cover the jar with a lid, leave it at the room temperature for couple of hours until you notice the starter rises and then transfer the jar to a fridge. Of course, you can also take your starter with you on your trip (and you will always have a company :)).

In stiff starters yeasts and bacteria grow slower, due to the harder access to nutrients, so this will retard the growth of your starter. When you are ready to bake again, take your starter out a day before you plan to mix the dough and feed it as usually. If you find it easier, discard your starter and start a new one after coming home or when you want to bake again.
troubleshooting

‘Trouble’ is just another word for your starter getting out of balance.

Q: I’ve mixed the flour with water in order to prepare a mother sourdough starter and let it ferment for 24 hours. However, after 24 hours the batter is still inactive. Why is that?

• What kind of flour did you use? White and old flours tend to ferment slower. I advise you to use fresh or freshly milled and whole grain flours (rye ferments very fast).

• At what temperature did your starter ferment? If around 20-22°C (or lower), it might take longer for your starter to get active. Give it couple of more hours in a warm oven. If you left your starter at higher temperatures (30°C), the fermentation could be disrupted.

• Is your water free of chemicals? Chemicals (fluoride, chlorine,...) might inhibit the normal functioning of microorganisms.

Q: There is a crust on the surface of my starter. What should I do?

If you don’t want to have bits of your starter in a dough, scrape off the dried-out surface and compost it (or mixed it back to your starter very efficiently).

Q: My starter (especially its surface) has darkened. What does that mean?

Don’t worry, you are witnessing a process of oxidation. A batter being exposed to oxygen will get darker, just like a sliced apple.

Q: My starter doesn’t rise at all after feeding and it looks soupy.

Your starter might get weak from time to time (can’t blame him) and will look like it can’t hold its structure. Try feeding it again with whole grain flour, warmer water and place it to warm place. When it doubles in volume, feed it again (and repeat couple of times) so it will get stronger again. If it doesn’t, may your starter rest in peace and start a new one.
Q: My starter is very sour. What can I do?

- When was the last time you fed your starter? Regular feedings (refreshments) can lower the acidity of your starter.

- For how long did you leave your starter to ferment? If you would like to have a starter with mildly sour smell, ferment it less time, but make sure it still active enough so it will be able to rise the dough.

Q: There is a layer of brown liquid on top (in the middle) of my starter.

This alcoholic liquid is called ‘hooch’ (photo below) and it is a symptom of an unfed, neglected and starving starter and it smells like very strong vinegar. When your starter runs out of fresh food, the byproducts of sourdough activity (acidic metabolic by-product of bacteria) will start to break down the gluten and eventually the batter will have no structure and the flour will separate from the liquid. The hooch is likely to appear with more liquid and white flour starters. I have never observed a hooch with stiff and whole grain flour starter. You can just pour it off, discard some of your starter (top layer or a tablespoon of it) and feed it as usual. You can also stir it back into the starter - however, it will have sharper smell and taste.
Q: I left my starter unfed for a very long time. Is he still alive? I have kept it in a fridge and it doesn’t have any molds on it.

If starter is kept unfed for a very long time it might look very inactive. However, this doesn’t mean it is dead. You can test your starter and see it for yourself.

Take your unmoldy starter out of the fridge and feed it with 25-30 g or rye flour. Leave it at the room temperature and observe if it rises in the next couple of hours. If yes, your starter is still alive. If not, wait for couple of hours more - maybe your starter needs more time to come back. If after two days you still don’t see any activity you might consider preparing new starter.

Q: Molds!

From my experience, molds appear when:
• A starter is left unfed (and uncovered) at the room temperature for a longer period of time (days or weeks, depending on the temperature).
• A starter is left unfed and abandoned (and uncovered) in a fridge for a very long of time (usually weeks).
• Small quantities of starter are left unfed at the room temperature or in a fridge for a shorter periods of time.
• Using an unclean jar (it is advisable to clean the sides of the jar after feeding it).

You will never see molds on a healthy, balanced and fed starter.

The photo on the left shows different molds forming on the starter’s surface. This starter has been left unfed at the room temperature for four days. If you see molds like these (black, yellow, blue), discard your starter and start a new one.
I'm specialized in home sourdough bread baking and my mission is to share and unleash the secrets and tricks of sourdough baking and to show that you too can master the art and the beauty of home sourdough baking.

P.S.: If you have any questions or comments, please contact me at natasa@mydailysourdoughbread.com.

I would love to hear your feedback about this tutorial.

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Looking forward