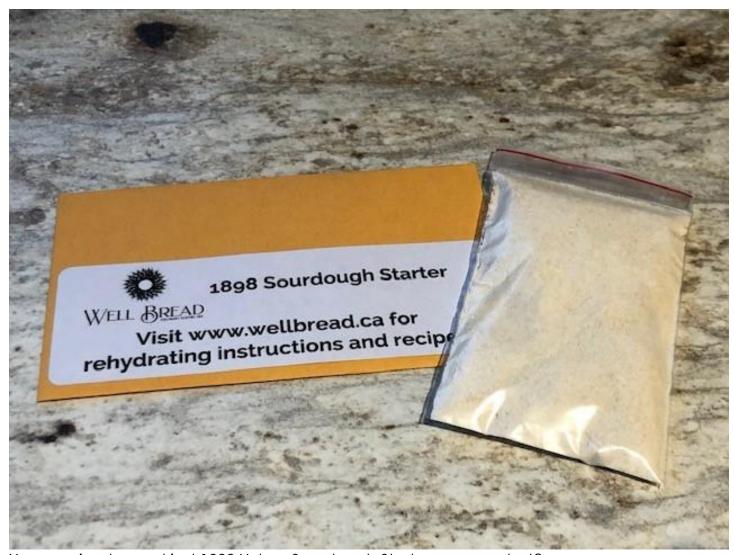
HOW TO REHYDRATE DRIED SOURDOUGH STARTER



You received your dried 1898 Yukon Sourdough Starter so now what?

You need about 1 tablespoon to start and I always send a little more just in case the Customs people decide to test the white powder I sent you in the mail. Don't laugh, it happens more than you know!

If you are looking for instant gratification you are not going to find it here, or with any other sourdough starter. You must give these bacteria and yeasts ample time to wake up, start to eat, get climatized to your home/business, and only then will they start to perform to their potential. It takes time but it is worth it. Plan to devote approximately four (4) days to this process; don't worry, your part is very little and quite easy.

This dried starter will last indefinitely so don't worry about rushing to activate it. I say plan on a Monday evening to activate it and by Friday it should be ready for a weekend of baking. Once this thing starts to take off you'll find you become a bit obsessive about watching it grow and respond to its new environment. Truly, it's like a new pet and if you think about it in those terms you will likely have more success with it. It is a living organism and don't forget that! I treat mine like a toddler; what worked one day may not work the next and there are no rules that guarantee you 100% success. This is a journey so prepare to go on one.



What you need to activate the dried starter

In a glass, plastic or stainless steel/non-reactive bowl, mix:

- 1 Tbsp of dry, powdered starter (the amount you received)
- 1 cup All Purpose flour any brand will work
- 1 cup tepid (body temp) water (not hot or warmer than your body temp, and dechlorinated if possible)
- 1/4 cup white sugar

I affectionately call this sourdough starter the 'white trash' of starters because it LOVES to eat white sugar. It has lived most of its life consuming simple sugars such as white sugar and it does not like to work hard for its food.

Why white sugar? White sugar was cheap and plentiful during the 1898 Yukon Gold Rush. The miners figured out pretty quickly that if they fed their starter a little sugar the starter was quicker to rise, which meant they could bake their bread quicker and get back to their gold mining. In the late 1800's, commercial yeast was not yet readily available. Sourdough starter was literally the 'staff of life' for gold miners. Obviously, it was shared with the Yukon gold miners by the gold miners who came up from the California Gold Rush because the DNA of this sourdough proves it originated from San Francisco. To learn more about the history of this remarkable sourdough read and watch the information links on my website. You truly have a piece of Yukon history in your hands.

In the Yukon, a person who survives a winter here is affectionately called a Sourdough.



Add 1 cup of water to a clean, non-reactive container large enough to hold twice the volume of the initial mix

I use a non-reactive glass bowl when I make sourdough starter. Non-reactive means the bowl and the contents you put into it will not have a chemical reaction with each other. Acidic foods leach metals out of the containers they are stored in. Sourdough starter can become quite acidic so start with the proper container. Plastic, glass, and stainless steel are all acceptable. Some glazes on pottery contain heavy metals and I would not recommend using those for making bread or storing your sourdough starter in. A fermenting crock is typically made from stoneware or some other food safe, non-reactive substance.

Pour clean, non-chlorinated water into a bowl. To easily de-chlorinate tap water: fill a container with cold tap water, leave it uncovered and on your counter for 24 hours. The chlorine will dissipate in that time. After 24 hours, cover the container to reduce evaporation and use it to feed your sourdough starter. Chlorine in water is used to kill bacteria. If your tap water is highly chlorinated it could kill your starter. This small effort can be the difference between success and failure when reviving this dried starter.

I use tepid water (not warm, not cold) or, more often, room temperature water because that's where I store my non-chlorinated water in a food safe plastic jug.



Add the $\frac{1}{4}$ cup of white sugar first and stir to dissolve in the water.

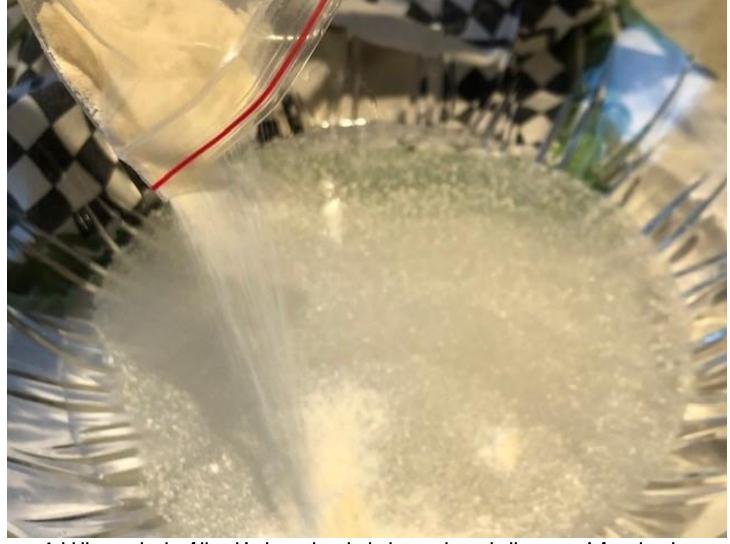
The starter bacteria need food as soon as it rehydrates. By sugaring the water, food is immediately available to the bacteria.

Give the bacteria a helping hand by mixing the white sugar into the water before adding the dried starter.

If the water is infused with food that is readily accessible to the bacteria, the bacteria will begin to consume it immediately upon rehydrating (waking up). This means the starter will come to life more quickly and give you a visual indication it is alive.

We use a large amount of sugar in the initial feeding to activate all the starter bacteria we can. If there is not enough food in the bowl, the bacteria that were almost dead when it went dormant will absolutely die as soon as it becomes hydrated. If there is food to eat, and it's in a form the bacteria doesn't have to work to digest, more of the bacteria in the dried starter will be viable. That means you will have a sourdough starter that has a higher amount of active bacteria and will make you bubbles sooner. That's the whole point of this exercise.

If you starve them, they will die. Simple as that. Just feed it the sugar and don't worry about the amount becoming part of your starter. The bacteria consume most of the sugar and very little is left in the final dough product.



Add the contents of the dried sourdough starter package to the sugar-infused water

When adding dry ingredients to liquid, it's better to add the dry powder to the liquid. If you add the liquid to the dry you will likely get a clump of dry, unincorporated powder remaining in the mixture or stuck to the bottom of the bowl.

Baking tip: in commercial bakeries when making bread, we always add the liquid ingredients to the mixer bowl first and then pour the dry ingredients on top. This helps to eliminate chunks of unincorporated flour, or other dry ingredients, that get trapped on the bottom of the bowl between the mixing paddle/dough hook and the bowl. Liquid first makes bread-dough mixing much easier.

Why do I use a bowl instead of a fancy fermenting crock? Because I want a container that has no corners where ingredients can become stuck. I also like to see the microbial action going on under the surface of the starter. Sometimes there are no bubbles on the surface of the starter, but through the glass bowl I can see the start of tiny bubbles and it gives me peace of mind.



Stir the dry starter into the sugary water and continue stirring until the starter appears to have dissolved

By stirring the dried starter into the water, the bacteria are being dispersed more evenly throughout the liquid. Doing this will reduce the pockets of dried starter that can get trapped when the flour is added.

It may take a few minutes of stirring to get the water to look like this. Or it might happen in 30 seconds. The starter will not dissolve, it just disperses and that's what we're going for at this stage.



Add 1 cup of All Purpose Flour to the bowl and mix well

Why All-Purpose flour? Because the higher starch content in all purpose flour means there are more carbohydrates for the microbes to metabolize (eat). Bread flour and other flours richer in nutrients and higher in protein take longer for the bacteria to metabolize. These single-celled organisms seek out the easiest food source (simple sugars/carbohydrates). Their sole job is to metabolize carbohydrates in order to produce carbon dioxide gas, alcohol, and lactic acid (among other things, but when talking about sourdough starter, these are the things we're after).

The bacteria gorge themselves on simple sugars/carbohydrates until they literally burst. When the bacteria burst, the carbon dioxide gas, alcohol, lactic acid and other matter is released. The contents of the cell, other than the items mentioned, reform and start the process again. They keep eating, bursting and reforming until all the available food is used up. These lactic acid bacteria don't multiply or divide, they just burst and what's left from inside the cell recreates itself and keeps on going. That's what's happening with all the bubbling action in your sourdough starter. Super cool science.

When the bacteria run out of food they slow down and eventually die. As the baker we want to catch the bacteria before it runs out of food and return it to a dormant state before it dies completely. It takes some practice and is relatively easy if you follow these instructions. Humans have been doing this for thousands of years and so can you!



Stir, stir, and then scrape your stirring stick with your finger and add it back to the starter

Yes, I'm serious. You need to introduce your own bacteria to the bacteria in your sourdough starter. This is biology and you need to contribute to the process. There is much research that's been done on the microbial relationship between the baker and their sourdough starters. No, it's not gross. It's science. It's fascinating.

https://www.questforsourdough.com/blog/awareness/bakers-become-their-bread

https://www.npr.org/sections/thesalt/2018/11/12/665655220/sourdough-hands-how-bakers-and-bread-are-a-microbial-match

Wash your hands and get them into your starter. You can even mix it with your hand if you prefer. I prefer to use a scraper so I can scrape clean the sides of my bowl. This helps me see how far my starter has climbed up the bowl when I look at it over the next few days. If the sides are clean to start with you can also see if the starter has fallen at any time in the process which is key. You'll learn more about that later. I go into explanation why this is important in the tutorial How To Dry Your Own Sourdough Starter on my website.

TASTE YOUR STARTER - SMELL IT, TOO

It is likely not sour at all and doesn't really taste like anything more than flour and sugar at this point. Just wait, the magic is going to happen. It likely smells sort of milky and fresh – no sour scent yet.



Thoroughly mixed and ready to get active – those bubbles are from stirring

TAKE A PICTURE OF YOUR SOURDOUGH STARTER

This is a great reference to have to see if your starter has actually done anything in the first 48 hours after being rehydrated.

Most of you will look at the starter so often in the next 48 hours that the subtle changes that occur may not be noticed unless you have a reference. A picture is a great way to do that.

Also, if you need me to help you troubleshoot your sourdough starter I will ask for pictures. If you don't have a picture to explain what's going on then how do you expect me to help tell you at what point things went sideways? Just take the picture.

I suggest you name your starter. Yes, I'm serious. If you name it, you're more likely to take better care of it. It's a living organism so why not? There are some great and funny sourdough names on the internet. Have a look if you need inspiration.

My sourdough starter is called Klondike. It's old. I'm polite. I don't want to take any chances with it so I named it and take good care of it. What I know about Klondike is it has experienced some hard times and I think it's a bit neurotic in a 'neglected-child-turned-sketchy-adult' kind of way. If you're too nice to it, it will behave badly to test you. Don't do anything complicated with your starter; just feed it, use it often and always keep a portion of it in the fridge until you need to resurrect it. More info about storing in the fridge later.



Cover with a clean kitchen towel and THEN with the plastic wrap

It's important to allow for some air movement to your starter, but not too much. Too much air movement will cause the starter to dry out and form a skin on top. If the container is completely sealed the carbon dioxide gases created could quite literally blow the lid off your container and sourdough starter makes a terrible mess to clean up.

Why the towel first? Because any condensation coming off the starter will collect in the towel and not drip back into the starter. The plastic over top of the towel keeps just enough moisture in and the towel allows just enough air to circulate in and out.

Baking tip – when making items like crème brûlée, or cheesecake, or other baked items that were not completely cold before going into refrigeration this is a great technique to use to keep water droplets of condensation off your baked goods. If your pan is quite large, the tea towel will likely sag and touch the surface of your baked goods. Not great if that happens on the surface of your cheesecake, etc. Use bulldog clips to secure the towel to the sides of the pan keeping it taut while it's being stored. The plastic wrap over the towel keeps just enough moisture in while the towel deals with absorbing the condensation.

Find a warm spot in your kitchen to let the sourdough become active. Don't put it near a window and don't put it too close to a heat source. The best temperature for sourdough to become active is between 21-30°C/70-86°F. The warmer the room, the more microbial action you will get. Warming up your starter too quickly, or not quickly enough, will not get you faster results – as shown in the following pictures.



What's going on here? Picture taken 16 hours after the first feeding

This starter is too cold

This is about 24 hours after the first feeding. I can see a bit of microbial action by way of bubbles and uneven surface but there's a strange yellow-ish liquid on top of my starter. Wth?

The yellow liquid is called "Hooch". Hooch at this stage of the process is an indication that your starter is too cool. Find a warmer place in your kitchen for the starter. Sometimes there are drafts in our homes we're not aware of. Living organisms like your sourdough starter, old people and sensitive pets like reptiles and birds notice those temperature changes and are negatively effected by them. Windows are the most likely culprit of drafts in your kitchen – the most heat loss in your home is through windows. If you live in a northern climate you understand this deeply.

How do I fix this? Start by finding a draft-free location in your kitchen. I use my cold oven. It's still room temperature but there's no air movement in there. Some people use their microwave oven. Just don't put it some place you're going to forget about it. Write yourself a note or set an alarm to check on your starter a few hours later. **Give the starter a good stir and relocate it to the new draft free area. Cover it again.**

The next picture explains more about that yellow-ish liquid is on the surface of your starter. Don't throw that out. I suggest you take a clean spoon and taste it....

A-ha! That's why it's called "Hooch".

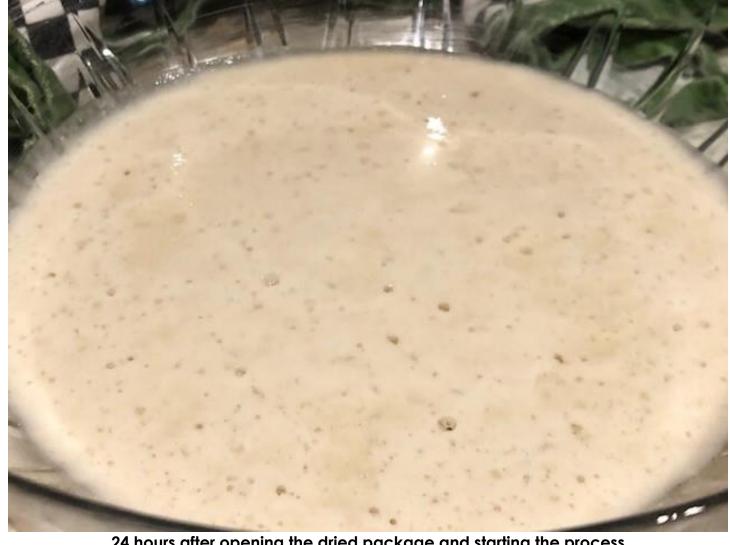


The yellow-ish liquid is called Hooch and it belongs in your starter, just not floating on the top at this point in the process

When a starter begins to go into a semi-dormant state it releases "hooch" which is mostly the alcohol that is created during natural fermentation. Having hooch at this point, especially if it's laying on the top of your starter, indicates not enough aerobic action is happening in your starter. Fermentation happens at an excessive rate when food goes into an anaerobic state (not enough oxygen) and sometimes when there is too much sugar. We want fermentation and alcohol, just not this much at this point in our sourdough starter. That balance between temperature and food is another reason why hooch forms in a sourdough starter.

SMELL THE STARTER AND TASTE THE HOOCH

Why is this happening? As explained in the previous picture, temperature is likely the #1 reason. Not enough air movement is likely the 2nd. Maybe the tea towel you're using is tightly knit and you don't need the plastic wrap over the sourdough starter. This is something you must trouble shoot. It's part of the process of getting to know your sourdough starter and your kitchen equipment. If the temperature was off from the start then the bacteria couldn't metabolize the food and produce carbon dioxide, it produced more alcohol instead. You need to troubleshoot your environment because that is usually the factor that most effects your sourdough starter. Don't blame the ingredients! That is the least likely cause of baking fails. Like I said, there are no guarantees with sourdough starter and the commitment you make to the process/journey will indicate your success. Don't worry, we can save this.



24 hours after opening the dried package and starting the process Things are starting to look promising!

Again, I stirred all that hooch into the starter, covered it and moved it into my oven to reduce the draft. **This is what it looked like 8 hours later.**

Ok, so there's a bit of hooch on the top but nothing like at the 16 hour mark. Stirring it redistributed the food and the bacteria. That's all it took to get going. The biggest thing I'm looking for at this point are the bubbles. Compare the starter from two pictures ago. See the differences? This one is filled with lots of larger bubbles. The size of the starter hasn't really increased much in volume. That's okay. These bubbles tell you things are happening and the bacteria are waking up, reforming and metabolizing food.

With this much activity I made the decision to feed my starter. The presence of the hooch is telling me that the food is not in balance. If the bacteria are creating more alcohol at this point than carbon dioxide that indicates too much sugar in the mix. I'm going to proceed with the first "real" feeding of my sourdough starter. This "real" feeding is what you will always feed an activated starter with. The picture above is of an activated starter. You've taken a dried product, hydrated it with a rich food solution and it is now active. It is not yet ready to use for baking – it has only been activated. Think of your last hangover: a bit of electrolyte water got you up and moving but you're still not worth a shit and need some decent food, a little love and some Netflix and quiet time. Your sourdough starter needs this too, maybe not the Netflix, but definitely food. Now it's time to give the starter the appropriate food source which is mostly water, flour and a much small amount of sugar.





Now you choose: Do you want to make a lot of starter over the next few days? Or just a little bit?

Since the starter cannot be used for bread just yet, you need to decide what fits your lifestyle over the next 2-3 days. If you make a lot of starter with the next 3-4 feedings then the discard will need to be used. You don't have to throw away the discard, it can be used to make pancakes, crepes, scones, crackers, biscuits, etc. Basically items that either don't need much leavening (rising) because the recipe has other leavening agents; like baking powder or baking soda, in it already. Large batch or small batch? This decision can only be made by you. I'm writing this tutorial during the Covid-19 pandemic and flour is at a premium. Think ahead and don't be wasteful. Make a large batch of starter if you're going to use it, make a small one if you're not.

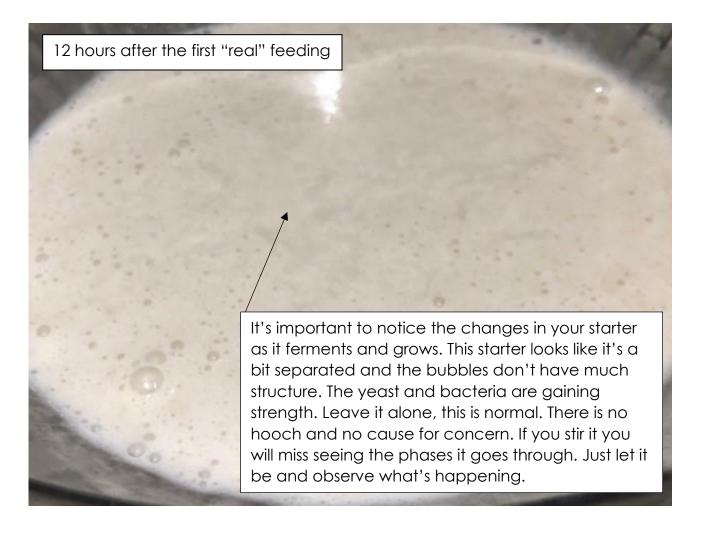
FOR A LARGER AMOUNT OF STARTER, USE THIS RECIPE

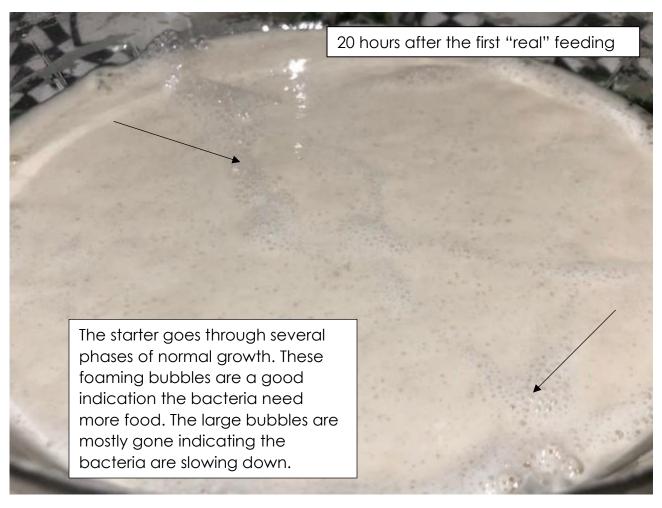
remove approx. 125g (approx. 1/2 cup) of the starter (use the discard for pancakes, crepes, waffles or other recipe from my website) and mix it with:
340 g (approx. 1 3/4 cup) of tepid water (non-chlorinated preferably)
340 g (approx. 2 cups) of all-purpose flour
26 g (2 Tbsp) of white sugar

FOR A SMALLER AMOUNT OF STARTER, USE THIS RECIPE

Remove approx. 65g (approx. 1/4 cup) of the starter (use the discard for pancakes, crepes, waffles or other recipe from my website) and mix it with:
170 g (approx. 3/4 cup) of tepid water (non-chlorinated preferably)
170g (approx. 1 cup) of all-purpose flour
13 g (1 Tbsp) of white sugar

Proceed to mix the feeding ingredients into the starter the same as before; stir in the water first, then the sugar and then the flour. Once it's thoroughly mixed, scrape your finger back into the starter and cover the starter with the clean tea towel. If making the larger amount I suggest you put a plate or something under the bowl/container you're using. At this point the starter could take right off and bubble right out of the bowl if it's too small. You will only clean sourdough starter off your counter/cabinets/floor once to understand why this step is not to be taken lightly.







The first float test. Result: Failed

When a sourdough starter is ready to be tested for "strength" (can it raise a loaf of bread) an easier way to gauge the starter is to perform a float test.

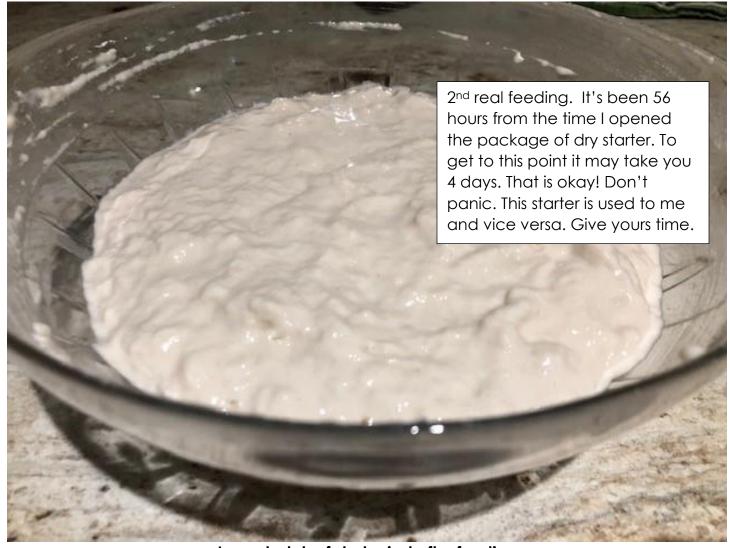
Fill a container (preferably see through, but not a glass of water because you need something wider) with room temperature water. If the water is too cold from the tap it could give you a false result, same if it's too warm.

Do not stir or deflate your starter, just pour some directly from the container to get an accurate reading of the microbial activity. This starter sank immediately indicating that, even though there are bubbles, it is not yet strong enough to raise bread. It's not producing enough carbon dioxide yet.

Doing a float test every time you feed your sourdough will give you another visual way to gauge the readiness of your sourdough starter. Again, as a baker you need to learn how your starter behaves normally. This is how you learn.

TASTE YOUR STARTER - IT SHOULD HAVE SOME SOUR FLAVOUR NOW. SMELL IT AS WELL.

The type of flour you use and many other factors contribute to a sourdough starter's flavour. By tasting it during the process you will understand how that flavour develops and changes with each feeding. The microbial load (amount of bacteria in the starter) is increasing exponentially with the regular feedings. The higher the load = more flavour and strength.



Large batch of starter just after feeding

Even though the starter can't raise bread yet, it can make amazing pancakes, waffles, crepes and loads of other baked goods. Although it's still mild, there's enough sour flavour in the starter to mildly flavour baked goods. Experiment with some of the recipes below.

Find creative uses for your sourdough starter discard. Some people who have pigs say the pigs love it poured over their feed. My compost seems to love it but my worms do not.

Here are some other uses for sourdough discard that may interest you:

https://www.kingarthurbaking.com/recipes/collections/sourdough-discard-recipes

https://youtu.be/vVx2oFFptG0

https://foodprint.org/blog/sourdough-discard-recipes/



24 hours after the 2nd feeding. Look how much volume – it has doubled in size!

I'm 80 hours into this starter now and it's still not ready to use for bread. That is totally normal and exactly what I expect.

Like I said at the start, it is going to take **4 days or more** to get a dried starter into shape so it can be used to bake bread. This is not a process that can be rushed. The bacteria are doing their best and they need time to colonize their new home with you.

I likely left this starter about 8 hours too long (I should have done a float test and fed it again at that time). I know the starter is running out of food because of all the foaming bubble action over the entire surface of the starter. That's okay. Letting it over-ferment a bit now and then develops flavours that intensify over the next few feedings. If you leave it too long (like several days) you'll almost start from square one. Bacteria that have no food die off rather quickly. If you kill enough of them by neglecting your starter, you will have to put even more time in and waste more flour than if you paid attention. Like I said, name your starter, set yourself timers and reminders to care for it. This is your new pet. Treat it as such.

Let's do a float test just to see what's going on here.



Float test #2. Result: Failed

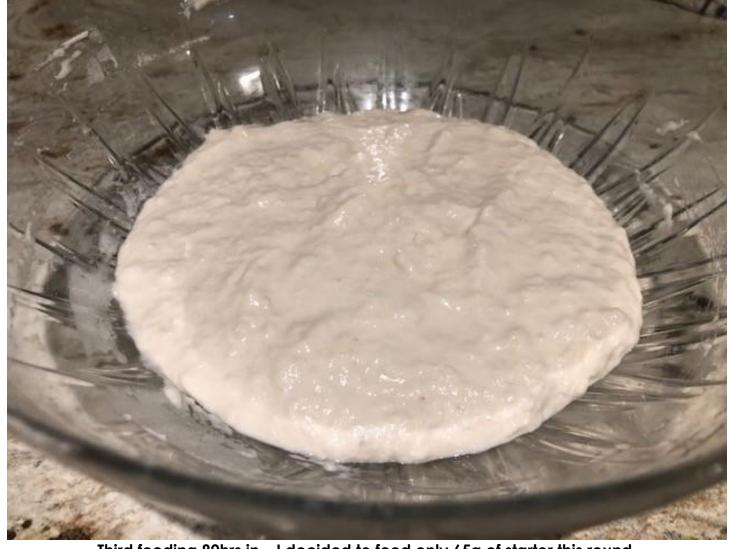
What do you mean it failed? It's floating!

Yes, it's floating now, but it immediately spread out as soon as it hit the water and the consistency is very thin. There is no strength in the starter whatsoever – just bubbles barley held together with some thin batter.

There's lots of microbial activity (carbon dioxide bubbles) but it ran out of food because I should have fed it sooner. The strength it likely had 8 hours ago would have been considerably more with the same amount of bubbles it has now.

No worries. Feed it again and use the discard in something delicious.

TASTE THE STARTER AND SMELL IT AS WELL. IT IS LIKELY QUITE SOUR AND SMELLS A BIT LIKE ALCHOL OR VINEGAR. THAT'S GREAT!



Third feeding 80hrs in – I decided to feed only 65g of starter this round.

This is a small batch amount

I used almost all the discard to make a large batch of pancakes and fed this small (65g) amount of starter with 170g flour, 170g water and 13g sugar.

This small amount of strong, well-fed starter has as much active microbial load as the large amount did at the first initial real feeding. Does that make sense? The amount of active microbial bacteria in this small amount of starter is exponentially greater because it has been fed and allowed to create a new colony of microbes.

The sour taste is considerable now. There's a slight citrus flavour and it almost tastes a bit salty. It's important to taste the sourdough starter before you feed it; otherwise, all you may pick up on is the flour and sugar if you're tasting it after just having fed it.



10 hours later, 90 hours into the process Does this look good? YES!

The small batch of starter has tripled in size in 10 hours and is still going! It's difficult to tell from this picture but the starter is still on its way up and has a slightly mounded top. This is the optimal time to use your starter for a batch of bread.

Let's do a float test to see where were at.

TASTE AND SMELL YOUR STARTER



Float test results: Passed!

This is what I'm looking for. The small clump of starter is sitting nice and taut on top of the water and is staying together in a clump – no spreading out and no sinking. This tells me there is enough carbon dioxide being created by the starter to give my bread lift. The network of microbes, starches and proteins are nicely knitted together forming a network of strength – this taut and buoyant clump is the sign of strength I want to see.

TASTE AND SMELL YOUR STARTER

My starter is ready to use! This rehydration process took just under 4 days for me: an experienced baker and sourdough user, to complete. If your process takes upwards of 6-7 days that is very normal. If you are going to rely on your starter to raise bread then you need to put the time and effort it takes to nurture your starter into a viable product. There are no "if-you-do-this-you-will-always-get-perfect-results" in sourdough. Many home bakers give up as they are not prepared to put in the time and effort it takes to maintain a healthy starter. Who cares if you have a few failures? That's how we learn! Just keep at it because sourdough bread is easier for our bodies to digest. Some people who think they are gluten sensitive are actually sensitive to commercial yeast. These people can't understand why they can eat sourdough bread and not feel sick, but get sick when they eat bread products with commercial yeast.

YOU MUST SAVE SOME OF THIS STARTER AND STORE IT IN THE FRIDGE FOR FUTURE USE



FULL OF LIFE WITH STILL SOME FOOD IN THE MIX, AND HEADED TO THE FRIDGE

BEFORE YOU USE YOUR SOURDOUGH STARTER YOU MUST REMOVE A SMALL AMOUNT TO STORE IN THE FRIDGE. <u>NEVER</u>, <u>EVER</u>, <u>ADD ANY OTHER INGREDIENTS TO YOUR SOURDOUGH STARTER</u> OTHER THAN FLOUR, WATER AND SUGAR.

Now that you put all that work into rehydrating and proving your starter, you need to save some in the fridge for when you want to use it again. This is the easy part because, if you use it often (once a week is often) then all you need to do is feed it and it will be ready to use in about 8-12 hours.

The most important part of preserving liquid sourdough starter is to get it to a semi-dormant state while it is still alive and with some food still left to eat.

What does that mean? When your starter is on the rise and producing bubbles, the starter will look voluminous and have a slightly rounded top which indicates there are bubbles underneath still pushing the starter up. If the starter has collapsed, you will see sunken areas in your starter or the entire mass will have begun to shrink in the container which indicates the bacteria has run out of food and is dying off. If that happens, you may not get the rise out of your bread that you are anticipating. If you are putting mostly dead bacteria into your dough then you can't expect it to raise your bread. There will still be some live bacteria left, but the amount will be considerably less than if you used the starter when it was at its optimal bacterial level – on the way up and still creating bubbles. If in doubt, feed it again.



HOW TO SAVE YOUR STARTER AND STORE IT IN THE FRIDGE

When your starter has doubled in size and is still rising, remove a small portion and put it into the container in which you will store it in the fridge.

In this picture I have a 1/2 cup measure and this is the amount I normally save. Because I use my starter at least once a week, I do not clean the storage container each time. I do not allow anything to contaminate this container so I don't worry about introducing or harbouring any unwanted bacteria in it. However, if you only revive your starter once a month, I suggest you thoroughly wash and sanitize your storage container each time. Some bacteria, if it's in a large enough quantity, may harm your sourdough. These unwanted, non-sourdough-loving bacteria can overtake and kill the sourdough bacteria you worked so hard to cultivate. If you're ever in doubt, be safe and wash your storage container and let it air dry.

I usually have to "burp" this sourdough storage container at least once on the first day I return it to the fridge. It continues to off-gas as it slowly goes into a semi-dormant state in the cold fridge.

Once you have this liquid starter in your fridge, the activation process is much easier than starting from dried. There is a complete tutorial on this website called IS THIS NORMAL? 1898 SOURDOUGH INSTRUCTIONS WITH PICTURES AND INFORMATION. You will find all the information you need to use your starter that is stored in your fridge.