Mozzarella Help

http://www.cheesemaking.com/store/pg/242-FAQ-Mozzarella.html

Storing Mozzarella & Using Whey

Beginning

You may find that your recipe for 30 Minute Mozzarella is slightly different from the one on our website. The reason for this is that milk is being pasteurized at higher and higher temperatures now. Keeping up with these changes has been a challenge and it has required us to modify our recipes. We do frequent printings of our written material, but the latest directions are always on our website. Note: This section of the FYI is about the 30 Minute Mozzarella recipe only.

1. Does anything in the kit need to be refrigerated?

When you order our 30 Minute Mozzarella Kit, you do not have to open it or refrigerate it for up to a year. The only ingredient that has a shelf life is the rennet tablets. They will keep for a year at room temperature. If you put them in the freezer, they will last at least 5 years.

2. Are the ingredients in the kit safe for children?

All of the ingredients in the kit are safe for children and women who are pregnant. (Pregnancy doctors are sometimes concerned with surface molds and short aging times for cheeses, however, none of that is involved here.) **Note: For those who are allergic to cow's milk, this kit contains no dry milk powder.**

3. Can I use any kind of milk with this recipe?

You may use raw milk, pasteurized/homogenized milk (whole, 2%, 1% & skim), goat's & sheep's milk, powdered dry milk with cream, and even water buffalo's milk with this recipe. Please read the Milk section for more information about choosing your milk.

4. Do I need to have a microwave or any other special equipment?

No. There are directions for making this Mozzarella without a microwave. Also, if you don't have a stainless steel pot, you may use Teflon, enamel or anodized aluminum. (We do not recommend using regular aluminum because the acids from the whey etch into the

metal. With further use, bacteria get in the holes, and the pot is no longer sanitary.)

5. Can I cut the recipe in half or double it?

Yes. You can cut everything in half, but it is difficult to measure 1/8th rennet tablet (or even 1/8th teaspoon if you are using liquid rennet).To measure 1/8th tablet, dissolve 1/4 tablet in ½ cup non-chlorinated water and then throw out half of the solution.

If you choose to double the recipe, double everything (including the amount of water used to dissolve the rennet and citric acid).When it comes to heating and stretching the curd, separate it into two sections to make it easier to work with.

6. Will I need to adjust the recipe for high altitudes?

No, because there is nothing to boil in the recipe.

7. Can I add lipase to my Mozzarella for a stronger flavored cheese?

Yes. If you wish, add 1/4 teaspoon Italase (more or less) to your milk after you have thoroughly stirred in the citric acid. Increase your rennet to ½ tablet.

8. Do you recommend using calcium chloride with this recipe?

No. Normally, we add calcium chloride to all processed or cold stored milk for a firmer curd. However, Mozzarella is the exception. During the stretch, we are releasing calcium and, therefore, adding it is counter-productive.

We know that many sites include calcium chloride in their Mozzarella recipe, but they may not fully understand the basis of the Mozzarella process. You will get a better stretch and final texture without it.

9. How do I know if my water is chlorinated?

You can usually call your town water department to find out. Or, you may use distilled water. Also, most filters remove 97% of the chlorine, which is fine for cheese making. The problem with chlorine is that it interferes with the rennet.

10. Is yeast (from baking in the area) a problem with this recipe?

No, because there is no bacterial culture involved.

11. I am lactose intolerant. Can I make this cheese?

Sadly, we have yet to find a brand of lactose-free milk that is not ultra-pasteurized. If you have found one, please let us know and we will add it to our list of good milks. With lactose-free milk that is not ultra-pasteurized, you will be able to make our 30 Minute Mozzarella and Ricotta.

If you do make this cheese with regular milk, it will have more lactose in it than the cultured cheeses like Cheddar or Parmesan. The amount will be comparable to the amount of lactose in soft cheeses.

12. Can I smoke this Mozzarella?

Yes. For a simple version, some folks add liquid smoke to the milk when making 30 Minute Mozzarella. Add 1 or 2 teaspoons per gallon right after adding the citric acid.

If you wish to smoke it the real way, it is always a cold smoke. The smoke is usually generated in a separate chamber and then cooled before entering a box with the cheese in it. The temperature must be kept below 84F or the butterfat melts and runs out.

Ingredients

Milk

We recommend using whole cow's milk the first time you make Mozzarella. It isn't necessary, but it will be the easiest way for you to start. If you are buying your milk at the store, look for the most local brand. Be sure it is not labeled UP (ultra-pasteurized). (Be especially careful of organic milks, because most of the name brands are ultra-pasteurized.)

1. Do I use the same recipe with any kind of milk?

Yes. There are a few exceptions:

Raw milk or milk from a cow, goat or sheep in late lactation – Start with 2 teaspoons of citric acid (instead of 1 1/2).

Powdered Dry Milk & Cream - Start with 2 teaspoons of citric acid (instead of 1 1/2).

Water Buffalo's Milk – Start with 3 1/2 teaspoons of citric acid and 1/8 teaspoon of liquid rennet (or 1/8 tablet).(We have not tried this, because we don't have access to this milk. We are following the advice of one of our customers who has used it.)

If you are adding cream to whole milk in an effort to duplicate water buffalo's milk, we recommend using at least 2 teaspoons of citric acid. When using one gallon of milk, we do not recommend replacing more than 8 oz. whole milk with 8 oz. light cream.

2. After I pasteurize my milk, can I cool it to 90F and proceed?

Yes. When you begin to make Mozzarella, your milk should be 90F.It doesn't matter whether you get it to that temperature by heating it slowly or quickly. If you have just pasteurized your milk, you do not even have to cool it all the way down. Just get it to 90F and proceed.(Watch for caramelizing or burning milk solids when heating quickly.)

3. In your book, you refer to "Mozzarella with Farm Fresh Cow's Milk." Does that mean I should use that recipe (and not this one) if I have raw milk?

No. The recipe in our book is simply the more traditional way to make Mozzarella. It requires a starter culture and it takes longer to make. Our 30 Minute Mozzarella can be made with virtually any kind of milk.

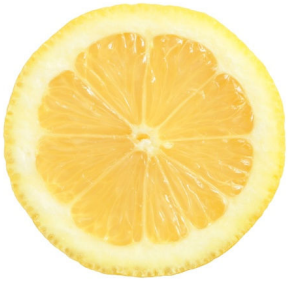
Citric Acid

Citric acid (sometimes referred to as 'sour salt') exists in a variety of fruits and vegetables. It is used as a flavoring and preservative in many juices, soft drinks and seltzers. It is recognized as safe for use by all national and international food regulatory agencies.

1. Where does your citric acid come from?

Ours is made in the US from corn which is non-GMO and gluten-free. It contains no glutamate or glutamic acid and no hydrolyzed protein. Glucose syrup from maize is a fermentation raw material, but it is not contained in the end product. We are working on obtaining citric acid that is not corn based, because we know it is better for the environment.

Unfortunately, we do not know of a source for Kosher citric acid.



2. Can I substitute lemon juice, or ascorbic acid for the citric acid?

No. There is no reliable way to determine how much of these things you will need. Citric acid is standardized and has the best taste. If you want to see for yourself and experiment with any of these substitutions, keep in mind that your target range is 5.4 – 5.6pH.

3. How do I add citric acid to my milk?

The key to adding citric acid to your milk is to do it slowly while stirring briskly. This helps to ensure even distribution. Some folks prefer to add their citric acid solution to the pot first and then dump their milk in on top of it before stirring.

If your milk starts curdling right after you add the citric acid, it may mean that the citric acid was not distributed quickly enough through the milk. **Note: Do not mix your citric acid into a small amount of milk and then add that to the rest, because it will result in uneven distribution.**

4. I accidentally heated the milk beyond 90F after I added the citric acid. Can I cool it down to 90F and proceed?

Yes, you can. It's primarily the rennet that is affected by the heat.

Rennet

Our vegetable rennet tablets are made with microbial enzymes which contain no animal products. They have no wheat starch or other gluten products. The enzyme is chymosin, the same one in calf rennet. It comes from a mold – mucur miehei. Although the enzyme comes from a mold, there is no mold in the vegetable rennet tablets.

1. What is the shelf life of the rennet tablets?

They keep well at room temperature for up to one year - 5 years if kept frozen. There is no need to worry if we are shipping your kit halfway across the world to a sub-tropical climate – the rennet tablets will survive the trip and live for years in your freezer.

2. Can I use liquid rennet instead of the tablets?

You can always use liquid rennet instead of the tablets. There will be no difference in the taste of the final cheese.(1/4 tablet rennet = 1/4 teaspoon liquid rennet.) **Note: Our liquid vegetable rennet is**

double strength, so, you would use 1/8 teaspoon instead of 1/4 tablet.

3. Can I substitute junket for the rennet tablets?

No. Junket is great for making custard, but it is nowhere near as strong as our rennet tablets. Cheese rennet is 80% chymosin and 20% pepsin. Junket is approximately 80% pepsin, so it is much weaker than cheese rennet. It also contains many additives.

4. How slowly do I add the rennet?

When you add diluted rennet to your milk, add it while stirring very slowly. Ideally, you will stir in an up-and-down motion. Do this for no more than 30 seconds –just enough time to get it evenly distributed. At this point, put the top on your pot and do not move it. **Note: If you are using raw milk, top-stir the milk for a few extra seconds to make sure the milk doesn't separate before the rennet has been evenly distributed.**

5. Is there a trick to breaking the rennet tablets apart?

Some find it easier to use a knife to cut them. Simply lay the knife on a score mark, and give it a quick tap. Others prefer to use a pill cutter (shown at right).There is enough margin of error in this process to accommodate small differences in the amount of rennet you break off. Don't worry if you can't break the tablet into four perfectly equal pieces.

6. How do I test my rennet to see if it has expired?

This is how we test our rennet: Heat one cup of milk to 90F. (Do not add citric acid.) Dissolve ¼ rennet tablet (or ¼ tsp. liquid rennet) in 8 oz of cool water and stir well. From this diluted rennet take 2 tablespoons and add it to the milk at 90F.Stir gently from the bottom to the top for 30 seconds.

If the rennet is working, the milk surface will begin to firm or form a slight film after two minutes. After six minutes, it will have formed a curd that will hold a knife cut.

7. My rennet tablet won't dissolve completely.

That's OK. There is usually a slight amount of residue left in the solution.

8. How long is the rennet good after I have dissolved it in the water?

It is only good for approximately 1/2 hour. So, that is the longest time you should take to dissolve your rennet.

Salt

Salt is optional and does not play a pivotal role in this recipe. You may use sea salt, Kosher salt or salt substitute. You may even choose to add herbs and/or chopped vegetables to your Mozzarella instead of salt.

1. What is the best way to add the salt?

We recommend sprinkling it onto the cheese during the final stretch. This can be awkward, but if you have it all measured and ready to go, you can mix it into the cheese with little effort. The same applies to any herbs you might wish to add.

Curd Formation

1. What are some tips for getting the right curds for 30 Minute Mozzarella?

Once you have added rennet to your milk, let it set, undisturbed, for 5 minutes. Check it to see if it makes a 'clean break' when you stick your finger into it. If it has not set, put the top back on your pot and wait another 5 or 10 minutes.

At this point, your milk should look like thick custard. When lifted with a spoon, it will hold its shape somewhat. It will break quite easily like a very soft pudding.

Sometimes, if the milk is marginal, it looks like cottage cheese floating in the pot. If so, heat it to 110F, take it off the burner, cover it and let it set for 5 minutes. **Note: Your thermometer is in the whey, so you are actually measuring the temperature of the whey.** If you can drain your curds (without cheesecloth) there is a good chance you will get Mozzarella, no matter how "different" your curds look. Proceed to the microwave or water bath step.

If it doesn't form any kind of curd, let it set for another 10 minutes. If there is still no curd, feed it to your pets or add herbs and salt and use it as a cheese spread. Try using different milk next time. This is the heartbreak of milk that has been overheated during pasteurization. It may not be ultra-pasteurized, but it has been heated to just short of UP temperatures. This has rendered it useless for making Mozzarella.

If your curd seems to be perfect (soft and custard-like), cut it and put the pot back on the stove. Heat it to 105F, (110F if you will be using the water bath method) stirring only enough to keep the pieces of curd from sticking to the pot. As you are stirring the curds and heating them up, they will lose more whey and become much firmer. That is the point of this step.

Note: This step may not be in your recipe. We recently added this step to the recipe because too many people were having problems with store bought milk. Milk is being pasteurized at

higher temperatures all the time now. So, we are being forced to adapt to these conditions. (If you are using raw or very fresh milk, you may not have to use this step.)

2. My curds are tiny little specks that won't hold together. They look just like the ones in the ultra-pasteurized pictures on your website, but my milk is not UP.

over-heated milk

If you can, strain them, add herbs and use as a spread. As you know, ultra-pasteurized milk has been heated so high during pasteurization that the structure of the milk molecules has been damaged.

What you may not know is that many other milk processors are heating their milk well beyond the normal temps (into the 170's and 180'sF), just short of ultra-pasteurization. This, along with long travel times and cold storage is causing many problems in our milk supply.

Sometimes your curds look fine, but they dissolve later in the process, when heating or stretching. This is also a result of overheated milk.

If you think your milk has been overheated, purchase fresh local milk. We are keeping a list of good milks which is composed of brands that our customers from all over the world have recommended.

3. After I add the rennet, my milk turns into a big glob of curd at the bottom of the pot.

very acidic

This is caused by milk that is very acidic. Proceed directly to the microwave or water bath stage. Next time, try heating the milk to only 86-88F before adding the rennet. This will form a curd that will retain more moisture.

The point where the curds begin to stick and get stringy is an indication that the curds are almost ready to stretch. Your final moisture will be determined by the cycle times in the microwave and how long you stretch the cheese.

4. My curds are lumpy and there is milk underneath.

This may be a problem with localized coagulation. The citric acid is not distributed quickly enough through the milk and some regions of the milk become overly acidic and coagulate immediately.

If this is the case, next time you need to dilute the citric acid in more water (one cup).Also, you might try adding your citric acid solution to the pot and then pouring your milk over it and stirring it well. With problematic milks, we usually add 1.5 teaspoons citric acid to 1 cup of cool water. Then, we add the acid solution just a bit at a time while quickly stirring it into the milk.

5. I am using good, local milk, but my curds are still too weak.

weak curds

You may be stirring your milk too long after adding the rennet. With today's milk, stirring one minute after adding the rennet will be plenty (a few more seconds of top-stirring if you are using raw milk). Make sure to take your pot off the burner and let it sit quietly while the curd forms. If you do this, a nice firm curd will form. If you continue stirring after this point, you are actually cutting the curd as you stir, resulting in a weak curd.

Next time, try this: Add rennet at 100F instead of 97F. Wait for about 10 minutes (off the burner) then cut the curd surface into 1/2-1" squares, give the pan a twist to separate the curds, and let this set for another 5-8 minutes. Now, put the pot back on medium heat and begin cutting the large pieces of curd crosswise with a spoon and stirring a bit from the bottom as you raise the heat to 105-107F.

Watch the temperature and continue stirring gently from the bottom up, trying not to break the curds too small. The curds should become firm enough to ladle into a bowl after 5-8 minutes of this. Then, if they break up at this point you should find another milk source. If they are firm, carry on with the rest of the draining and microwave steps. This process may take longer than 30 minutes, but that is because we are working with excessive pasteurization temperatures.

6. What does it mean if my whey is milky?

It is normal for the whey to be somewhat milky, especially with high butterfat milk. However, there may have been some loss of butterfat due to incomplete (soft) curd set or excessive curd handling. The next time you make it, be sure you get a firmer curd by setting the milk at a temperature 3-5 degrees higher. Then, stir a few minutes longer when you have heated it to 105F.

7. I am using the same milk I used before, but now my curds are too soft.

Sometimes the age of the milk is a factor. You always want it to be as fresh as possible. Try adding a little more rennet (1/2 tablet) next time. There is also a possibility that your dairy has switched to higher pasteurization temperatures.

8. When I have my curds drained and ready to heat and stretch, can I refrigerate them and stretch them later?

Yes. You may also freeze them until you are ready to stretch them. Wrap them well with no air. When you are ready, thaw them in the refrigerator.

Here's an interesting tip from one of our customers who uses goat's milk:

"I've been making Ricki's Mozzarella for years now and this year I made a mistake that really ended up working out beautifully for me. I made the Mozzarella in the normal way, right up to adding the rennet and waiting for the curd to set. Well, I was called outside and couldn't come back in for almost 2 hours. The curd had knitted on the bottom of the pan but was still very soft, almost like there was not enough rennet to give me a clean break. So I thought I'd just try to finish it and I turned the lump of curd to break it twice and left it alone for a few minutes. Then, I drained the curd for 10-15 minutes and put the curd in the fridge as I had to go outside again. The next day, I spun it and it was wonderful!!

So now I bypass the cutting of the curd and after I add the rennet I just leave it alone and let it do its thing(off the heat) in the pot for 2-3 hours, drain it, put it in refrigerator until the next day and spin."

Stretching

The temperature of the curds is very important in the stretching phase. The heat needs to penetrate the cheese to raise the internal temperature of the curds to 135F before the stretch can happen. (If it the curds get much hotter, they will melt and come apart.)If your water bath or microwave is too hot, (over 175F) your ball of curds may dissolve.

Note: Some recipe booklets say to hold the curds in the water bath for 3-8 <u>minutes</u>. That was a typo. It should read 3-8 <u>seconds</u>.

1. I don't know how to handle the cheese while stretching it.

Many folks try to knead their cheese like bread during the stretching phase. That will result in too much moisture loss.(Your cheese may become tough and chewy.)Let it fall on itself a few times until it all seems smooth and shiny. Shape it into a ball and put it in your container. Or, if you want to make Bocconcini - while stretching, break off into little pieces and plunge them into ice water. When cool, wrap in plastic and refrigerate (or eat!).

Always add your salt and/or herbs during the final stretch. If you add them earlier, they may prevent you from getting an even stretch. If you are adding vegetables, such as tomatoes, cut them into tiny pieces and dry them a bit before adding them to your cheese.

2. I microwaved too long and my curds crumbled.

If your microwave is too strong, or you heat them too long, your curds will fall apart. Cut down a bit on the times. Start with 30 seconds, then, do it again. That might be enough.

3. As soon as I began microwaving my curds, they dissolved into what looks like Ricotta. Can I use them as Ricotta?

This happens when the curds are not strong enough. If you followed the directions, including cutting the curds and reheating to 105F, the problem is probably the milk. If you are sure the milk has not been overheated and is not too old, try using ½ tablet rennet next time.

You can use these curds as Ricotta, but they are heavier than the real cheese. When you make Ricotta, you will find that it is much fluffier than your failed batch of Mozzarella curds.

4. By the time I was done, I had a very low yield.

If you are using milk with less butterfat in it, your yield will be less. Or, if your curds were not firm enough, you may have lost too much butterfat to the whey.

Another thing to be aware of is the amount of cream in your whey. Let the curds set until the whey is clear both before and after cutting the curds. If the curds need more time to form at any point, give them 5 or 10 more minutes.

5. When finished, my cheese is too dry and rubbery. I want a softer Mozzarella.

There are many steps you can take to achieve a softer cheese. If your curds did not seem too firm when you began to heat them, you may have stretched them too much. Simply let the cheese fall on its self a few times and put it in your container. (It loses a lot of moisture during the stretching process.)

If it is still too dry, next time, add the rennet at a temperature 2-5 degrees lower or do less cutting and stirring before the stretching stage.

6. My cheese is too soft. I want to grate it for pizza.

There are many steps you can take: Increase the rennet to ½ tablet. Raise the temperatures a few degrees. Cut the curds smaller. Stir them longer after reheating. Stretch them more.

Any or all of these steps will result in a drier cheese. Or, you can partially freeze your soft Mozzarella and then grate it.

7. My Mozzarella doesn't melt.

You should be able to make a good melting Mozzarella using this recipe. Try keeping more moisture in the cheese by kneading and stretching less. You may even lower the temperature 2-3 degrees when you add the rennet and when you reheat the curds after cutting.

Storing Mozzarella & Using Whey

1. What is the best way to store my Mozzarella?

The best way to store your Mozzarella is to put it in a plastic container, cover it, and submerge it in cold water for 20 minutes or so. Then, place the container in the refrigerator for 3-4 hours. Take out the cheese, wrap it in Saran Wrap or some other breathable kitchen wrap and store it in the refrigerator. It will keep like this for 7-10 days with no loss of flavor. You may freeze it, if you wish. (We prefer to grate it first.)

You may also freeze the whey, if you like. Milk is almost 90% water and you will get almost seven pints of whey from a gallon of milk.

2. Why can't I store my Mozzarella in water like they do at the store?

With this kind of Mozzarella, there is too much calcium loss when the cheese is submerged in brine. It becomes slimy.

If you would like to store your Mozzarella in brine, consider using the traditional recipe "Mozzarella with Farm-Fresh Cow's Milk" in our book, Home Cheese Making.

3. My Mozzarella turned translucent after a few days in the refrigerator.

Using skim milk or 1 or 2% causes the cheese to be translucent. The white color is butterfat.

4. What's in the whey and what can I do with it?

Whey contains lactose, protein, vitamins, and minerals along with traces of fat. Because it digests very rapidly, the amino acids enter the blood stream faster than other protein sources. For this reason, athletes often consume commercial whey protein shakes after workouts to help them gain muscle mass.

Some people like to soak their grains and beans in whey. Others make it into lemonade by filtering it and adding sweetener. It may also be used as soup stock or to replace liquids in recipes. Acid loving plants such as tomatoes thrive on whey. At the very least, you can compost it.

It will keep up to a week in the refrigerator and it may be frozen.

5. Can I make Ricotta from this whey?

No. This whey is the product of a different acidification process than is used in other cheeses. The process of quick acidification results in changes to the chemistry of the whey. T o make Ricotta, use the whey left over from making a cultured cheese like Cheddar or the 'Mozzarella with Farm-Fresh Cow's Milk' recipe in our book Home Cheese Making.