

Basics of cheese making

1: START WITH FRESH, WARM MILK

The nicer and the fresher the milk you use, the more delicious your cheese will be. I like to buy my milk the same day I make it into cheese. To warm the milk, you can either get it still warm from the udder (in which case you need to be on a dairy farm) or you can transfer it from the fridge into a large pot and warm it slowly on the stovetop.

2: ACIDIFY THE MILK

There are many ways to make cheese but the first 'split in the road' is how you acidify the milk. One way is to dump acid (vinegar or citric acid) right into the milk to get the correct acidity. This process (called direct acidification) leads to cheeses such as ricotta and mascarpone. The other way to acidify the milk is to add cultures, or living bacteria. Given time, warmth and lack of competitor bacteria, these cultures will eat up the lactose in the milk, turning it into lactic acid.

3: ADD A COAGULAN

The most common coagulant is rennet, the name for an enzyme which causes the proteins in milk to link together. However, the word 'rennet' is a bit vague. Rennet can mean a 'traditional rennet' which comes from an animal stomach. It can mean a 'bacterial' rennet, sometimes also euphemistically called 'vegetable rennet' which comes from recombinant bacteria (using DNA from veal calf stomach cells). Or rennet can come from a fungus ('microbial' rennet). Using the more general and accurate term 'coagulant', we can add in 'plant' coagulants which might be sap from a fig tree or a milk thistle.

Mix the coagulant into the liquid milk and wait until a gel forms.

4: TEST FOR GEL FIRMNESS

When you've given the rennet enough time to work on the proteins in the milk, the milk will transform from a liquid into a gel. You can test the 'doneness' of the gel by pressing (with a clean hand) onto the surface of the milk.

5: CUT THE CURD

The next step is now to cut the curd down from a giant blob into smaller cubes or chunks. You can do this with a 'cheese harp', with a knife or even with a whisk. The size to which you cut the curds will dramatically affect the amount of moisture retained in your final cheese; the smaller the initial pieces, the drier (and more ageable) the cheese will be. And vice versa.

6: STIR, COOK & WASH THE CURD

For the next several minutes or even hour (depending on the recipe), you'll stir the curds in the vat. Possibly, you'll turn on the heat and cook the curds while you stir. During this phase, the most important thing that is happening is acid is continuing to develop inside the curd and, from the motion of your stirring, the curds are drying out. The more you cook and the more you stir, the drier your cheese will be.

Washing is the process of removing some of the whey from the vat and replacing it with water. This creates a milder, sweeter, more elastic cheese and cheese paste.

7: DRAIN THE CURDS

Finally, it's time to separate the curds from the whey. You might do this nearly final step by simply dumping the contents of the pot into a colander in a sink. You might wait 10 minutes to let the curds settle to the bottom then press the curds together at the bottom of the pot before bringing them up and out of the pot in chunks.

Generally, we work quickly at this point in the process because we want to conserve the heat into the curds, encouraging them to mush back together to form a nice smooth wheel. If we wait too long, the curds get cold and the cheese falls apart.

8: SALT AND AGE THE CHEESE

Once the curds have been separated from the whey, you can add salt. Or, you can move the curds into their final forms (or baskets) and press the cheese into a wheel before salting. If a cheese is salted, properly acidified and has the correct amount of moisture inside, it can be aged into something more complex. Or it can be eaten immediately--the same moment it was made.

Beginner Cheese Maker FAQ's

Getting Started

Cheese is produced from milk due to the activity of special dairy bacteria and the action of rennet. These act on the proteins in milk, causing them to coalesce into a gel-like curd which is the beginning of cheese. Cheese may be made from almost any kind of milk - goat's, sheep's, powdered dry, skimmed, 1%, 2%, etc.

How is home cheese making different from commercial?

Home cheese making differs from commercial cheese making in scale and in the need to produce exact duplicate products day after day for retail markets. Commercial cheese makers employ the same raw ingredients as home cheese makers, but their knowledge and experience is much higher. (Also, they must obtain local certifications and follow strict regulations.) If you wish to sell your cheese, we suggest you start by making simple cheeses, do as much reading as you can and visit cheese makers in your area.

Many of the recipes have the same ingredients in them. What makes the cheeses different?

At first glance, it may seem that different cheeses are made the same way. However, the differences in the cheeses are due to very slight variations in the process. Cheddar and Colby, for example, are very similar as they start out. However, in the Colby, there is a step where water is added to the curds, causing it to be a cheese with more moisture than Cheddar.

Other factors which determine the outcome of the cheese include the amount of culture, the ripening time, the amount of rennet, the size of the cut curds, the rate time at and which the milk is heated, the length of time stirred, and the way the whey is removed. Minor changes in any of these areas can have a dramatic effect on the final product.

How much cheese can I expect to get from one gallon of milk?

Your yield will be approximately one pound per gallon for the hard cheeses and two pounds per gallon for the soft cheeses. The amount of butterfat in the milk will affect this. Sheep's milk for example, is 9% butterfat, so the yield is much higher.

Can I double or triple the recipes?

Yes. You should be able to increase amounts of culture and rennet proportionately. The times and temperatures should be close to what the recipes call for. Brining time is simply a matter of scale -increase proportionate to cheese volume. (As in life, nothing works perfectly, so you may need to tweak the recipes a bit. We recommend keeping good notes.)

Can I make cheese with beer & wine in it?

Yes, beer or wine is often used. Here are a few examples in washing curds - as in Gouda or Colby cheese. Each curd will take on the color of the wine or beer, as in the stout and porter washed cheeses.

Can I make smoked cheeses?

Yes. Always do a cold smoke when smoking your cheeses. The smoke is usually generated in a separate chamber and then cooled before entering a box with the cheese in it. On the industrial level, the cheese is smoked at 40-50F. At home, it must be kept below 84F, or the butterfat melts and runs out.

For a quick fix, some folks add liquid smoke to the milk for a smoked mozzarella. Add 1 or 2 teaspoons per gallon right after adding the citric acid. We don't recommend doing this with any other cheeses.

Can I use the cheesecloth they sell at the grocery store?

No, do not buy the open weave cloth in a grocery store. These cloths are not woven tight enough and after all that good work you have put into your cheese making, it would be a shame to lose it through the loose weave of commercial cheese cloth.

We make sure that all of our cloths for draining cheese are finely woven and will protect your curds from going down the drain. Our cheesecloth is used for lining molds and for draining curds during hard cheese making. Our butter muslin is used for draining soft cheese curds.

Why can't I use chlorinated water when diluting rennet?

Chlorinated water will stop the enzyme action of the rennet. If you don't know whether or not your tap water is chlorinated, call your local water department. If it is chlorinated, you may choose to buy distilled water or spring water, or you may filter your tap water. (Most filters remove 97% of the chlorine from your water, which is enough for cheese making.)

Why is it important to sanitize?

When making cheese, we are using specific bacterial cultures to ripen our milk. We want to avoid contamination of this milk by unwanted bacteria so the good bacteria we have chosen can do its job.

Surface areas - We recommend using a food grade sanitizer. Before you begin to make cheese, wipe down your counters with this solution.

Utensils - Sterilize your utensils in boiling water for 10 minutes (or run them through the dishwasher on the hottest cycle).

Pots & pans - The residue on your pots is called milk stone, which builds up over time. The best way to find a cleaner for this is to do a search for milk stone remover online. Also, if you have an agricultural store nearby, ask them for an acid based detergent for dairy use. Normally, alkaline based dairy cleaners are used to remove fat and proteins but the calcium deposits of milk stone need an acid cleaner. Most dairies use the alkaline cleaner every day and the acid cleaner once a week.

Cheesecloth - Before first using, it is best to hand wash your cheesecloth in cold water with a neutral detergent to get out all the sizing and process debris. Always rinse your cheesecloth or butter muslin in cold water immediately after removing your curds/cheese. This will prevent the milk proteins from bonding to your cloth. After you have rinsed in cold water, you may proceed to hand or machine wash your cloth in warm/hot water with a neutral detergent.

How do I control the temperature?

The kitchen sink is the best choice for this. The easiest way to keep a pot or vat of milk up to temperature is to put it into a sink full of hot water. As the milk begins to warm to target temperature and the bath begins to cool, drain some water from the sink and add some more boiling water. When starting the process, you want the water outside the pot to be about 10-15F hotter than your target milk temperature when starting the process. As you get within 7-8 degrees of your target, reduce this more. Always keep the final bath 2-3 degrees above the milk temperature.

How do I raise the temperature of my milk 2 degrees every 5 minutes?

Temperature control can be a bit of a trick to work out in the beginning. To increase the temperature slowly, add some boiling water to the water bath so that it stays about 5-10 degrees warmer than the milk temperature. Fortunately, this slow heating is only for the first 10-15 minutes. Once the curds have released a good deal of whey, you can heat much faster.

How do I know when the curd is ready to be cut?

When you poke your finger into the curd at a 45 degree angle and the curd breaks neatly around your finger, the curd is ready to be cut. If not, wait 5 minutes and try again.

Do I have to cut the curd when it's ready or can I let it set longer while I do something else?

Cut it when it's ready or it will continue to firm up and will not drain properly.

What can I use to cut my curds?

You may use a regular long knife, but it might scratch your pot. We sell a curd knife for this purpose.

What is the reason for cutting the curds?

It increases the surface area from which the curd can drain its whey. The size of the cut determines how fast and how much the curds will drain. Some recipes call for cutting 1/2" cubes, some for 3/4" and some for 1/4."

I've heard that checking the pH and acidity is important. Do I really need to do this?

You don't ever have to measure acidity if you don't want to. For thousands of years cheese was made without taking such measurements. However, in the past, folks were handed down their recipes from previous generations and the same cheeses were made year after year. Today, it's a little harder to know what's going on with your milk.

Why would it be helpful to measure the acidity?

The cheese making process is largely a matter of acid development - measuring the initial acid to make sure the milk has not developed too much acidity and then monitoring the rate of acid development during the cheese making process. Most cheeses have a target acid development profile that defines the style. Hence, acid monitoring during the process is a very good idea. This can be done as Titratable Acidity (TA%) or pH.

Home cheese makers do best to measure pH because it yields results that are consistent from batch to batch. For further information, [American Farmstead Cheese](#) by Paul Kindstedt will give you greater insight into acid and pH measurements for different cheeses.