

## Tomme: Basic Howto



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Tomme is one of the basic of all hard cheeses and has its roots in the European dairy traditions. It was traditionally made from the leftover skimmed milk after farmers collected cream. It was a practical way to use up leftovers, and create a cheese that was good young and old. It was made from cow's milk and goat's milk in areas that were more mountainous than the flat parts and rolling hills of France and Spain. It was aged in natural caves and developed a thin mold coating that varied with the region. Many cheeses are made as variants of tomme styles, and it is a fantastic base for you to experiment with washed rinds, scrubbed rinds, even smear rinds. You can also alter the character by washing some of the curd with water to remove lactose and reduce acidity. This works especially well for goat milk, which has a characteristic acidic tang from the shorter chain fatty acids.

This cheese should have a relatively high (relative to other mesophilic cheeses, similar to alpine styles) mineral content, meaning that calcium phosphate will not be degraded, and whey drain pH will be high (6.3+). This results in the curd sticking to each other and matting quickly. For a washed curd tomme, follow the process through cutting, healing, but raise heat much more slowly for the first 15 minutes. Target 92F, and stir gently for those 15 minutes. The whey should separate enough to where you can draw off enough whey to equal 1/3 of the total milk amount. Before you draw it off, heat a volume of water that is 1/3 of the milk amount to 130F. Drain off the whey and add the heated pH here? water in two stages. Add the first half and stir gently for 5-10 minutes until the curd firms up a little more. Then add the second half. Your final temp should be the same as with a normal tomme, right around 100F. Do not heat to the high end of mesophilic (105F). You do not want acid production to be that fast. If concerned about temp, add the heated water in three stages so you hit 100F. Then stir the curds until they are the right texture. pH here?

### Ingredients, Equipment, and Supplies

#### Quantity Description

- 3 gallons 2% milk, not ultra pasteurized
- 1/4 tsp Heaping 1/4, more like 3/8 tsp DVI culture. Use MA4000 or similar. Flora Danica, CHR Hansen's and CSK gouda cultures also work but the flavor is different.
- 3/4 tsp CaCl<sub>2</sub> solution (optional)
- 3/4 tsp Single strength rennet, or 3/8 tsp double strength, dissolved in 1/4 cup cold water

Pot big enough to contain milk: ~12-15 quarts

Thermometer, 0-212 F. pH meter if you have it

Long knife that reaches to the bottom of the pot and optionally, whisk

Colander

Paint strainer bag (1 gal size) or cheesemaking cheesecloth (not from the grocery store)

Empty yogurt cup or other small container that floats

Clean kitchen sink

Container big enough to contain 2 cups liquid

Ladle and gloves

## Process

Step	Time from Step 1	pH Target
Gather all your ingredients and equipment in one place.	0:00	N/A
Sanitize all the tools by filling the pot with a few inches of water, and putting everything that fits in it, closing the lid and letting it steam for 30 seconds. You can also dip everything in a solution of 1 gal water with 1 tablespoon of chlorine in it. If using chlorine, rinse with water after.	0:05	N/A
Pour the milk in the pot and heat on the stove to 88 F. Turn off stove.	0:45	6.5-6.7
Add the DVI culture and let it ripen the milk for 30 minutes at 88 F. pH should decrease slightly (.02+). If needed, add CaCl <sub>2</sub> diluted in 1/4 cup cold water.	1:15	6.5-6.6
Add rennet dissolved in 1/4 cup ice cold distilled water, stir up and down 15 strokes (4-5 ml double strength per 100 lbs milk, 7-8 ml single strength per 100 lbs milk, convert according to your rennet activity).	1:15	6.5
Wait for flocculation, multiply by 3.5 to get total ripening time from the time you added rennet. Time to flocculation target is 12-18 minutes. Use more or less to try and hit the target the next time if you're off a little.	2:00	6.5
Cut into 1/4 inch cubes, let rest 10 minutes.	2:10	6.5
Stir and increase temp to 100 F over 30 minutes. Hold at 100F until the curd is at the right texture. You can tell this by pressing a tablespoon of curd in your hand. It should mat together slightly and be somewhat firm.	2:50	6.3-6.4
Drain in vat or warm colander. pH should be 6.35 or higher. Let curds mat and press slightly under whey.	3:00	6.35
Put into a cheesecloth lined mold. This cheese sticks, so soak the cheesecloth in pH 5.2 whey beforehand or spray with vinegar.	3:00	6.35
Press under own weight turning at 15 min, 30 min, and 1 hour increments.	4:00	Varies
Press until pH is 5.4 or overnight.	16:00	5.4
Brine in an 18-22% brine 3-4 hours per lb of cheese.	26:00	5.2-5.3
Leave at 55-65 degrees for a day at ~70% RH for the outer rind to dry a little before moving to the cave.	N/A	N/A

## Milk Preparation

To prepare the milk for Tomme, you must heat it to 88F. This is the case for a basic Tomme that we are making here. Within the Basque regions, there are many variations of this basic recipe, with some artisans heating to higher initial temperatures, and some lower.

Tomme is most often made from raw milk, making the addition of culture unnecessary because it has natural cultures. But because we are using pasteurized milk and we want to develop a specific flavor profile with the cultures, we must add it. When using DVI culture, you must add it and let it dissolve and become hydrated, because it is frozen and dehydrated. This takes about 30 minutes. Add them to the milk when it is close or at your target temperature.

When using raw milk, you can omit adding culture entirely, or add a tiny portion to contribute flavor. After adding culture, wait for acidity to drop a little, about .10. This is because the rennet target is 6.5, and fresh milk is usually higher, about 6.6. Waiting for a slight drop also helps to ensure that the culture is awake and active. Once you reach this stage, you are ready to add rennet. If your milk does not get a good set from past experience, it may be necessary to add calcium chloride (CaCl<sub>2</sub>) in order to help the micelle-to-micelle bonding. Add at a rate of not more than .01% by weight, which is about 1/4 tsp of 30% solution per gallon of milk.

## Coagulation

Tomme is coagulated by adding rennet. In Europe, the tradition is to use calf rennet that has a strength of 1:10,000. You can use whatever rennet you have available, at the right dosage. That dosage is as specified in the rennet section earlier: 3.5-4.5 ml per 100 lbs of milk of double strength, 7-10 ml of single strength of single strength. Use the lower end of the range for higher solids milk, such as Nigerian goat or sheep.

The flocculation target for Tomme is 10 min minimum, and up to 18 minutes. The multiplier is 3-3.5x. When the milk is ready, dilute your rennet in ice cold distilled water, add to milk, and mix in up-down strokes for 10-15 strokes. This is to distribute the rennet completely, yet not over agitate the milk.

To determine the flocculation time, place a floating cup on top of the milk, and determine the length of time it takes from when you add rennet to the point of flocculation. The flocculation multiplier is a way to ensure consistent moisture retention regardless of the milk. Moisture content is very important because it helps to determine the rate of proteolysis and glycolysis. A more moist cheese will age faster, but is more prone to spoilage. You must balance moisture level with culture selection, humidity, and temperature to produce a proper tomme. The high flocculation multiplier means that a tomme will age faster, but also will not last as long before it fully matures and becomes overripe.

## Curd Cutting

When making hard cheese, the curd size matters because it helps to determine the final moisture of the cheese, and to a degree, the final level of calcium. For tomme, the size of curd should be about the size of large peas, 3/8" big. When you cut curd, it is done in combination with the flocculation

multiplier. A shorter multiplier with a small curd results in a drier cheese, like a parmesan, whereas a large multiplier with large curd results in more moist cheese, like a brie. At the proper time after flocculation, cut the curd with a whisk or knife into 3/8" pieces. After you do this, let the curd heal for 10-15 minutes to firm up before stirring. Healing helps the curd to retain fats and prevents shattering.

## **Curd Cooking**

The total time to cook and stir curds, and the final temp target vary with cheeses. But for tomme, you cannot go past 100F, and it takes about 30-45 minutes to reach the proper curd consistency. It's difficult to use time as a measure for when to stop cooking. You must look for the right moisture content in the curds. This is determined by taking a handful of curd and squeezing it together. It should come together, yet still be able to come apart to individual curds. The other aspect to keep in mind is the pH. Whey drain pH, more than anything else, determines the final cheese calcium level, which gives a cheese its final character. The calcium level of curds also influences the curd ability to bond. More calcium means a faster bond, and a more pliable cheese. If you are making a washed curd style of tomme, you can start washing after healing, at no more 130F water than 30% of the original milk volume to get to a final temp of up to 100F.

## **Whey Draining**

The whey drain pH for Tomme must be high, above ~6.35. The curds will want to mat together, so you must stir to ensure they are the right moisture level, otherwise they will mat prematurely, when they are still too moist. After they are the right level, let the curds drop to the bottom of the pot and mat together there for 10 minutes.

## **Curd Knitting**

After waiting for the curds to knit on the bottom of the pot, take your hand and press the curds to the bottom of the pot to help them mat together. This is called pressing under whey.

## **Molding/Hooping**

Pour some whey on the cheesecloth or curd bag or spray the cheesecloth with vinegar. This is to help the cheesecloth not stick to the cheese. This cheese is very prone to sticking because of the high calcium due to high drain pH. If you want your cheese to knit better, press it under whey after you put it in the mold, or press it in a pot that is sitting in a sink full of hot water. Warm temperature helps the curds to knit.

## **Pressing**

Put into your mold and press with 10-20 lbs of pressure (lbs, not psi). This cheese is traditionally pressed by stacking multiple molds on top of each other. It does not need much weight. Mechanical openings are acceptable for this cheese style.

## Salting/Brining

You can either salt rub or brine the cheese. If brining, use an 18-20% brine for 3-4 lbs per lb of cheese. Your initial brine must be balanced for pH and calcium. To get there, either use whey, or add 1 TBSP CaCl<sub>2</sub> solution and 1 TBSP vinegar. If you do not, the cheese outer layer will likely become slimy as the calcium goes out of the rind. Your brine temp should be the same as your cheese temp.

## Affinage

This section is in progress. In general, you need to age a tomme at 88-92% RH and 55F. Be sure to dry the rind out for a day or two at 60F and ~70% RH. It cannot be wet when it goes into the cave or you may get undesirable mold growth. You can use many rind styles with a tomme, which we will cover in articles in the [Rind Development](#) section.

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