



## Information for the use of the Polycarbonate Cheese Vats

Polycarbonate cheese vats are a great option to consider if you're currently making, or planning to make cheese. They are a great alternative to using stainless steel pots.

### Features

- See the 'instructions' heading below for how to use the polycarbonate vats
- The main feature of the polycarbonate vats is their great thermal resistance. They are designed to hold the temperature of the milk and the water in the jacket very well. The temperature of the milk and the water jacket will drop faster on a cold day, but the rate of temperature drop is a lot slower than usual plastic containers.
- The next key feature is the rectangular shape of the polycarbonate vats and the 'flatter' surface area (as opposed to taller and round milk in pots). This open space allows you to perform very exact cuts of the curd and gives better control stirring the curds. Cutting and stirring curd accurately is very important for making good cheese. (As an extra option, Cheesemaking's stainless steel curd knives are designed to suit the size of these vats. The curd knives are not essential, they are a highly convenient item to consider for your Cheesemaking tool kit down the track)
- The polycarbonate is a premium quality clear food grade plastic. It is designed to hold boiling water if needed.
- They are virtually unbreakable, but they will crack if you bang them very heavily.
- They will scratch.
- They will easily burn/melt if you place them near, or on a hot plate or a flame.
- They are clear. This allows you to see the milk/curds/whey when you are making your cheese. This is not a technical requirement or benefit, but is simply visually appealing when you spend a lot of hours over a vat making cheese.
- They allow you to move your cheesemaking away from the stove. This simply provides you with more freedom and comfort. Especially during the summer months when standing over a stove for hours becomes uncomfortable and/or monotonous.
- When you are finished making cheese, store all your cheesemaking equipment in the polycarbonate cheese vat with the lid on until the next cheesemaking day.
- Each vat has a lid. The lid has three very important components to it:
  - It has a notched end, where the handle of the curd stirrer sits in place. The aim is to keep the lid on the cheese vat as much as possible to assist in keeping the milk/curds/whey warm and also to minimise contamination. The notched lid lets you keep the stirrer in the milk/curds/whey during the entire cheesemaking process, so you do not have to keep removing the stirrer every time you use it. *The one exception is to remove the stirrer as soon as you add the rennet while the milk sets, then reintroduce the curd stirrer once the curd is cut.*
  - The lid has a 3mm hole in the center that you can place your thermometer probe into. The lid sits on the vat, the thermometer unit sits on the lid, the probe protrudes through the hole and into the milk. This will allow you to constantly monitor the milk temperature without removing the lid.
  - The lid has a slot in the middle that allows you to easily with one hand to lift it on and off. There is no clipping of the lid to remove it.



## Polycarbonate Cheese Vat and Lid Sizes and Options

- 6 litre
- 8 litre
- 12 litre
- 24 litre
- 6 litre and 8 litre combination
- 8 litre and 24 litre combination
- 12 litre and 24 litre combination
- 6 litre, 12 litre, and 24 litre combination

Note: It is recommended that the workable capacity of any vat is 1 litre less than the stated volume of the vat. EG; if you use the 6 litre vat, 6 litres of milk will fit in the vat, but it will likely overflow when you perform cutting and stirring steps. There is no minimum volume level.

## Instructions for using a single vat to make cheese

These are detailed instructions on how to use the polycarbonate cheese vats to make cheese, designed for all Cheesemaking skill levels. There may be too much detail listed here for some people. Please take the information that you require and don't focus on anything that sounds too specific or advanced for your use. The temperatures and times are guidelines. The circumstances of how you use these polycarbonate cheese vats may vary to what I outline below. After using these vats once it becomes much easier to understand how they operate.

The same concept applies regardless of which sized vat you are using (6, 8, 12 or 24 litre)

- Warm the milk on the stove (in a stovetop safe pot) to the temperature required by your cheesemaking recipe (we will use a cheesemaking milk temperature of 32°C as the temperature example for these instructions).
- Transfer the milk to the sanitized 6 litre vat. Do not place the 6 litre vat onto or near the hot stove top, it will melt.
- All the functions of making cheese: adding cultures and rennet, temperature control, stirring, cutting curd, cooking, Cheddaring, milling, curd salting, hooping the curd are performed while the milk/curds/whey are still in the vat.
- To keep the milk/curds/whey warm, the vat needs to stand in a water jacket. A water jacket is simply another vessel with water in it, big enough for the cheesemaking vat to stand in. Preferably also big enough to easily remove and add water from the side without disturbing the milk vat (the 200ml jug in our equipment category is perfect for this task, or any similarly slim container). Examples of water jackets can be one of the larger polycarbonate cheese vats, a laundry tub, kitchen sink (providing the plug does not leak). Basically, any container that is marginally bigger than the polycarbonate vat. This is a similar concept to a 'bain marie' or 'double boiler'
- The water jacket is now used to maintain the temperature of the milk during the entire cheesemaking process.



- The water jacket needs to have warm water up to approximately the same level as the milk. If the milk and water are at approximately the same level you will have the most efficient heat transfer. The volume of water in the jacket will vary depending on the size of the vessel that you are using. This water should be approximately 3°C - 5°C above the required milk temperature (around 50% tap water + 50% hot water from the kettle will give you this). Eg if the milk is 32°C, the jacket should be around 35°/36°/37°C. It is important to get that initial temperature correct.
- To maintain the correct temperature of the water jacket, allow it to slowly cool back down to the milk temperature (eg 32°C), then remove approximately 200ml of water from the jacket and add approximately 200ml of boiling water from the kettle/stove top to replace it. This will increase the jacket temperature by another 4°C (approximately). The combination of letting the jacket drop to 32°C, back up to 36°C then back down to 32°C, will keep the milk at approximately 32°C for the whole cheesemaking process. Keep repeating this process until the curd is hooped. On cooler days you will have to repeat this task more often than on hotter days.
- One of the properties of the polycarbonate vat is its excellent temperature holding properties and even though the water in the jacket rises and falls, the temperature of the milk/curds/whey will stay fairly constant during the cheesemaking process. On a warm day it can be up to 30 minutes before you need to add the 200ml of boiling water.
- While the polycarbonate cheese vats maintain the temperature very well, you still need to pay close attention to the temperature of the milk/curds/whey. **If you don't maintain the water jacket temperature it will fall below the milk temperature**, which will cool the milk, not maintain the milk temperature. If this does happen, you need to increase the jacket temperature an extra 4°C, so that it is now approximately 40°C (based on the example of a required 32°C milk temp). Maintain that increased temperature (by adding/removing approximately 400mls of hot/cold water from the jacket) until the milk gets back to 32°C. Then go back to the usual 32°C up to 36°C down to 32°C.
- If you are cooking curd, for example Cheddar, then these temperatures will change. The Cheddar process starts with the standard 32°C to 36°C water jacket (as Cheddar milk is at 32°C ). But when you start cooking the curds and whey to 40°C, you require a temperature rise of 1°C every 7 minutes. To obtain this rate of increase in the curds and whey, use the water jacket in the range of 43°C to 47°C. Once you reach 40°C, maintain the water jacket at 40°C to 44°C. Then when you have completed the cooking and you are now Cheddaring the curds at 37°C, you need to maintain a temperature of the water jacket at 37°C to 41°C.
- **What is very important to understand:** While I have outlined a variety of temperature scenarios, it is the temperature of the milk/curds/whey that is most important, the temperature of the jacket is only secondary to the temperature of the milk/curds/whey temperature. You will need to work out what system works best for you to keep the milk/curds/whey temperature at the correct level for each cheese that you make.
- When you are finished making cheese just store all your cheesemaking equipment in the cheese vat with lid on until the next cheesemaking day.
- When you are finished making cheese, a few alternatives:
  - Use the polycarbonate vat for making your brine,
  - Insert a cheese mat or rack into the polycarbonate vat and use it to ripen cheese in a ripening cave (although the polycarbonate vats are tall, so a large ripening space would be required)



## **Instructions for using two polycarbonate vats: one polycarbonate vat for milk and another polycarbonate vat as the jacket**

For the process of using two polycarbonate cheese vats the same principle outlined above still applies. The different polycarbonate vat combinations that you can choose from are:

- The 6 litre vat sits in the 8 litre jacket,
- The 6 litre vat sits in the 12 litre jacket,
- The 8 litre vat sits in the 24 litre jacket,
- The 12 litre vat sits in the 24 litre jacket,
- The 24 litre vat sits in a 36 litre jacket. The 36 litre vats are a special order item. Email me at [info@cheesemaking.com.au](mailto:info@cheesemaking.com.au) and I will send you the latest prices.

### **Some additional features of the combination vats and jackets are:**

- Using the jacket lid for temperature maintenance: The milk vat already has its own lid so temperature loss from the milk is minimal. To minimise heat loss from the jacket, use the lid from the second polycarbonate vat to cover the milk vat and jacket at the same time. Remove the thermometer from the milk vat lid, invert the jacket lid and place it on top of the jacket so it seals both the milk vat and the water jacket.
- The temperature holding abilities of the polycarbonate are now working on all sides, the base and the top of the jacket.
- You will need to remove the lid when you have to work on the milk/curds/whey.
- Depending on the cheese room temperature, you should get up to approximately 45 minutes before the next temperature adjustment is required.
- The thermometer bracket sits neatly over the wall of the polycarbonate jacket.
- With two thermometers and one thermometer bracket you can now take the temperature of the milk and the temperature of the jacket at the same time. Which will make monitoring your temperatures much more convenient

### **Using a sous vide heater to maintain the temperature of the water jacket**

- Some cheesemakers who have been using these polycarbonate vats purchase a sous vide circulating heater.
- This sous vide heater clips onto the wall of the polycarbonate jacket and circulates the warm water during the cheesemaking.
- There is no need to change the water to maintain temperatures.
- The heat transfer is more efficient using a sous vide water heater, because the water temperature is constant around the milk vat. To maintain a temperature of 32C in the milk, the sous vide heater should be set at 32.5C.
- Here is a link to one brand of sous vide heater that I use, but there are other brands. This is not an endorsement of this product, it is to help you decide if you want to use a sous vide heater: <https://anovaculinary.com/>.
- They do come on special a few times a year.

The polycarbonate cheese vats may also become great vessels for slow cooking of products using sous vide heaters.