



URBAN EST
1981 WINERY
& CRAFT BREWING SUPPLIES

Cooling the Wort

It's very important to get a boiling wort chilled down to a fermentable temperature quickly. It is also something that can take a lot of time. Here are a few techniques to make this process work a little better than staring at the pot yelling "chill! Chill! CHILL!"

Fermentable Temps?

If yeast is added to a wort that is not cool enough, it more often than not ends in disaster. The heat of the wort will kill some or all of the yeast, and leave the beer either without yeast or underpitched (*which is a whole other matter, but most of the time results in bad beer*).

In practice, anything above 30°C will be warm enough to kill yeast. We like to pitch our yeast in wort that is between 18°C-25°C. This temperature range should be your goal too.

The other issue in cooling down wort is that in the time between removing the pot from heat and adding yeast, the wort is left open to all sorts of bacteria. The sooner the wort is cooled, the lower the chance of contamination. Essentially, wort needs to be cooled down sufficiently in a short period of time for best results.

Below are some techniques for chilling wort safely.

1) The Ice Bath

This is the technique most often used by new homebrewers. Simply transfer the pot from the stove (or whatever heating source was used) and place it in a sink full of ice water. The pot will need to be transferred to new ice baths a couple of times. It is remarkable how fast the heat from the kettle will turn the ice into a hot water bath.

Keep the pot in ice water, and transfer as needed until the wort cools down. This method can take a LONG time. Generally anywhere from 1-3 hours. It also uses lots of ice (or snow if its winter).

This is certainly a workable method for first time homebrewers, but we don't recommend it long term.

2) Immersion Wort Chiller

This is our preferred method at KJ. Immersion wort chillers can be purchased from us or they can be made at home. Wort chillers are either copper or stainless steel tubing coiled into a cylinder. At the top, there is an intake and outtake with garden hose fittings attached. The intake is attached to a compatible sink. Wort chillers work by running cold water from a tap through coils that are immersed in the wort.

To use a wort chiller, place it in your kettle in the final 15 minutes of the boil. The boiling wort will completely sterilize the chiller. Once the boil is finished, attach the chiller to a compatible sink (one that can accept garden hose fittings, like a laundry sink) and run water through it. The cold water will cool the beer down remarkably quickly. We recommend stirring the wort chiller around the pot every 5 minutes or so. This

method can take as little as 15 minutes to cool down a beer. Once the wort is cooled, remove the chiller, tilt it upside down to clear out any water inside, and clean it for next time. The one downside to this method is that it can use lots of water. However, the water that comes out of the chiller is clean and perfectly viable for another household use.

3) Plate Chiller

We don't have a whole lot of experience with these at KJ, but they are very useful for a lot of homebrewers. These work by pumping water from the kettle through a set of chilled stainless steel plates. In order to use this style of chiller, a pump is required, and the beer needs to be relatively clean (otherwise it can gunk up and block the plates). Contamination is a major risk, and lots of equipment reliability issues can come up.

This method is one of the quickest to chill beer, but requires the most amount of equipment. We recommend brewers start with an immersion wort chiller first.

4) Overnight Chill

In this method brewers transfer the still hot wort directly into a food safe fermentation pail. Attach the lid to seal it, and let it sit overnight to cool. The next day, take a temperature reading and if it is cooled, add the yeast and ferment normally. If it is not cooled yet, wait until it is then add the yeast.

At first glance this method seems to go against the whole "cool down quickly or your beer will be contaminated" idea, and it would, if not for the fact that the container is sealed. When the hot beer goes into the pail, it sterilizes the entire thing. Once the lid is tacked on, nothing can get in there to contaminate it until you add the yeast. This is quite a clever way to cool the wort. There are a couple of caveats to this method.

- Make sure the pail you are using is food safe. We have checked with our suppliers and can confirm that all of the pails we sell are safe up to 180°F (82°C). The wort will have to cool a little bit before it can be added to a pail. We find it takes very little time to go from boiling to 82°C.
- Be sure to strain the beer to collect hop and other residue before they get in the pail.
- Once the beer is in the pail and the lid is on, gently slosh the wort in then pail to make contact with all parts of the container. This will sterilize it. Be sure not slosh it too aggressively; there is always the potential for hotside aeration!
- **For hop-forward beers, this method gets a lot trickier.** Hops sitting at warm temperatures for a prolonged period of time can take on some astringent, or bitter, flavours. Beers that just have bittering hops in them (i.e. hops added with more than 20 minutes left in the boil) are fine. Beers with lots of late addition hops are in danger of taking on these gnarly flavours.
 - Some brewers add their late addition hops as a dry hop once the beer has cooled.
 - *i.e. instead of adding hops at 15 mins and 5 mins in the boil. Add them to the fermenter as a dry hop. It won't be exactly the same, but it will be close. To make up for the lost IBUs, add more bittering hops.*
 - Others make a more concentrated wort, and then add the missing water as they are transferring it to the pail. Make sure the water is sterilized. This dilutes the bitterness from the hops.
- Clarity can potentially take a hit with this method. Using Irish moss or Whirlfloc during the boil will help. So will cold crashing post fermentation.
- Be sure to check the temperature the next day to ensure that it is in yeast pitching range (18°C-25°C). We recommend sticking an **adhesive thermometer** on the outside of the pail to make checking the temperature easier.