



## How to Brew a Lager

Tips and recommendations for home brewing lager styles.

- Yeast

- Pitch healthy, large amount of yeast. A large starter may be required for liquid yeast or 4 or more sachets of dry lager yeast properly rehydrated or 4 vials of liquid yeast.
- Over 400 billion cells recommended for an o.g. 1.060 lager, 5 gallon batches.
- This would equal a 2 step starter of 1 L and 2 L of liquid yeast with a viability of at least 50% of 100 billion cells with use of a stir plate. Multiple steps for higher o.g., or older yeast. Do not airlock starter flask/ container.
- May want to cold crash starter for 24-48 hours before pitching, or account for extra starter volume in recipe.
- If starter is cold crashed, allow yeast slurry to warm up to within 5-10 degrees of final wort temp on brew day before pitching.

- On brew day

- Cool wort to 60-65 degf and transfer to bucket or carboy oxygenating well.
- Optional; decant majority of starter liquid after cold crashing, but leave enough to slosh up yeast cake.
- Use of a fining agent like Irish moss or whirfloc will greatly help with end product clarity.
- A proper rolling boil and prompt cooling will also help to reduce haze forming proteins through hot and cold break.
- Try to cool wort below at least 60 degf before moving to fermenter.
- Move fermenter to fermentation chamber or cold area of house (i.e. corner in basement) that is approximately 45-55 degf, depending on type of yeast, and pitch your yeast starter or rehydrated dry yeast.



- Fermenting

- Depending on type of yeast, keep fermenter at specified temperatures, typically 45-55 degf, for 7-10 days or fermentation is nearly complete.
- Raise temperature of fermenter to 55-65 degf for primary fermentation to finish and for the diacetyl rest.
- After 2-4 days at 55-65 degf, transfer to secondary fermenter. Kegs work great for this to help ward off oxygenation. If you don't have a keg, fill up your secondary fermenter as full as you can. Less headspace the better.
- May use sanitized objects such as marbles to take up space and increase volume.

- Secondary Lagering

- For a true lager, temperatures should now be lowered very slowly to prevent yeast shock to around freezing (32 -35 degf) by about 3-5 degrees a day at most. Temp controlled fermentation chambers work best here.
- My method, after 7-10 days of primary (50 degf) and 2-3 days diacetyl rest(60-65 degf), is to move fermenter to basement for 2 days (55 degf), move to cellar for 2-3 days (45-50 degf) and then to the fridge (40 degf) and adjust the fridge over the next 3-4 days down to 35 degf for 4-6 weeks.
- You can also cold crash after the diacetyl rest and if space allows, let sit at cold crash temps (as cold as you are able to get it to, 35-45 degf) for a couple weeks to help clear the beer.

- Carbonation

- After "true" lagering, beer should be almost fully carbonated.
- If lagered in keg and not up to carbonation level desired after about 5 weeks, simply pressurize keg to desired psi and let sit for another week, and it should be perfect.
- For bottling a lager, rack out of secondary to a bottling bucket. Use the temperature adjustment for calculating priming sugar and add dextrose/water solution to beer before bottling. If beer is not close to carb level, more sugar will be needed.



- For bottling, extra yeast is typically not needed, however extra time may be needed for full carbonation.
- Extra yeast for bottle conditioning may be needed for higher o.g. beers (over appx 1.080) or if lagered for more than 6 months. Any yeast can be used for this purpose.

Lagering can seem scary or daunting to some home brewers, but if you're able to ferment at colder temps (45-55 degf) and preferably have a place to at least cold crash, you can produce great lagers to add to your brewing repertoire.

Without a fermentation chamber, winter is a great time to lager in Wisconsin, most basements have a nice cold and dark corner and you could even cold crash in an uninsulated garage.