

Lager Brewing

Thinking about brewing a lager style beer? Here are a few tips to help ensure success on your first try. For an in-depth scientific analysis of lager brewing, please refer to Greg Noonan's book *New Brewing Lager Beer* available for sale on our bookshelf.

1) Preform a yeast starter

- The purpose of doing a yeast starter is to encourage a vigorous fermentation that yields full attenuation and clean flavor profile. The cool fermentation temperature required for lager beer stresses yeast, so a strong yeast starter paired with good wort aeration will help ensure that your lager beer is a success. We strongly encourage that a yeast starter is prepared for lager fermentation, especially with the White Labs yeast vials. If a yeast starter is not used when fermenting a lager, the risk of a slow fermentation that is under-attenuating and produces off flavors is greatly increased.
- For procedure, please refer to the Yeast Starter document on the Beer Making page.

2) Pitch Yeast at 70F - 75F

- While lager yeast can maintain fermentation at cooler temperatures, they are more comfortable fermenting at warmer temperatures. Pitching your yeast starter at a warmer temperature and waiting for fermentation to start before cooling the beer down will help ensure a healthy fermentation free from diacetyl production.

3) Reaching fermentation temperature

- To produce the clean and sometimes sulfury (which can be desired) fermentation profile that lager yeasts provide, a colder fermentation temperature needs to be achieved. Most lagers are typically fermented at 50-55F, though some specific yeast strains may vary on optimal fermentation temperature.
- Ideally, fermenting the beer in a converted deep freezer or refrigerator with a temperature controller will yield the best results. You will want to reduce the temperature slowly, over the course of a few days to your desired fermentation temperature.
- Though not as ideal, it is still entirely possible to lager beers during the colder months without a dedicated freezer or refrigerator by using your basement, attic, garage or any combination of spaces that would help you achieve the desired temperatures.

4) Perform a Diacetyl Rest

- Diacetyl is chemical compound that is produced by yeast during the early stages of fermentation that is typically consumed by the yeast near the end of fermentation. The colder fermentation greatly decreases the efficiency of yeast's ability to metabolize the diacetyl that is

present.

- Diacetyl in a beer can give the beer a buttery and/or creamy quality that is undesirable in most styles and especially in lagers where a clean fermentation is most desired.
- To perform a diacetyl rest, you will need to gradually warm up your beer to 60-70F for at least three days. This can be done by controlling your temperature in your refrigerator/freezer or removing your beer from the cold environment and putting it in a room that sits within the target temperature range.
- The warmer temperature not only helps reduce diacetyl but it also allows the beer to fully attenuate before the lagering stage.

5) Lagering

- This is the conditioning stage that helps achieve that crisp and clean flavor profile desired in lager beers.
- After the diacetyl rest is complete, transfer the beer into your carboy for secondary and begin to gradually (over the course of several days if possible) reduce the temperature to about 32-35F as possible and hold it at that temperature at least 2 weeks but preferably up to 6 weeks (or longer depending on the style) to ensure that your beer has matured in flavor.

6) Priming, Packaging, and Storing

- If you have a keging system and force carbonate your beers, keg as normally would.
- If you are bottle conditioning there are a few steps to perform to ensure that your long awaited for beer is properly carbonated when you go to crack one open. Since the beer has been condition for a long period of time at very cold temperatures, the yeast will have become malnourished, dormant, and almost completely flocculated out of the beer.
 1. Warm the beer back up to about room temperature
 2. Repitch a dry yeast into the beer (US-04, S-04, S-33, or T-58 will perform well)
 3. Let the beer sit a day or two with the new yeast in it at room temperature
 4. Now you can bottle just as you normally would any other beer.