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Brewing Northern Brewer Lager Kits

- Supplement to the General Beer Kit Instructions

There are three big factors that differentiate lager brewing from ale brewing:

Yeast – Lager yeast is a distinct sub-category of brewing yeast. *Saccharomyces uvarum* or *carlsbergensis* ferments at colder temperatures than ale yeast and doesn't produce the same fruity-smelling and -tasting esters during fermentation that ale yeast does. Many lager yeast strains do, however, produce a lot of hydrogen sulfide during primary fermentation – don't worry if your lager smells like sulfur as it ferments. The offending compounds will vent off or be broken down during lagering.

Temperature – Maintaining steady, cold temperatures is critical for making good lager. The primary fermentation temperature should be between 48°F and 58°F, depending on the exact yeast strain being used (to determine optimal fermentation temperature, refer to the Wyeast specifications listed in the Kit Inventory). During secondary fermentation, the temperature is slowly lowered to 35°F – 40°F for several weeks – this is the *lagering* phase. During lagering, the yeast cells slowly metabolize residual sugars and fermentation byproducts, which leaves the finished beer clean and crisp.

Time – Because of the lower fermentation temperature, yeast metabolism is slower. Primary fermentation for a lager may last from 7 to 14 days; the lagering phase will last from 4 to 6 weeks, or even longer for strong lagers like bock and doppelbock.

In addition to standard brewing equipment, you will also need the following to brew lagers:

- A secondary fermenter
- A lager cellar (e.g., a cold basement with constant temperatures) or a refrigerator with an overriding thermostat.

Optional but very highly recommended:

- yeast starter kit
- wort chiller

Prior to Brewing Day

1. **Prepare a yeast starter.** Incubate the Wyeast XL pack and prepare a 1000 ml (or larger) yeast starter, 2 to 4 days before you will brew the beer. The actual work for this step takes a relatively small amount of time but makes a big difference in the fermentation and flavor of the finished beer.

Ferment the starter at the same temperature at which you will ferment the beer – for example, if you will be fermenting your Maibock at 50°F, allow the yeast starter to ferment at 50°F as well to prevent “temperature-shocking” the yeast.

For information on how to make a yeast starter, refer to www.northernbrewer.com/docs/html/yeast-starter.html

If you choose not to make a yeast starter, boil the wort as specified in the General Beer Kit Instructions, and pitch yeast when the wort is 70°F or lower. Keep the fermenter at room temperature until fermentation just begins (dots or slight foam appear on beer surface). *Immediately* place beer in a cooler location (48-58°F). This method requires very careful monitoring of the fermenter once the yeast is pitched, and is more prone to producing beer with off-flavors.

On Brewing Day

2. **Brew the beer.** Follow steps #3 through 12 of the General Beer Kit Instructions to make the wort.

Tip: Cool the wort to as close to the fermentation temperature as possible before pitching the yeast!

Brewing Day and Beyond

3. **Primary fermentation.** Place the fermenter in a lagering cellar with constant temperature, or inside a refrigerator or chest freezer fitted with an overriding thermostat. To determine optimal fermentation temperature, refer to the Wyeast specifications listed in the Kit Inventory.

Active fermentation may not begin for 24 to 48 hours. Primary fermentation in lagers may last from 7 to 14 days.

4. **Secondary fermentation and lagering.** Siphon the beer into a clean, sanitized glass carboy when the primary fermentation is finished. Signs to watch for are: bubbling in the airlock slows down, the krausen on the surface of the beer starts to fall back, and a hydrometer reading should show that the beer is about $\frac{3}{4}$ of the way to terminal gravity.

Once the beer is in the secondary fermenter, gradually drop the temperature to begin lagering. Lower the temperature 1 to 2 degrees per day until it reaches 35°F – 40°F. Lager the beer at this temperature for 4 to 6 weeks; strong beers may need to be lagered longer than this.

5. **Bottling.** Nine times out of ten, you can follow the instructions in step #14 of the General Beer Kit Instructions for priming and bottling your lager. Sometimes, however, you may need to add fresh yeast at bottling to ensure good carbonation. This is most common when the beer has been lagered for more than 6 weeks. If the beer is very clear after the lagering phase, most of the yeast may have settled out, and there may not be enough cells left in suspension to carbonate the bottles.

To repitch yeast at bottling, add one incubated Wyeast XL pack per 5 gallons (it's not necessary to make a yeast starter). Sanitize the pack and a pair of scissors as described in step #11 of the General Beer Kit Instructions, and gently mix the fresh yeast with the beer in the bottling bucket, then proceed as normal. This will not cloud the beer or cause bottles to explode (as long fermentation is complete or you don't add more than the correct amount of priming sugar!).

6. **Conditioning.** Keep freshly bottled lagers at 60°F or warmer for 10 – 14 days to let carbonation develop. Chill and serve as desired.