



Basics of Yeast Handling

Recommendations for White Labs Pitchable Yeast Cultures

1. Always store the yeast at temperatures between 36 to 40°F (2-4°C) and follow the recommended best by dates for optimal performance.
2. For the first generation of the new yeast culture, a lighter style beer with a 10 to 12°Plato gravity is recommended for best yeast performance. WLN1000 White Labs Yeast Nutrient will help shorten the fermentation lag time and make the yeast healthier for subsequent generations.
3. Keep yeast in the refrigerator until needed. Do not freeze the culture. Remove yeast at least two hours before pitching, so the slurry can come close to room temperature. To inoculate, sanitize scissors, cut the top left of the bag and pour in.
4. Fermentation is best started warmer (approximately 70°F/21°C) and lowered to desired fermentation temperature after krausen formation or evidence of CO₂ begins, usually less than 12 hours.
5. The initial signs of fermentation should be evident within 12 to 20 hours depending on the age of the yeast. Successive generations will have a shorter lag time and faster fermentation. The first complete fermentation usually takes one to three days longer because yeast needs to adapt from a laboratory culture to a fermentation environment.

Collection, Storage & Repitching Yeast

When do I harvest the yeast?

- ▶ Ideally 5 to 7 days into the fermentation to preserve the health of the yeast

Where do I store it?

- ▶ White Labs Ferm Flask
- ▶ Modified kegs
- ▶ Food grade plastic buckets
- ▶ Large Erlenmeyer flasks

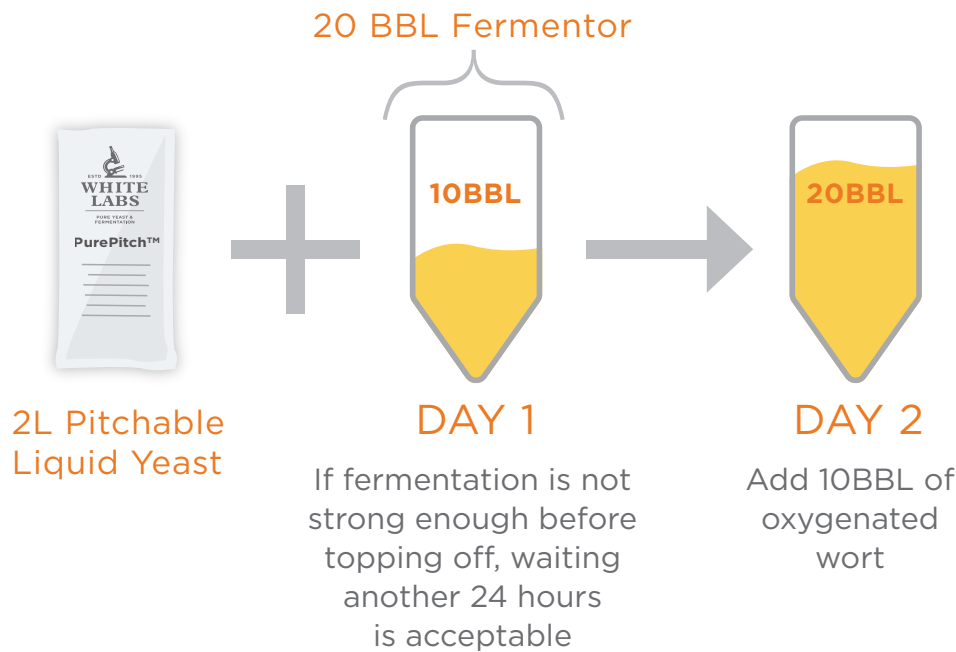
How should I store it?

- ▶ At 2-4°C in a storage vessel
- ▶ With a blow off bucket or pressure relief valve to degas CO₂
- ▶ No longer than 7 to 14 days



Double Batching - Ales

Multiple Day Method



PROS:

- Less yeast required

CONS:

- Can result in a different flavor profile due to the increase in yeast growth
- Fermentation may not be active enough at 24 hours to brew on top

Lager Yeast Options

Option 1: To start fermentation at 48 to 55°F (8-12°C), begin with more yeast. Reference the Custom Culture Calculator in the White Labs app for accurate pitch rate amount.

Option 2: Cool wort to hybrid/ale temperatures (60-65°F/15-18°C), pitch yeast and maintain temperatures until signs of fermentation are evident, CO₂ formation or pH decrease. Begin to lower fermentation temperatures until desired lager temperatures are reached. In order to maintain vitality, it's recommended to lower lager fermentation temperatures (0.5-1°C) per hour.

Option 3: Use a yeast step up. Grow in 10 percent of your fermentors final volume (i.e. for a 20BBL propagate in 2BBL of wort), pitch step up volume 0.5L of yeast per 1BBL. Maintain propagation at the same temperature you are going to pitch your yeast. After 24 to 48 hours, add propagation to fermentor. After the initial pitch, it's recommended to use higher pitching rates. Collect two to three times the normal slurry. Perform a cell count, viability analysis and a microbial stability test on the slurry to determine pitch rate from 1.2 to 2 million cells per milliliter of wort per degree Plato.



Wild Yeast & Bacteria Volume Recommendations

General use for secondary fermentations:

- ▶ 1L per 2-3BBLs for *Lactobacillus*, *Pediococcus* and *Brettanomyces* strains
- ▶ Souring will need maturation times around 3+ months
- ▶ Organisms will have a difficult time growing in environments below a pH of 3.5

General use of wild yeast for primary fermentation:

- ▶ Typical pitch rates are 750,000 to 1 million cells/mL
- ▶ Our general recommendation is 1L per 1-1.5BBLs
- ▶ Fermentation timeline will be slower, closer to 18 to 30 days depending on the strain

General use of bacteria for kettle souring/quick souring methods:

- ▶ Generally 1L per 5BBLs is necessary for quick souring within 48 to 72 hours
- ▶ The higher the pitching rate, the faster the souring
- ▶ Anaerobic environment is preferred for *Lactobacillus*
- ▶ Temperatures ranging from 80 to 95°F (26-35°C) are optimal for most *Lactobacillus* strains. See reference guide for strain specifics at whitelabs.com.
- ▶ Wort production needs to be very clean

RESEARCH

Domestication & Divergence of *Saccharomyces cerevisiae* Beer Yeasts

The White Labs Research & Development team collaborated on a study that did full DNA sequencing of 96 White Labs yeast strains. To read the study published in the journal *Cell*, Volume 166, Issue 6, p1397-1410.e16, 8 September 2016, visit [cell.com/cell/fulltext/S0092-8674\(16\)31071-6](http://cell.com/cell/fulltext/S0092-8674(16)31071-6).

Lineage

- Britain
- US
- Belgium/Germany
- Hefeweizen
- Mixed
- Wine
- Beer 2
- Asia

Niche

- Beer
- Beer (refermentation)
- Bioethanol
- Bread
- Laboratory
- Sake
- Spirits
- Wild
- Wine

Beer 1

