

## **BrewYourOwnAtHome**<sup>TM®</sup>

("If you can drink it, you can make it.")

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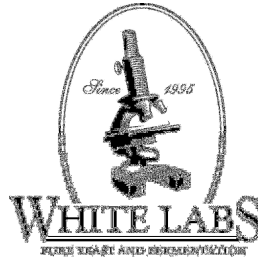
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Yeast is the most important ingredient when it involves making great beer. Over 500 different flavors and aromas are derived from yeast. Many brewers spend a lot of time and money on other ingredients and forget about the importance of adding high quality and bacteria free yeast into their wort. A brewer should spend as much time if not more selecting their yeast strain as they do selecting other ingredients for their beer.

### **Starters:**

A "starter" can be any volume of wort to which you add yeast before using it to make your beer. The yeast get active in this smaller volume, usually for 1-2 days, and then can be added to 22 litres of beer. This can be a good way to "prove" the yeast, and also build up greater cell numbers when making high gravity beers. White Labs recommends on their label to make a starter "if the gravity is over 1.070, if the yeast is past its "best before" date, or if a faster start is desired".

Procedure:

Make up a 1-2 litre wort, gravity ~1.040, hopped as normal. Boil for 30 minutes, cool to room temperature. Pitch one vial; shake well and let sit for 1-2 days. Little to no activity will be seen in the starter, since this is a very small volume compared to the quantity of yeast pitched. The yeast in a starter may be done within a couple of hours. But a layer of yeast should be at the bottom after 1-2 days. The wort on top of the yeast can be either decanted off the top, or left in and pitched with the whole volume. Most pitch the whole volume, but if the starter gets to the point of 2 liters for 22 litres, then we recommend decanting the wort off the yeast.

Typical Starter Volumes for 22 litres:

To activate the yeast: 1 litre

To regenerate expired yeast (there will be living yeast in the package for ~1 year): 2 litres

To brew a high gravity beer: 2 litres

To brew a lager beer, starting fermentation 10-13C: 3 litres

- Malt based starter instead of simple sugar is preferred.
- No krausen/activity is normal as yeast present consumes all of the sugar added for the starter quickly, and then falls out. That can happen within a number of hours, so it will never go through the process of removing oxygen and producing CO<sub>2</sub>, hence no krausen.
- We do not recommend storing a starter but if you have to you can store for up to two weeks, making sure the starter is sealed to prevent contamination.
- Off-flavors such as a sulfur can be concentrated in the starter.
- Procedure same for lager and ale yeast.

### **Tips for Harvesting and Re-Pitching:**

The better you treat your yeast the greater the shelf life. While we do not recommend that homebrewers harvest and re-pitch, here are some helpful tips:

When harvesting yeast, the best yeast is the middle portion of the harvest. Yeast which falls out later in fermentation is usually not as flocculent or as healthy. Most homebrew systems involve a plastic bucket with no "cone" similar to professional brewers to harvest the yeast, which can make it difficult to harvest the best yeast (creamy white with minimal trub). Store for no more than 2 weeks, after that the health of the yeast deteriorates.

Yeast should be harvested within a couple days (but no more than two weeks) after completion of fermentation. Having the yeast sit under beer too long will have an ill effect on the yeast. The yeast will have a large loss of viability. A good number of the yeast will autolyse (die and have their cells burst open). As you know, when things die it can leave behind bad smells and flavors. The final product will probably have some off flavors because of the long exposure to the stressed yeast.

Best results are usually limited to 2-3 generations.

### **Other Notes:**

#### ***Variations in Yeast***

The colors of yeast strains can vary, which is a factor of how much protein that is in the vial. The more protein precipitate, the darker the yeast will look. Plus each strain interacts with the protein layer differently. The very flocculent yeast such as WLP002-English Ale will separate itself from the protein completely, and you will see a creamy yeast layer and a darker protein layer on top. Other strains, such as WLP802-Czech lager will mix with the protein, giving an overall darker complexion.

#### ***Aeration***

The best system for aeration is the Oxygenator type of systems that come with O2 bottle, and tubing with sterile air filter, something like an aquarium pump. The higher the gravity wort, the less soluble O2 is, so the longer you need to aerate to achieve saturation.

#### ***Fermentation Length***

Most fermentations will be complete within 14 days. Lager fermentations can take up to one month, plus aging time. The typical ale profile is to ferment very actively for 1-4 days, which is called the "exponential" or "log" phase. Then the yeast enter a stationary phase, which helps to mature the beer and can last from 3-10 days. The beer should be ready to bottle at this time. It is important to check the final gravity (FG), and calculate the percentage attenuation to make sure the fermentation is complete. If the particular yeast strain is not very flocculent, it is hard to gauge when fermentation is complete without calculating attenuation %.

#### ***Attenuation***

Attenuation is the percentage of sugars that the yeast consumes during fermentation. If the fermentation went to 1.000 gravity, that would be 100% attenuation. Understanding the different attenuation ranges of each strain will help determine the terminal gravity of the beer.

#### ***Flocculation***

Flocculation refers to the clumping of yeast cells at the end of fermentation. Strains are separated into three main degrees of flocculation- High, Medium, and Low. An example of a highly flocculent strain would be our English Ale yeast, which will settle at the bottom of the fermentation tank. An example of a low flocculent strain would be our Hefeweizen yeast.

For more information, visit [www.whitelabs.com](http://www.whitelabs.com).