MAKING A YEAST STARTER

Pitching the proper amount of healthy yeast is critical to a successful fermentation. A yeast starter is a simple way to multiply your yeast cells over the course of 18-72 hours before brewday to create enough yeast to sufficiently ferment your batch. You are simply creating a small wort with a small amount of malt extract to give the yeast a sugar source to multiply from. Yeast starters are especially used when making high gravity batches and batches over 5 gallons, but even where one vile/pouch will do, a starter can decrease lag time and optimize your final results.

A smack pack, made popular by Wyeast, is a large foil pouch with a liquid yeast culture and a nutrient pack inside. The nutrient pack is broken ('smacked') and the yeast feeds off these nutrients and multiply over the course of 3-6 hours at room temperature, before pitching, on brewday. Smack packs are convenient, and great when your tight on time, but may not always be accessible. Smack packs can also be used along with a starter for further growth. Pitching too much yeast is better than not enough, but finding an appropriate balance will result in optimal beer flavour. A 2L starter is a good amount for a 20L (5.25 Gal) batch.

Yeast starters are intended for use with liquid yeast. Dried yeast can actually detriment from a starter, as the producer has integrated nutrients and other variables that are intended for use on the beer itself, as opposed to starter wort. Dry yeast will benefit from a simple rehydration in 80-100F water for 15-30 minutes prior to pitching, or can be directly pitched into wort depending on manufacturer's recommendations.

Y*ou want the starting specific gravity of your starter to be 1.030-1.040*. This range is preferable for yeast growth, high enough for efficient growth while not too high resulting in stressed yeast. Common equipment practices are the use of an erlenmeyer flask as the main growth vessel and magnetic stir plate to be administered during growth. You can alternatively use a glass 'growler' jug and manually shake/swirl your starter periodically during its growth. Making a yeast starter is easy and it's just a very mini version of an extract brewday.

Ingredients for 2 Liter (Half Gallon) Starter:

1 vile/pouch of Liquid Yeast
**** 0.5 lb (8oz, 227g) Liquid Malt Extract *or* 0.4 lb (6-7oz, 180g) Dry Malt Extract**
**** 2 liters (plus a bit for steam losses) of water**
A few grams of Hops *(optional)*

******This ratio of Malt Extract to Water is appropriate for a targeted starting gravity of 1.030-1.040

Equipment needed:

Brewpot and spoon
Thermometer
One Gallon Growler (*or Flask and Stir Bar***)**
Suitable funnel
Aluminum foil
(Stir Plate if using a Flask)

1. First off sanitation is, as you know, **extremely important** in brewing but especially when handling yeast. **Thoroughly cleanse and sanatise any equipment you will be using** including any surfaces that will be in contact with your equipment right up to the yeast package itself and your hands (gloves help). No sense in taking chances.
2. Have your yeast ready at room temp; pull it out of the fridge a few hours or so before making your starter.
3. Collect just over 2 liters of water in your brewpot and bring it up to a boil.
4. Just as you would in an extract brewday, once you reach a boil add your malt extract while stirring to avoid scorching.
5. Bring back to a boil, *add hops (optional)*, and stir often while boiling for about 10-15 minutes.
6. Once boiling is complete move your brewpot to an ice bath and cool your wort to 70-75*F. With the small volumes of liquid you are using this won't take long.
7. Once cooled, pour the wort into your sanatised vessel (with sanitised stir bar inside if using a flask), splashing to create aeration. Add your yeast and cover your vessel opening with a santised piece of aluminum foil, lightly 'scrunching' it in place.

It may seem that a piece of aluminum foil may not be the most sanitary choice for covering the vessel, but with CO2 being pushed out, and oxygen being drawn in, this makes for optimal transfer of these gases, where an airlock can be restricting in this regard. As your starter activity begins to die down, usually after 24-48 hours, you can replace the foil with an airlock if desired.

If you are using a growler jug you can, as mentioned, periodically shake/swirl the jug to agitate the starter and introduce further oxygen. Stir plates are designed to draw oxygen into the flask. With the magnetic stir bar positioned in the center of the flask, (use the magnet on the plate itself to assist in 'grabbing' the stir bar on the bottom of the flask and bringing it to the center) turn the plate on and set to desired speed.

You will see some mild yeast action taking place in your starter vessel over the next day or so. When you are ready to pitch the starter, you can simply shake the whole jug and dump everything into your batch, or if the yeast has flocculated well, and you wish to avoid the starter wort adding volume/flavour to your beer, you can decant the starter wort off of the settled yeast cake, leaving just enough to dilute the cake and pour it into your batch. Cold-crashing can speed flocculation if desired, just make sure to warm the yeast back up to pitching temperature before inoculation. If you are using a stir-plate keep in mind to avoid pouring the stir bar into the batch.

****** A note on Lager Starters:***

Lager Yeasts ferment optimally at lower temperatures than ales (45-55F versus standard room temp 68-72F). While a lager yeast will still work at room temp, it can create an off flavour known as diacetyl, a chemical compound reminiscent of hot melted butter. A yeast starter is a necessary step in Lager production, as the colder fermentation creates much slower yeast activity therefore requiring more yeast cells, roughly double, for success.

When making a Lager Starter, methods are open to personal preference and some still use room temp methods, but I would recommend, different from the instructions above:

**Plan roughly 5-9 days ahead of brewday. Do a longer starter at 45-55; colder temps require an extended growth period. This keeps the yeast at it's most optimal temperature from the first point of pitching.*
**Pull the yeast out of the fridge ahead of time still, but do your best to prevent it from reaching over 60F.*
**Cool your starter wort down to optimal lager temps (45-55F) before pitching your yeast.*
**Double your starter volume to 4L (one gallon) to encourage additional growth. Or do a "Step Starter" by adding multiple addition of sterile wort over the course of the starter.*