

Tips for Controlling Wort Fermentability by Marcel Charbonnet

Hey fellow CCH members! Today I'm going to share a few tips on controlling the fermentability of your wort.

Sugar and Yeast: Yeasts will ferment smaller sugars more readily than larger ones. So a yeast growing in wort that contains mostly small sugars will ferment more of them into alcohol before going dormant. A yeast growing in wort containing lots of large sugars will ferment mostly the small sugars, maybe some of the larger ones, and then go dormant. This results in beers with different alcoholic strengths, but they also taste very different!

Balance: Controlling the amount of residual sugar in your wort has a huge impact on the overall flavor and balance of beer. HIGHLY FERMENTABLE wort will result in a dry, crisp beer that lets hop character really come through. LESS FERMENTABLE wort will give a sweeter, maltier beer. You can get a good idea of how much of your sugars were fermented by comparing the Original Gravity before fermentation and Finishing Gravity of the final beer.

Specialty Grains: In general, darker malts and extracts will be LESS FERMENTABLE, while lighter ones will be MORE FERMENTABLE. Addition of more specialty grains in a recipe will make it LESS FERMENTABLE than just base grains.

Simple Sugar: Refined sugars are the MOST FERMENTABLE. Cane sugar, corn sugar, honey, syrups, candy, etc. Any of these can be added in the boil or during fermentation to make your beer MORE FERMENTABLE. I have used 10% simple sugar in many beers with great results. Very high amounts (50%) can cause "cidery" off-flavors and should be avoided.

Lactose: Think of lactose as the opposite of refined sugars. It is sugar refined from milk and is NOT FERMENTABLE at all by yeasts. Lactose will add only sweetness to the beer. It is often used in sweet stouts for that reason. One pound in a five gallon recipe will add a significant amount of sweetness.

Mash Conditions: If you have the good fortune to brew all-grain, you can directly control the size of sugars produced by altering your mash temperature and length. Diastatic enzymes in the malt work better at different temperatures. Think of 150-152 degrees as a midpoint. Lower mash temperatures (147-149) will produce smaller, MORE FERMENTABLE sugars; higher temps (153-158) will produce larger, LESS FERMENTABLE sugars.

Longer mashes give the enzymes more time to break down those big sugars, so even a high mash temperature will eventually produce smaller sugars if you let it run for a long time. All the diastatic enzymes slowly deactivate over time during the mash, but some amount of activity will still be there hours later. 60 minute mashes are the most common. Do longer mashes if you want MORE FERMENTABLE wort. Raise the mash temperature at the end of the mash with a "mashout" step and start your boil right away to stop the enzymes and save your larger LESS FERMENTABLE sugars from further digestion.

Yeast Strain: Each yeast strain has a different ability to ferment sugars. How much of the available sugars they will ferment is partly due to the strain's particular biology. We call this the yeast's "attenuation". Usually the amount of sugars that will be fermented into alcohol will range between 65 to 85% of what is available. You can check the various yeast properties here:

<http://homebrewresource.com/yeast-guide/>

Yeast Health: This listed level of attenuation is for an average wort. It assumes enough healthy yeast working long enough to reach this percentage. Unhealthy yeast, too little yeast, or too short a fermentation time may not reach these numbers. For more reproducible results, pick a yeast strain that has the attributes you need and give it ideal conditions to work! Combined with the above recipe techniques, you can dial in a beer's flavor to exactly what you want.