



## Carbonating Your Beer

Most commercial breweries carbonate their finished product with CO<sub>2</sub> gas. We have this option by kegging and force-carbonating our beers in the same way. But we homebrewers also know carbonation can be accomplished naturally by simply starting a second fermentation after bottling. Because the bottle is capped, any pressure that would normally be released via an airlock is forced back into the beer. Not just a simple twist of fate.

Preparing your beer for natural carbonation involves one final racking of your cleared beer into a mixture of “priming media.” Most fermentable ingredients can be used to prime beer. After the primed beer is racked and bottled it must remain at the temperature at which primary fermentation was carried out for a period of seven to 21 days depending on what was used for priming. After this time, the brew can be consumed or further aged at cooler temperatures.

Following are some of the more common ingredients used for naturally carbonating beer.

**Corn Sugar:** Brewer’s corn sugar is the most widely used ingredient to prime beer. It is reliable and ferments out almost completely, leaving no noticeable taste to most palates. I’m always hearing stories from new brewers who remember helping their dad measure sugar into each bottle and the gushing and exploding bottles. These probably were caused by inaccurate measurements or contaminated sugar. To avoid that scenario, boil the entire amount of corn sugar for five minutes in about a cup of water and mix with the entire batch, eliminating uneven carbonation as well as bacterial problems. A good way to mix in the priming media is to put it in the bottling bucket first, then gently siphon wort into the media.

The amount of corn sugar to use can vary with beer styles and drinking temperatures. A good rule is to start with three-fourths cup for a five-gallon batch. Most people tend to drink lighter-bodied beer at colder temperatures. Because colder liquids tend to absorb more CO<sub>2</sub>, people who drink their beer ice-cold may use up to a cup, but be wary when taking a case across county in the back of you station wagon! Beer primed with one cup sugar per five gallons needs to be kept cool. Beers enjoyed at warmer temperatures may be primed with three-fourths cup although some people prefer the lighter carbonations of two-thirds cup. As usual, your own preference is key, and after a few batches you’ll have a system worked out. Typical carbonation time for beer primed

with corn sugar is seven to 14 days. Priming with corn sugar tends to maintain an even level of carbonation over time.

**Malt:** Dried malt extract or extract syrup may be used to prime beer. The dried type is easier to use and light malt is preferred, but any color will suffice. I've never heard of hopped extract being used for priming, but if anyone does opt to try I'd be glad to judge the results. To use malt extract, start with 1 ¼ cups, boiled in a pint of water. Malt extract has only about 70 to 80 percent of the fermentables (by weight) of corn sugar, which is why you must use more. Adjust as you would with corn sugar for style and serving temperature. Boil the malt extract for a few minutes to achieve a hot break (the foaming that occurs during the initial boil so remember to use a large enough pan.

Beer primed with malt tends to take longer to carbonate, generally 10 to 14 days for full carbonation. Malt priming is ideal for brown and darker ales because malt-primed beers tend to produce a foamy, dense head characteristic of those styles.

**Honey:** Honey can be used to carbonate beer and sparkling meads. The priming rate for honey is one-half cup per five gallons. Honey also should be boiled and foam removed as it rises. When the foaming has stopped and the liquid cooled, prime as usual. Expect to wait about 10 to 14 days for carbonation.

**Molasses:** Use one cup per five gallons when trying this form of sugar to carbonate. Use the same boiling procedure as with malt. Molasses is bound to be good in a rich porter or imperial stout. Carbonation time is about the same as with corn sugar.

**Brown Sugar:** This is nothing more than refined cane sugar with some molasses added. Use three-fourths of a cup and boil as you would with corn sugar.

**Other Stuff:** Fermentables are everywhere: juice concentrate, maple syrup, coffee, and chocolate syrups, to name a few. The key to experimenting with these is determining the fermentable sugar content and scaling it to the amount present in three fourths cup of corn sugar, which amounts to about 4 ounces. Who knows? That blast of cranberry chocolate syrup you primed with may turn a judge in your favor!

Kraeusening is a more advanced form of natural carbonation. To krausen, brewers prim with unfermented or "green" beer. For more information on this method, check *Zymurgy* Winter 1993 (Vol. 16, No 5).

## Trouble Shooting Steps

The problems of poor carbonation can usually be identified and sometimes corrected. If chilled beer is flat after 10 to 14 days, move a bottle to a warm, (70 to 75 degree-F) room for 48 hours. If the beer is carbonated after this time, you've underprimed. Drink this beer warm to enjoy the carbonation and write it off to experience. If beer is still flat, inspect cap liner – they aren't those old cork caps you picked up at the flea market are they? If they are, recap one bottle, swirl it and wait a few days. Still no success? "If the thunder don't get you then the lightning may." Your yeast may have died from unknown causes or from remaining in secondary fermentation too long. Try uncapping a bottle and adding a couple grains of dry yeast and recap. Wait seven to 10 days and sample.

If all else fails, you can't go back and you can't stand still. Decant beer into a pitcher with equal parts of a beer that is carbonated and try your luck at a "black and tan."

If your beer is overcarbonated, try cooling it down. If chilled beer has better carbonation, drink it cold and learn from the experiences. *-This article was originally written by Bruce Susel for the summer 1994 issue of Zymurgy-*