

Bottling and Kegging Technique

PACKAGING YOUR BEER

Cleaning & Sanitizing

Cleaning your bottles :

Sodium percarbonate, PBW, & Oxyclean are all pretty effective cleaners .

For used bottles: soak in cleaning solution and scrub inside with a bottle brush.

Follow by a rinse with a dilute citric acid solution to neutralize alkali cleaner.

Thoroughly rinse with clean water. A jet spray is a good for this purpose.

For new bottles a thorough rinse with water will be enough.

Cleaning & Sanitizing

Sanitizing your bottles:

Iodophor and Starsan are both effective no-rinse sanitizers.

Prepare sanitizer according to manufacturer's instructions.

You can immerse your bottles in a bucket filled with either solution and empty individually as you fill or use a bottling tree or rack to drain and hold bottles.

If using a tree or rack be sure to clean and sanitize it as well.

To sanitize your bottle caps place in a container of boiling water for 10 minutes.

Bottle Conditioning

Once your beer has reached it's final gravity, transfer to another sanitized container.

Be careful not to disturb trub since you don't want this in your finished beer.

Use a racking cane or auto-syphon to transfer and avoid splashing.

Dissolve the priming sugar in an equal or slightly greater amount of distilled H₂O.

Heat to boiling and let stand for 10 minutes to sanitize and add to transferred beer.

You can add this solution to bottling vessel prior to racking for more thorough mixing.

Stirring gently will help incorporate sugar into the transferred beer but DON'T splash.

Common Priming Sugar

Dextrose (corn sugar) neutral flavor.

Sucrose (table sugar) fairly neutral flavor.

DME (dry malt extract) imparts malt flavor, color, & protein which will impact beer.

Other sugar sources: brown sugar, honey, maple syrup, fermentation caps etc.
All of these will effect the flavor and possibly color of the beer.

Unfermented or actively fermenting wort (Kräusening). Good topic for a separate discussion.....

Sugar Quantity

Amount to use depends on batch size and beer style.

Every recipe calls for $\frac{3}{4}$ cup dextrose/5gal. which isn't necessarily correct for each style.

Use a scale to measure your priming sugar. This is a lot more accurate than measuring by volume.

All fermented beer will contain around 1 volume of CO₂ in solution. The exact amount is temperature dependent. You'll need to factor this into your priming sugar addition.

The formula for calculating sugar addition is :

$$Fb + 0.49 \times 0.91 \times M / V = Cb \sim Fb = 3.0378 - (0.050062 \times ^\circ F) + (0.0002655 \times ^\circ F)^a$$

I prefer to use Brewer's Friend priming sugar calculator:
<https://www.brewersfriend.com/beer-priming-calculator/>

Bottling With Yeast & Sugar

If your beer has been fermenting for 4 weeks or less, there's probably enough yeast present in suspension to carbonate the beer with only a sugar addition.

For beer fermenting / ageing longer than 4 weeks or ABV over 7%, it's a good practice to add fresh yeast with priming sugar.

White Labs recommends $\frac{1}{4}$ vial of their liquid yeast for 5 gal. of standard strength beer and $\frac{1}{2}$ vial for higher strength beers (over 7%).

Dry yeast is a handy product for this use. 2.5 grams ($\frac{1}{4}$ pack) of dry yeast should suffice for 5 gal.

Be sure to re-hydrate dry yeast for even distribution in your beer.

A few clean strains are: Danstar CBC-1, Danstar Nottingham, Lalvin Champagne, & Safale US-005

Bottling Process

Gently stir sugar solution (and yeast if used) into your beer.

Using a racking cane and bottling wand or tubing with a clamp to stop flow, fill bottles from bottom up. This will help minimize foaming.

The beer displaced by the bottling wand or tube will leave about 1” of headspace in the bottle.

Place a sanitized crown cap on top of bottle and crimp in place with capping Device. It's a good practice to rotate bottle 90° and re-crimp to ensure a good seal.

If you have access to CO₂, it's a good practice to flush your bottles with CO₂ prior to filling to minimize oxygen exposure

Conditioning

If properly stored your beer should carbonate in 2-4 weeks.
This is temperature dependent.

If stored too cold, the yeast may not ferment the added sugar and the beer won't carbonate. Too warm and the yeast may generate unwanted off-flavors.

Bottle conditioned beer generally stores well once carbonated.
A cellar temp of 50° - 55° F for ales and 42° - 48° for lagers works well.

Keg / Cask Conditioning

Cleaning and sanitizing practices described for bottles apply to kegs as well.

Disassemble, clean and sanitize all parts and re-assemble.

Fill keg with sanitizing solution. Install lid & force sanitizer out of keg w/ CO₂. This will ensure that virtually all O₂ has been removed from keg.

Remove keg lid and add sugar solution and yeast if used.

One caveat: use about 20% less sugar to carbonate a keg than bottled beer.

Siphon fermented beer into keg, re-install lid, purge headspace w/ CO₂ and cellar at moderate temp until carbonated

Force Carbonating in a Keg

Follow cleaning, sanitization, & O₂ purging noted on previous page.

Transfer fermented beer to purged keg, replace lid, & purge headspace with CO₂.

The rate fermented beer (or any liquid) absorbs a gas is temperature and pressure dependent.

You can carbonate warm beer – it just takes more CO₂ at a higher pressure for a longer time to achieve your desired result.

An example is: the 2.2 volumes of CO₂ found in an Am. Pale Ale @ 40° = 9.0 PSI for 7 days.

Same beer at 60° is 18.8 PSI and will take a few days longer to achieve same level.

Brewers Friend Carbonation Calculator :

<https://www.brewersfriend.com/keg-carbonation-calculator/>

Shake & Pray Carbonation

This is exactly what it sounds like-

Keg your beer, chill, and then crank your CO2 regulator as high as it will go.

Attach the gas to your keg, turn keg upside down and rock your keg violently back & forth a hundred times or so. Return to fridge , let stand for a day or so and serve...

Bottling Carbonated Beer from a Keg

Follow cleaning and sanitization steps noted at beginning of presentation.

You'll need:

a bucket filled with sanitizer to place filling device in between bottles.

CO2 tank, hoses and filling device of your choice.

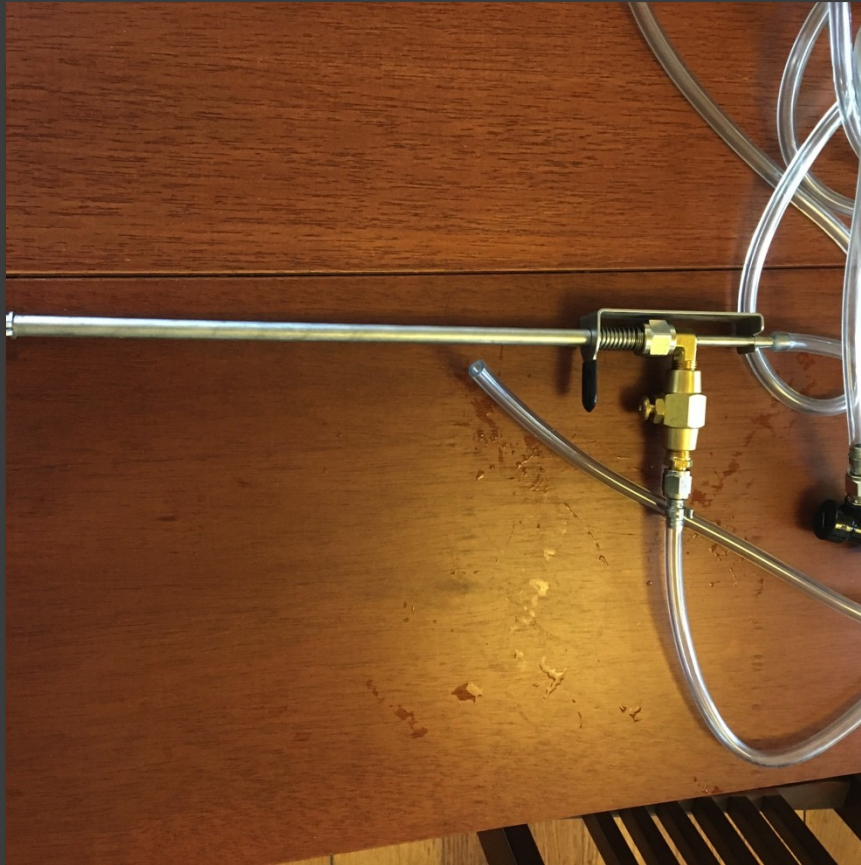
Blickman Beergun - https://www.youtube.com/watch?v=PfqZ_9UCt7s

Counter-pressure filler - <https://www.youtube.com/watch?v=2NrjcNjRHpE>

DIY beer gun – works like a beer gun but lots cheaper.....



Bottling Wand



Blickman Beergun

You Tube video

https://www.youtube.com/watch?v=PfqZ_9UCt7s



Counterpressure Bottle Filler

YouTube video

<https://www.youtube.com/watch?v=2NrjcNjRHpE>



DIY Beer Gun

Cobra tap, icemaker water line & air valve sprayer.

Bottling Sugar Formula Symbol Key

Fb = Flat beer

Cb = Carbonated beer

M = sugar weight

V = beer volume