



Nitrogen charged beer.

Is it possible to bottle nitrogen-charged beer?

You can bottle beer that has been "gassed" with a blend of carbon dioxide and nitrogen. Just use your counter-pressure bottle filler as you normally would. However, when you pour your bottled nitrogenated beer into a glass, you will not get the rich head or the profusion of fine bubbles with that comes with beers from a nitrogen tap. In fact, your beer will probably seem flat. Producing bottled beer that duplicates commercial "draft style" beer requires equipment and techniques far from the reach of homebrewers. I do not intend to discourage homebrewers from innovation, but this technology has a lot more to do with the package than it does the beer.

So what is draft-style beer? Draft style beer is beer that pours from a can or bottle as if it came straight from a nitro tap with a super-thick, creamy head. The most well-known example of this is the cans of draft Guinness, available almost everywhere. These beers begin like their draft counterparts — they are brewed, filtered and gassed with a mixture of carbon dioxide and nitrogen. This can all be accomplished at home. The next step is packaging. To the casual observer the package is either a can or a bottle. No big deal, right? Wrong. It is a very big deal.

The package in all draft-style beers contains a device, known in the industry as a "widget," that transforms the bottle or can into a mobile dispensing system. Let's back up and look at how nitrogenated beers behave at the bar. A nitro beer will do nothing remarkable when poured from a standard beer tap except for the fact that it usually falls into the glass with absolutely no fanfare — no foam, no cascading, nothing but beer. Taste this beer and it tastes and feels really flat. Pour the same exact keg of beer through a special faucet (usually called a Guinness tap or a stout faucet) and the whole game changes. You get foam, cascading bubbles, a super creamy head that sticks to the glass like shaving cream and a wonderfully rich mouthfeel.

The difference between the two glasses of beer has to do with nitrogen solubility. Beers containing only dissolved carbon dioxide make a huge foamy mess when carbon dioxide suddenly breaks out of solution. Draft systems designed for normal beers are specifically designed to prevent this breakout. To produce its creamy head, a nitrogenated beer is forced at a relatively high dispense pressure, usually around 30 psi (pounds per square inch), through a plate containing several small holes. Normal beer taps do not contain this orifice plate and its function is to cause gas breakout. When nitrogen breaks out of solution, millions of tiny bubbles form and these bubbles look, act and feel much different than carbon dioxide bubbles. Any brewer, whether at home or in a brewpub, can serve nitro beers on draft as long as a stout faucet is used.

Putting the same beer in a bottle or a can requires a widget to accomplish the same effect. Widgets are arguably the most revolutionary developments in beer packaging since the bottle cap. Widgets were invented in the 80's and first came on the market in the early 90's. There are several types of widgets and they all do the same thing — they release small bubbles of nitrogen into the packaged beer when the container is opened. These bubbles act as nucleation sites, like salt crystals sprinkled in beer. More nitrogen bubbles form around these sites and in a very short period of time the beer has erupted into a rolling sea of tiny bubbles. Essentially, the widget starts a chain-reaction of nitrogen bubbles that cascades through the nitrogen dissolved in the beer.

Commercial brewers who use this fascinating technology require several pieces of specialized equipment. The first is a widget, or a plastic bladder-type doo-dad with several very small holes and/or check valves. Most widgets these days look like little footballs and move freely in the package, as opposed to the first model found jammed in the bottom of Guinness cans. Bottled widget beers require extra-heavy glass since the headspace has a higher pressure than carbonated beers. To start the process, an empty widget is inserted into the can. Next, they fill the bottle or can with beer and a small drop of liquid nitrogen is added immediately before it is sealed. Since liquid nitrogen has a very low boiling point, it boils in the container and creates enough pressure to partially fill the widget with beer. When the beer is opened and the headspace pressure is released, the gas in the widget rapidly expands and forces the beer in the widget through the holes or check valves and then the magic happens. Nitrogen bubbles lead to more nitrogen bubbles and, after several seconds, the beer has a head you can cut with a knife.

So, this is why most brewers are technologically challenged when it comes to bottling or canning their favorite nitrogenated tipple!

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