

What Goes into Beer?

Beer is at once a very simple and complex beverage. If you crush up some malted grain, soak it in some hot water for a little bit, and leave it out in an open container, you'll eventually end up with something that you can accurately call "beer." That is, after all, how the beverage was invented. Of course, making delicious beer is a bit more complicated than that, but you'll still need just four ingredients: water, malted grains, hops, and yeast.

Water

Water often makes up well over 90% of the volume of beer, but its importance is commonly overlooked. The quality of water used in brewing plays a major role in defining a beer's flavor. Not only does its chemical composition dictate how that water tastes on its own, but also how other beer ingredients will perform in the brewing and fermentation processes. As such, brewers carefully monitor the mineral content, pH, and temperature of their water as they use it for brewing.

Malted Grains

Most of the color and much of the flavor in beer comes from grain, specifically malted barley. This is raw barley that has been soaked in water, allowed to germinate, and dried in a kiln. This process allows the starch held within the grain to be converted into sugar for fermentation. The length of time and temperature at which the malt is kilned dictates the type of malt that is created. There are dozens of varieties, each intended to impart a different color and flavor on the beer. Barley is perfect for making beer because it has a large starch reserve, enzymes within the grain to convert that starch into sugar, and a husk that allows water to easily filter through the grain during the brewing process. Almost invariably, malted barley makes up the base of every commercially available beer, but other grains are used as well, in both malted and unmalted varieties. Wheat, oats and rye are frequently used in craft beers to affect mouthfeel, head retention, and flavor. Corn and rice are more commonly used to lighten body in mass-produced lagers from the likes of Anheuser-Busch and Coors.

Hops

Hops are responsible for most of the bitterness in beer and a host of wonderful floral, citrusy, and herbal flavors. There are many varieties grown by farmers all over the world, each imparting their own unique character. To do so, the hops are added to the sweet liquid that is produced by soaking grain in hot water—also known as wort—and boiled in a kettle for about 60-90 minutes. Hops aren't just good for flavor though—they also inhibit bacterial growth that could spoil beer.

Yeast

Yeast is the last ingredient to be added to beer, once the brewing process is complete. It is typically added in the form of a slurry that is purchased from a laboratory that specializes in isolating yeast strains for brewing. As with malt and hops, there are many varieties of yeast available and each one will produce a different final product. Almost all beers can be lumped into two categories: ale or lager—the yeast is what determines that categorization. In all beers, the yeast is responsible for the process known as fermentation. This is when the yeast metabolize grain-derived sugar in wort, turning it into alcohol and carbon dioxide (in the form of carbonation). This also leaves a noticeable flavor impact on many beers, which is dictated by the type of yeast used and the conditions under which fermentation occurs.