



ALL GRAIN BREWING METHOD

Mashing

In essence beer is in most cases a fermented beverage made from grains and hops. To get to beer we need a source of sugar for the yeast to ferment and make alcohol, this is achieved by steeping crushed malted barley in hot water at a temperature which converts stored starch into fermentable sugars. This part of the process is called Mashing, the vessel this is performed in is called the Mash Tun. The purpose of this mashing is to allow enzymes to convert the starch in the malted barley to sugar. The result of this is a sugary liquid is called wort by brewer and is mashing in its simplest form.

Sparging

The next step as above is to rinse the excess sugars from the grains and bring the amount of liquor or wort to the desired amount for the batch being brewed. This process is called Sparging and is performed in breweries around the world, using an arm that sprays warm water over the already mashed grains.

Boiling

The next step is to boil this wort together with the hops in what brewers call a Kettle. A variety of reactions occur during the boil such as the bitterness being extracted from the hops and proteins from the malt combining with the hop tannins.

Cooling and Fermentation

The next part of the process is to cool the wort to a temperature where you can add yeast. As yeast is a living organism if you add it to the boiling wort it will die. Yeast is usually added around 20 C but it can range from this by a few degrees. The yeast will then use the available oxygen in the wort to reproduce, once they have used all the oxygen they will feed on the sugars created in the mash.

The by-products of this fermentation is carbon dioxide and of course alcohol. Other chemicals are also released that add to the flavour and aroma of the finished beer. Once the yeast is done they settle to the bottom. This part of the process is called Fermentation and because it's only the first part its called Primary Fermentation. The rest of the fermentation is then carried out to allow the flavours of the beer to develop and even out.

One crucial point about the fermentation is the temperature that it is carried out at is what primarily causes the differences between Ale and Lager (and is a source of many off-flavours). Once fermentation has finished the beer is then bottled or kegged in most cases with a small amount of sugar or an injection of CO₂. This creates further Carbon dioxide that cannot escape and therefore gives the beer some fizz.