



Beer: What is it?

The staple ingredients from which most beers are produced are Malted Barley, Water Hops, and yeast. The German purity law decreed that beer must be made from these materials *ALONE*, and many of the world's greatest beers are still made according to this method.

The stages of beer production can be broken down into stages -

#### 1. Malting

The process begins with the receipt into the malt house of specially grown two-row malt barley, which is steeped in water to germinate the grain. The germination releases hormones and enzymes that break down the cell walls surrounding the starch granules. This modification is halted by drying and kilning the malt. Different malts are made by varying the amount of heat and the duration of kilning.

#### 2. Mashing

Malted barley is then milled and mixed with water at the 'Goldilocks temperature' (not too cold, not too hot). The enzymes that remain from the malting really get to work on the starch granules, converting them into Maltose - Malt for short. It is this malt that will be converted to alcohol during fermentation.

#### 3. Kettling

The malt liquor produced in the mashing stage then needs to be vigorously boiled for up to two hours with the addition of hops at various stages. Kettling releases volatile substances that would spoil the beer and converts compounds in the hops to bitter the beer. At this stage it is called Wort and is cooled to yeast pitching temperature and transferred into fermenters. For most home brew kits, this stage is taken a step further, removing much of the water to produce the thick malt extract we are used to in tins.

#### 4. Fermenting

This is where the majority of home brewers begin, by adding back the water that was removed to make the malt extract or by using a fresh wort. The key to this stage is awareness of the temperature of the ferment for the type of beer you want to brew, i.e. whether it is a lager or ale. The next thing is knowing when to bottle.

Often a brewer will ask how many days it will take to brew. I really wish it was as easy as that, but the truth is, it's easy to understand once you realise that the yeast are in charge at this point. Fermentation is complete when all of the available fermentable's have been consumed (not when it stops bubbling) - in other words, the yeast have finished their tucker!

This depends on many factors such as temperature, yeast strain, pH of the water, starting gravity, and malt type to name a few. So to ascertain the correct bottling time, we need to test with our Hydrometer or Refractometer, till a steady reading is obtained (three days in a row is a good guide). If you were to bottle early while there are still unfermented sugars, the extra could cause over-gassed beers or, in extreme cases, blown bottles!