



beer brewing



Malt (left) and pelleted hops.

what is it?

It's the making of all types of beer, a fermented, alcoholic drink. The main processes involved are:

- 'Mashing' – soaking a grain (usually malted barley) in hot water, which activates enzymes to break down the starch in the grain into simple sugars.
- Boiling of the 'wort' (water / sugar mix) with hops to add the desired flavour.
- Fermentation of the cooled liquid by adding brewer's yeast (or allowing yeast in the air to do the job – 'wild fermentation' akin to sourdough breadmaking).

Different kinds of beer: the word is 'styles' – there are different beer styles, based on colour, taste, strength, ingredients, brewing techniques etc. The list of styles includes everything from bitter, mild and stout to lager, malt liquor and pale ale. The Beer Judge Certification Program (BJCP), a US-based non-profit, categorises beer styles and trains judges of beer competitions internationally. However, brewers can make whatever they like – there are no beer police that only allow certain types / categories.

History: the oldest evidence of beer was in ancient Sumer, in modern Iraq / Iran over 7000 years ago. Remnants of beer and malted barley in bowls have been found, and the first recipe for beer is from the same area, around 4000 years ago. Beer seems to have had separate origins in China and Europe, thousands of years ago too, and eventually appears in any culture that grows grains.

Beer took off in Europe because barley grows easily, beer is nutritious, and by the Middle Ages beer was often drunk rather than water, which could be contaminated. Hops were used by the 12th century. Before then, all sorts of plants were used to tone down the sweetness of the malt, but hops became the most popular, as they added a pleasant bitterness that was thirst-quenching, and they're also a natural preservative that prolongs the life of the beer.

Monasteries dominated beer production, and they came up with many new techniques, ingredients and recipes, many of which exist today. In the 20th century, production came to be dominated by large corporations, but since the 1970s, there's been a resurgence in craft / micro-breweries and homebrewing.

what are the benefits?

- You'll be reducing the distance that the beer has to travel to get to you, and if you re-use your bottles, you'll extend their life and reduce the amount of energy required to make or recycle them.
- You can choose local, organic ingredients to reduce the environmental impact of your beer even further.
- However, after you've bought the necessary kit, and factored in time, electricity, ingredients, gas etc. (especially if you want to brew specialist beers with expensive ingredients), you won't save much money, unless you use a kit, or unless you're just looking to make alcohol without being bothered too much about quality or flavour.
- It's a fun hobby (cost may not be your main concern) you can create lovely gifts for beer-lovers, and you could turn your hobby into a business; local, independent breweries are good for communities in many ways.



Adding malt to the mash tun.

beer brewing



lowimpact.org



Independent breweries help keep money in communities, and produce a wide range of unique, local beers.

what can I do?

There are more recipes online than you could ever try. Do some research, join some forums – there will be people out there keen to help you. Once you understand the basics, get a brewing kit and ingredients from homebrewing supply shops anywhere, including online. You might find some basic kit around the house. You need a water source, malt, hops, and brewer's yeast. You can get special malts for any style of beer. For beginners, stick to the well-known styles first, before experimenting.

Wholegrain brewing process: first is mashing, in a vessel called a mash tun. Take malt, steep in water, usually c. 65-73°C, depending on the beer style / alcohol content, and for a time depending on the recipe. This releases the starch from the malt and activates enzymes that break down the starch into simple sugars. Then separate the spent grain from the wort (the water/sugar mix).

The next stage is boiling. Put your wort into a kettle or a copper, as it's called (was traditionally copper, now mainly stainless steel). Add hops, depending on how bitter you want your beer, plus aroma, flavour etc. If you don't want a bitter taste, it's possible to brew beer without hops at all. You can experiment to see what works for you.

Boil for roughly an hour, depending on style. Next add yeast, but cool the wort first, because yeast will be killed at boiling temperature. You can use a simple heat exchanger – a coil of pipe in the boiler, through which you run cold water. You can leave the vessel somewhere to cool down, but there's more chance of infection. If you have basic

DIY skills, you should be able to make a very simple heat exchanger. Transfer the cooled wort (c. 20°C) to a fermentation vessel - a food-grade plastic bucket, but stainless steel will last longer. Add yeast, according to the recipe, then leave it to do its job (usually 2-4 days). If you leave the beer for 2-3 weeks, the taste will improve. Some beer styles will be better if you leave them for several months to get the right flavour / aroma profile.

Homebrew kits: it's the same process with a kit, but malt and hops are pre-mixed and need to be reconstituted with water before adding yeast. It's much simpler, and so starting with a kit might be a good idea, to see if it's for you. If you like it, you'll want to switch to wholegrain brewing.

Bottling: invest in a small bottling machine if you're going to be making a reasonable amount of beer – or there's something called Beergun, which is a bit more expensive, but works well. This will minimise contact with the air, and avoid oxidation.

Brewing beer for a living: contact a local micro-brewery and ask if you can come along and hang around, volunteer maybe. You might envisage tasting beers, attending beer festivals and meeting people, but it also involves a lot of cleaning. It's hard work – it needs to be a labour of love. You won't make a living on a very small scale, although it can be a sideline. The Society of Independent Brewers (SIBA) provide information on setting up an independent brewery.

Buying beer: all towns deserve an independent brewery that produces real ales and keeps profits in their community. CAMRA (Campaign for Real Ale) have a directory of pubs serving real ales. Be careful – small breweries are often bought out by giant corporations, but the name stays the same and it's difficult to tell. Here's an idea: research and find a genuinely independent brewer you like and order a crate delivery once a month.

resources

- see lowimpact.org/beer for information, courses, suppliers and books, including:
- Greg Hughes, *Home Brew Beer*
- Mike Karnowski, *Homebrew Beyond the Basics*
- Euan Ferguson, *Craft Brew*
- camra.org.uk, Campaign for Real Ale
- craftbrewing.org.uk, Craft Brewing Association
- siba.co.uk, Society of Independent Brewers
- familybrewers.co.uk, list of family brewers

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