

# Brewing

## **Introduction:**

Brewing is the art of making beer. To make beer, sugars present in malted grains are dissolved in water. The sugar solution is boiled with herbs (almost always hops), and is allowed to cool. Yeast is added to the cooled solution. The yeast eats the sugars, and releases ethanol as a byproduct. When the yeast is finished eating the sugars, the beer is ready for consumption.

## **History:**

The earliest botanical evidence of beer making was found in western Iran, and in Egypt. Finds in both areas date back to ~ 3500 BC. The earliest written record of beer comes from Mesopotamia in ~2800 BC. In ~ 400 BC, the Greek historian Pythius mentions beer was the common drink in Gaul. Romans stationed at Hadrian's wall commonly drank beer.

Beer is made from malted grain, water, herbs, and yeast. During period, different types of grains were used, depending on what was available at the time of brewing. Wheat was the preferred grain but was not commonly available (Most wheat was used for bread making). Oats, rye, spelt, and barley were also used. By the 16<sup>th</sup> century, Barley became the grain of choice. This was due to availability of barley, and brewing regulations that limited the use of other grains. Hops were not commonly used in beer until the 13<sup>th</sup> century. Before then, a mixture of herbs, called gruit, was used. The exact composition of gruit is unknown, but Bog Myrtle was an ingredient. After the 13<sup>th</sup> century, hop use spread, eventually replacing gruit as the herb of choice. Hops act as a preservative. With the addition of hops, beer could be traded between cities, and countries. Beer became a very important trade item for Northern Germany, Holland, and eventually England.

Unlike continental Europe, England continued to make unhopped beer into the 16<sup>th</sup> century. Hopped beer started being made in England in the late 14<sup>th</sup> century, alongside unhopped beer.

## **Materials Needed:**

1. Sanitizing solution. Can be either bleach, or a specialized cleaner (one step)
2. Stock pot 3 – 10 gallons, depending on the size of the batch you are making. A canning pot works fine.
3. Fermentation vessel. In period, this was usually a cask. Modern home brewers either use a food grade plastic bucket, or a glass carboy.
4. Airlock. Needed to keep contaminants out of your beer.
5. Clean beer bottles
6. Bottle capper

7. Most brewing shops carry a Starter kit for brewing. This contains all of the equipment you need for brewing (except for the stock pot), and the ingredients needed for making a 5-gallon batch of beer. Cost: \$70 – 90. Most of this equipment is re-usable.

### **Ingredients:**

1. Malt: Type and amount depends on the beer you are making. Cost ~ \$25 for a 5 gallon batch
2. Hops: Type and amount depends on the beer you are making. Cost ~ \$4 for a 5 gallon batch
3. Yeast: ~ \$2 for a 5 gallon batch.

### **Basic Process:**

1. **Clean and sanitize your equipment!** I can't stress this enough. Anything not in contact with boiling water needs to be washed, and sanitized.
2. Add malt extract to boiling water, in stockpot.
3. Add boiling hops. Boil for 45 minutes
4. Add finishing hops. Boil for 2 minutes.
5. Cool wort to room temperature, and transfer into fermentation vessel.
6. Add yeast. Store carboy in place out of sunlight, with a temperature of ~ 70 degrees F.
7. Let beer ferment for ~ 2 weeks, or until you no longer notice activity in the airlock
8. Transfer beer into a clean container
9. Bottle your beer, and wait ~ 4 weeks.
10. Enjoy your beer!

### **Glossary:**

**Beer:** A fermented beverage made from malted grain, hops, water and yeast.

**Ale:** In period, a beer made without hops. In modern times, a beer made with top fermenting yeast that prefers temperatures from 65-75 degrees for fermentation. Stouts and porters are examples of ales.

**Lager:** A beer made with bottom fermenting yeast that prefers temperatures from 38-42 degrees for fermentation. Most American beers are lagers.

**Wort:** Unfermented beer.

**Hops:** A bitter herb added to beer. Hops counter the sweetness of the malt, and preserve the beer. Different hops give different bittering characteristics to the beer.

**Malt:** Grain that has been prepared for brewing. The grain is allowed to sprout, and is then heated and dried. The sprouting releases enzymes that will break the starches

into simple sugars that can be eaten by yeast. Roasting the grain creates sugars that cannot be digested by yeasts. These sugars add body and color, and flavors to the beer.

**Extract Brewing:** A method of beer making where the source of malted grains is canned malt extract. Extract brewing is more expensive, but easier than all grain brewing.

**All Grain Brewing:** A method of beer making where malted barley grains are steeped in hot water, to remove the sugars. All grain brewing is harder, and takes longer than extract brewing, but costs less, and gives the brewer better control over the end product.

## **Resources**

The Joy of Home brewing. Charlie Papazian. Avon Books. ISBN# 0-380-76366-4. This is a good beginners guide to making beer at home.

How To Brew. John Palmer. Defenestrative publishing co. ISBN# 0-9710579-0-7. This is more technical than the Joy of Home Brewing, and goes deeper into brewing with whole grains, and water chemistry. It is a very good book, but can put off beginning brewers.

A Sip Through Time. Cindy Renfrow. ISBN #0962859834 This book contains many period drink recipes. Focus is more on wine and mead, but it does have a few beer recipes. The recipes are in English, but there are no redactions.

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