

# EXTRACT BREW DAY

What follows are Step by Step instructions for a typical extract brew day at home, brewing a 5 gallon (19L) batch on your stovetop. It is best to determine where your 5 gallon mark is on your fermentor, prior to brewing, if your fermentor isn't labeled. Described techniques are intended for brewing a concentrated wort and using top up water to hit the target batch volume in your fermentor.

## Minimum Equipment Needed

6 gallon (23L) Primary Fermentor (Food-grade plastic pail & lid, or glass/plastic carboy)

Compatible drilled rubber stopper (usually # 6.5) and an Airlock.

Hydrometer, Test Cylinder and Thief

Plastic brewspoon

Large funnel (if using a carboy)

3-5 gallon kettle

Accurate thermometer (optional)

Sanitiser (No-Rinse variety recommended, ex: Star San, IO Star)

Powdered Brewery Wash or other brewer's-grade detergent; recommended

\*\* Before you begin the brewing process always start with soil free, well rinsed gear. Anything that may contact your beer during the boil will be effectively sterilized due to the boiling temperatures, but everything that will contact your beer **post-boil** must be *thoroughly sanitised*. Sanitation tips are listed in Step 7 if you choose to do this before you begin, rather than during the boil.

1. Have your ingredients ready to go. Begin to collect roughly 2-2.5 gallons of water, depending on kettle size. Keep in mind when collecting water in your kettle, you want to leave enough room for the malt and a rolling boil. Last thing you want is to be adding your last container of malt and realize it's not going to fit.
2. Put your kettle on the stove on HIGH and start to heat up the water.
3. If you are using **specialty grains** you want to add them **pre-boil**. If not, skip this step. Put the grains into the grain bag (your recipe kit should have come with one) and tie it at the open end, leaving room for the grains to move around. Place the grain bag in the water to steep once you've hit a rough temperature range of 140°F-170°F. If you don't have a thermometer, just add your grains once the water's a little too hot to touch and slightly steaming. **Don't boil your grains**. Steep grains for about 15-30 minutes for sufficient extraction, remove bag, let it drain and dispose of it. You may optionally rinse the grain bag with additional water, but squeezing the bag is not recommended. Continue heating up water until boiling.
4. Once your water comes to a boil, add your malt extract syrup along with any other sugars you are using for your recipe. Keep a constant stir going while you dump in the malt/sugars to avoid them getting scorched on the bottom of the pot. You have now created **wort** (*unfermented beer*).
5. Bring the wort back to a boil. Feel free to stir periodically. While waiting for the boil get your bittering hops ready. If you are using hop bags (optional), put all the bittering hops together in your hop bag and remember to tie the bag close to the open end to give the hops freedom to move around. I recommend keeping the lid only partially on, or off altogether, while waiting for your wort to come to a boil again. You will see a froth form on the surface. This is a sign that your boil is about to kick-off. It can turn over in the blink of an eye and will overflow if you let it, so once it gets frothy keep a close eye and leave the lid off. When the boil kicks off the froth may begin to rapidly rise. If this happens, rapid stirring while blowing on the froth should calm it down quickly along with slightly reducing the heat on your stove.

6. Once you get a rolling boil add your bittering hops. Follow your recipe directions regarding boil time, but 60 minutes is most common. Keep track of time for the duration of the boil.

7. Continue stirring periodically over the course of the boil, and add hops as per the recipe schedule. If you are adding a Whirlfloc Tablet or Irish Moss, add this at the **15 minute mark** in the boil, or what the recipe calls for. When the boil is nice and calm, you can take care of any necessary sanitation, but **always keep a close eye on boiling liquids**.

**\*\***When it comes to sanitation, you want to pay extra close attention to anything that will be in contact with the beer *post-boil*. This is known as your cool side. You want to start with equipment free of any soils or organics, this is where a brewer's grade detergent comes in handy to cleanse thoroughly and rinse freely. Detergents alone will not kill bacteria, only remove soils. Once your equipment is soil free and rinsed, sanitize all your cool side equipment. Common brewery sanitisers will be reusable, require only short contact times, and need no rinsing. This makes for efficient and cost effective sanitation throughout your brewing adventures. Always follow package directions and recommendations when using chemicals.

8. After the boil is complete, remove the pot from your stove and place it in an ice bath in an available sink or basin. Put the lid back on your pot slightly ajar to let steam escape. If the lid has become dirty, clean and sanitise it before you put it back on. You could optionally prop your kettle up on wood blocks so the ice water can cool the underside of the pot as well. About 30 minutes in an ice bath is sufficient, and you shouldn't have to change the water out unless you feel it's gotten too hot and is no longer cooling your pot, a thermometer can help in this situation. Stirring the wort with a sanitised spoon can cut down cooling time as well. While you wait for your wort to cool, it's a great time to finish any necessary sanitation...and have a beer!

9. After about 30 minutes your wort should be roughly 100-120°F. Again, a thermometer can help with this. If the wort is still slightly steamy that's okay, you will be topping up to the 5 gallon (19L) mark in your fermenter with **cold** water which will even out your temperature before pitching your yeast. You want the final result to be room temperature when using ale yeast, and under 60°F when using lager yeast.

10. Pour the wort into your fermentor. In this situation splashing is good because the oxygen will provide a good atmosphere for a healthy fermentation. It's after you ferment that you want to avoid aeration of the brew. In the case of using a carboy as your primary fermentor, you will need a funnel to pour the wort through.

11. Top up your fermentor to the 5 gallon mark with **cold** water. This will bring your batch volume to the right level and the wort to a suitable temperature for the yeast.

12. Give a good stir (with a **sanitised** spoon) to evenly dilute the wort for an accurate gravity reading. Use your thief to take a sample of the wort. Release your sample into your test cylinder. Place the hydrometer in the test cylinder with enough wort to allow it to float, for a proper reading. Take your reading on the **specific gravity** scale at the **bottom of the meniscus dip (\*\* Next Page)**. A thief is sometimes compatible with a hydrometer to sit inside it for an all-in-one gravity sample and reading. This initial reading will be known as your **Original Gravity (O.G.)**. Record it.

13. After taking your reading, pitch (pour) your yeast into your fermentor. I recommend sanitising the pack of yeast, dry or liquid, with a spray bottle, and using a pair of sanitised scissors to open any pouches. Give your batch a good brisk stir to provide further oxygen for the yeast if you wish.

14. If you used a bucket, firmly put the lid on. Fill your airlock roughly halfway with no-rinse sanitising solution or water, and assemble it firmly wedged in the rubber stopper. Place the airlock and stopper into the hole of your bucket lid or carboy. After you put the airlock and stopper in the hole, push lightly on the top of the lid. If the float piece in the airlock rises and the water bubbles you have a good lid seal.

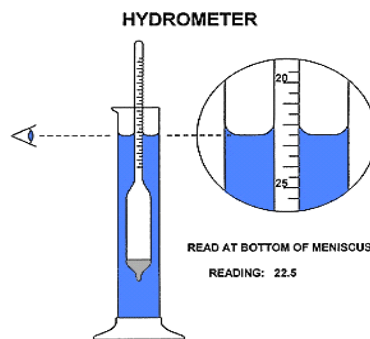
\* You can also use a blow off tube in place of an airlock; a short length of food grade hose can be wedged inside the stopper with the other end in about an inch of sanitising solution or water in a (sanitised) jug or pitcher. This provides a liquid barrier and a path for fermentation activity just as an airlock would. Commonly used with higher gravity batches where fermentation activity will be vigorous.

**15.** Move your fermentor to the location where it will ferment. Somewhere clean, with a mild temperature in the room temperature range (66°F - 74°F) for ales, or (48°F - 58°F) for lagers.

**16.** Thoroughly clean, rinse, and dry your equipment before you store it. Any brewer's grade detergent you mixed up earlier in the brewday can be used for this purpose. This will save a lot of grime related headaches and heavy scrubbing later.

**17.** Sit back, relax, and enjoy the rewarding feeling of an accomplished day. Have a beer if you haven't already ;)

**\*\*MENISCUS DIP (Read at Bottom)**



Make your best estimate when taking readings, as a hydrometer is a very finely graduated tool. I find the meniscus dip roughly equals 0.002 on the specific gravity scale.

## **Fermentation**

Primary Fermentation for ales will typically last anywhere from 7-10 days and up to 2-3 weeks at the room temperature range (66°F - 74°F). Lager fermentations can take between 4-8 weeks depending on the fermentation temperature and yeast strain used; research is recommended.

Take another Hydrometer reading after this period to ensure fermentation is complete. This is known as your **Final Gravity (F.G.)**. A common finishing range for most brews will be 1.008 - 1.014, but this can vary based on the type of yeast you used, and the amount of time your beer has fermented.

A good way to determine that a fermentation is 'ready' for transfer/bottling is to do this simple calculation:

Take your Original Gravity (O.G.), lets say it's 1.052.

**Minus the 1**

$$1.052 - 1 = 0.052$$

**Multiply by 0.35**

$$0.052 \times 0.35 = 0.0182$$

**Add the 1 back in and round to three decimal places**

$$0.0182 + 1 = 1.0182 = 1.018$$

*This final number* should be treated as your maximum final gravity before any transferring/bottling is done.

You can then prime and bottle, or transfer to a secondary fermentation vessel (commonly a glass carboy) for a period of your choosing. A typical length of 1 to 2 weeks is common for secondary fermentation (aging). Secondary fermentation allows for additional settling and flavour development and is an excellent time for additions of flavouring ingredients such as dry hops, ginger root, orange peel, etc. When transferring your brew, make sure to **siphon** the beer into the secondary vessel, and **not just pour it!** Pouring will create splashing and can leave you with oxidized beer. Aeration is only desirable when introducing oxygen into the wort for yeast health post-boil and cooling.

If your recipe calls for dry hops, they can be added in a Primary or Secondary fermentation vessel, depending on your choice. Secondary is recommended. If you choose to skip secondary fermentation, make sure to add the dry hops *after* primary fermentation is complete. Judge this based on your last hydrometer reading (Final Gravity). Regardless of your choice, let the dry hops sit in your beer for a minimum of 4 days to achieve the full affect.

## **Calculating Your Alcohol Content**

*Just another easy calculation!*

$$\text{(O.G. - F.G.)} \times 131.25 = \% \text{ alcohol}$$

**Example:**

$$\text{(1.048 - 1.012)} \times 131.25 = \% \text{ alc.}$$

$$\text{(0.036)} \times 131.25 = \% \text{ alc.}$$

$$0.036 \times 131.25 = 4.725$$

$$\text{Rounded} = 4.7\%$$