Basic Steps of Malt Extract Brewing

The most basic method of making beer involves using malt extract, either in dry or syrup form. Dry malt extract is often referred to as DME. The most basic varieties available are Light, Amber, Dark, and Wheat. Using any single variety, or various combinations of some or all of these four dry malts, you can produce the entire spectrum of beer, from the lightest pilsners to the darkest stouts.

Malt extract beers usually have specialty grains added to provide whatever specific flavors and colors are called for in various styles of beer. Specialty grains are tied into a straining bag for easy removal, and placed in the brewing water as it is warming up. These grains will produce a colored and flavored base for the beer. It is important to note that the temperature of the water at this point should not be higher than 170°F. This can help avoid any unnecessary harshness in the finished beer. After the grains have been steeped and removed, turn off the heat source and add your malt extract powder or syrup. Turning off the heat can help avoid scorching the malt extract before it is thoroughly dissolved into the water.

Once the extract has been dissolved, you will have what is known as wort, or unfermented beer. You will bring the wort to a boil, add the first addition of hops, and start the timer for one hour. The hops that boil for the full hour are called bittering hops. Depending on the specific style of beer, there may be no more hop additions, or there may be several more additions. These hops, if called for by the recipe, will add hop flavor and aroma, since any flavor or aroma from the bittering hops have boiled away. Typically flavor and aroma hops are added with anywhere from 10-2 minutes remaining in the hour boil. This allows the volatile oils from the hops to dissolve into the wort, without being boiled so long that they evaporate. So, the later in the boil that hops are added, the more aromas they provide in the finished beer. Irish Moss can be added during the last 15 minutes of the boil to help with clarity in the beer. Irish moss gelatinizes and attracts proteins that can cause haze in the beer. If you use a wort chiller, placing it in the brewpot at the same time as the Irish Moss (with about 15 minutes left in the boil) is a good idea. This lets the heat of the boil sanitize the copper.

Once the hour boil has elapsed, turn off the heat and connect the chiller to a cold water source. Slowly turn the cold water on until you achieve a solid stream of water exiting the chiller coil. You want the least amount of water pressure required to have a solid stream of exiting water, as the longer the water is in the chiller the more heat it absorbs. Allow the chill water to run until the wort is cool. After this point, sanitation is extremely important, so be sure that everything that contacts your wort has been properly sanitized. Siphon or decant the cooled wort into your primary fermenter. Be sure to leave behind as much trub (the sludge of spent hops in the bottom of the brewpot) as possible.

Original Gravity reading can be taken at this point. This reading tells us about the total sugar content in the wort. It can be important to have this reading, in case you want to know the alcohol content of the finished beer or if you run into fermentation problems. Simply float the sanitized hydrometer in the cooled wort and read the number on the Specific Gravity scale at the liquid level. This is your Original Gravity or OG, record this number for later reference. Once the wort is in the fermenter, you should aerate the wort. Stir vigorously with a sanitized spoon to froth the wort. Yeast need oxygen at the beginning of their life cycle to reproduce, so this is the only time in brewing where mixing air into your wort is actually a good thing. At any other point, the introduction of oxygen is a bad thing. Be sure the temperature is in the right range, and pitch your yeast. If you are pitching dry yeast, you can just sprinkle it right on top of the wort and it will begin working shortly. Rehydrating a dry yeast will give them the best start possible at fermentation, but only if it is done properly. If
yeast is not rehydrated properly, it can do much more harm than good, possibly killing the yeast before they even get started. Yeast needs to be rehydrated at no hotter than 95°F and for no longer than 10 minutes, or as the instructions on the specific package indicate. Once the yeast has been pitched, the fermenter needs to be sealed with an airlock and stopper so that it can vent properly.

Fermentation will typically start within 24 hours, and continue for anywhere from a few days to two weeks, depending on the amount of sugar to be consumed (indicated by your Original Gravity reading).

Once fermentation slows down, you can decide on whether or not to use a secondary fermenter. A secondary fermenter has several advantages and disadvantages, depending on your situation. A secondary fermenter is a container like a carboy with a narrow neck, into which you would siphon your beer in order to separate the heavy trub and sediment at the bottom of the primary fermenter from the clearing fermenting beer. Removing the beer from this sediment can help prevent off-flavors, improve clarity, and reduce the sediment in bottle conditioned beers. Transferring the beer when it is still fermenting will help reduce the possibility of oxidation or staling of the finished beer, because the beer is still releasing CO2 which will help to purge any air in the headspace of the carboy. You will leave the finished beer in the secondary carboy until you can visibly see that all of the yeast has dropped out of the beer. This process usually takes seven to ten days. It is quite obvious, as the beer will go from appearing lighter-colored and murky due to the yeast floating in suspension, to darker-colored and clear once they fall out of solution.

If you do not decide the use a secondary fermenter, just leave the beer in the primary fermenter for approximately two weeks. This should be plenty of time for the beer to ferment out completely and clarify, just as it would in a secondary fermenter. There is no problem with leaving the beer in a primary fermenter, but if you do, it is not a good idea to leave it in a primary for more than about two weeks. The longer the beer is in contact with the yeast sediment, the more chance of the yeast decay causing an off-flavor in the beer. However, this is not a “will happen” but a “could happen” scenario. Also, it should not occur within a two-to-three week time frame. If for some reason you know that you cannot bottle the beer within two to three weeks after beginning fermentation, moving the beer into a secondary fermenter is a really good idea to prevent the possibility of off-flavors occurring from exposure to the decaying yeast.

When fermentation has finished and the beer has clarified, it is time to rack the beer into a bottling bucket or any sanitized container that can hold at least 6 gallons. Siphon gently so as not to disturb any sediment at the bottom of the fermenter. Try not to mix in a lot of air as you go. You will then need to prime the beer. This is the addition of a measured amount of sugar or malt extract immediately before bottling. Adding extra sugar at bottling time gives the yeast more food and they will start a new fermentation in the bottle. This will produce a little more alcohol, but more importantly, CO2! Because the bottles will be tightly capped, the gas has nowhere to escape and will carbonate the beer. The priming sugar or extract should be boiled and cooled ahead of time, then thoroughly stirred into beer in the bottling bucket so that it is evenly distributed. Next, siphon the beer into sanitized bottles and cap them with a new, sanitized cap. These bottles of beer MUST be stored at room temperature for at least two weeks so that the yeast can consume the priming sugar and carbonate them. After two weeks, you can chill them and sample all your hard work.