



Midwest Homebrewing & Winemaking Supplies
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What is a partial mash?

Partial mash beer brewing is kind of a halfway point between extract and all-grain brewing. If you're not quite ready to make the investment in the equipment needed to brew all-grain, partial mashing is a great way to get a taste of the process and see if you'd like to make the jump. Here we'll tell you how to do partial mash brewing using equipment already available in the average kitchen.

While most specialty grains impart only color and flavor to your beer, there are a number of specialty grains that require mashing for proper use. Malted wheat, Munich, Vienna, and flaked barley are a few examples. If you'd like to brew an authentic Vienna lager or Belgian Wit, you'll need to mash some of the grain.

Partial Mash Equipment

Countertop partial mash brewing requires little in the way of new equipment beyond what you already have to brew extract. At a minimum, a [grain bag](#) is needed to contain the grains. A large sieve that can fit on top of your brew kettle will also come in handy if you're using this method. Many partial mash brewers also use a small, clean drink or picnic cooler to hold the temperature of the mash during the mash period. Midwest offers a [3 gallon partial mash system](#) that will allow you to mash 5-6 pounds of grain.



3 Gallon Partial Mash System

The Partial Mash Method

When partial mashing, only a portion of the grains required for an all-grain beer are mashed, while the bulk of the wort is made from malt extract. Typically only the specialty grains plus a small amount of pale malt are actually mashed, and then the runnings of the mash are mixed with malt extract and boiled to produce the beer just like you've done in the past.

When formulating a partial mash recipe, you need to have a combination of the specialty malts needed for the beer plus a few pounds of base malt, typically pale malt. The pale malt is needed to provide the critical enzymes needed for mashing, as specialty grains do not normally contain these enzymes.

The mashing process converts long, complex sugar molecules into shorter ones that yeast can consume. For mashing, a combination of grains and water must be mixed together and held at a constant temperature range between 148-158 F – ideally around 154 F. The challenge is to maintain a constant temperature for the time it takes the mashing to complete – typically 30-60 minutes.

Two methods are typically used to maintain temperature. One is to heat the mash mixture over a stove and attempt to regulate the heat to hold a constant temperature. This is much easier to do on a gas stove; Midwest does not recommend attempting this method with an electric stove. The second method employs a cooler like our 3 gallon partial mash system. A cooler provides a much better way to maintain the temperatures necessary to convert the starches into sugars. This is called infusion mashing. You would simply heat a premeasured quantity of water (usually 1 - 1.25 quarts per pound of grain being mashed), then mix it with the cracked grain in the cooler.

The cooler method is definitely the more consistent way to go. It's important to maintain a constant temperature while mashing, and doing this on a stovetop is not easy. Also, bringing the temperature up too high will stop the mashing process which results in an incomplete conversion of the sugars. This will ultimately result in a sweet beer that is low in alcohol. Who wants that?

The Stovetop Method

You can use your existing brew kettle for this, assuming that it's big enough to hold the water and grains you'll be mashing. Calculate the amount of water you'll need, and heat it up to about 170°F and turn the burner down to low. Place your crushed grains into the grain bag, and put the bag into your kettle. What you're shooting for here is

to have the mash end up at 154°F. After the grain bag has been in the water for a few minutes, take a temperature reading. If it's too hot, turn the burner off until it reaches your target temp. You'll need to keep a close eye on it to make sure the mash stays in the needed temperature range. You'll need to maintain this temperature for 30-60 minutes. At this point, you'll want to heat 3-6 quarts of water in a separate kettle to about 170°F. You'll need this to rinse the grains (sparging) when the mash is complete.

You can confirm that the mash is complete with a small amount of iodine or IO Star sanitizer. Pull a small amount of liquid from the mash, and add a few drops of iodine. If the added iodine turns clear, then the mash is complete. If it is still dark blue/black, then the mash is not complete. Do another iodine test in 10-15 minutes. When the mash is complete, remove the grain bag from the kettle and put it in a large sieve or collander that will fit on top of your brew kettle. This way you can set the sieve on top and let the wort drain into your kettle. Now take the water that you heated to 170°F and slowly pour it over the grain bag, a pint or so at a time. What you're doing here is trying to get all of that sweet wort that you worked so hard to get out of that grain bag. DO NOT squeeze the bag, as this may cause undesirable flavors in your beer.

Once you're done sparging, you should have 2.5-3 gallons of wort in your kettle. Now you just brew as you normally do using extract.

The Infusion Mash Method

You'll need a cooler that holds at least 3 gallons for this. Again, our 3 gallon system is ideal for this, but if you're handy, you can convert a cooler you already have to a mash tun. For example, if you have a [beverage cooler](#) (at least 3 gallon capacity) with a spigot at the bottom, all you need to do is unscrew the nut on the back of the spigot inside the cooler to remove the spigot. Then you'd insert a [Cooler Kit Spigot](#) into the hole. Now screw a [6" Boil Screen](#) into the back of the spigot inside the cooler. Next you'll need about 3 feet of [high-temp tubing](#) to attach to your spigot with a 1/2" hose clamp, and voilà! You have a mash tun. Alternately, you may use a large [grain bag](#) instead of the boil screen, but the boil screen will make the job much easier.



3 gallon
Rubbermaid cooler



Cooler conversion kit



6" boil
screen



High-temp tubing



Large grain bag

The process is very similar to using the stovetop, but you won't need to babysit the mash since a cooler is very good at maintaining temperatures. Calculate the amount of water you'll need, usually 1 - 1.25 quarts per pound of grain being mashed. Heat the water to about 170°F and pour it into your mash tun (make sure the spigot is closed!). Now you'll want to add your grain, but not all at once (if you're using a grain bag, just place the bag into the cooler, and move it around until you're sure all of the grain is wet). Pour about a third of your grain in and stir it up well. You want to make sure that there are no clumps of dry grain (dough balls). Once all your grain has been mixed in (called "doughing in"), take a temperature reading. You're shooting for 154°F, but consult your recipe to make sure. If it's too hot, you can pour in some cold water, a pint at a time, until the desired temp is reached. Likewise, if it's too low, add some 170°F water to raise it. Once your target temperature is reached, simply put the cover on the cooler and wait 30-60 minutes. At this point, you'll want to heat 3-6 quarts of water in a separate kettle to about 170°F. You'll need this to rinse the grains (sparging) when the mash is complete.

You can confirm that the mash is complete with a small amount of iodine or IO Star sanitizer. Pull a small amount of liquid from the mash, and add a few drops of iodine. If the added iodine turns clear, then the mash is complete. If it is still dark blue/black, then the mash is not complete. Do another iodine test in 10-15 minutes. When the mash is complete, place your brew kettle under the spigot. Now, open the valve on the mash tun and take the water that you heated to 170°F and slowly pour it over the grain bed, a pint or so at a time. What you're doing here is trying to get all of that sweet wort that you worked so hard to get out of that grain. When you're done, you should have 2.5-3 gallons of wort in your brew kettle. Now simply brew as you normally do.

A First Step to Better Beer

Congratulations! You've just brewed your first partial mash beer. You've taken a big step toward all-grain brewing. Even a partial mash will greatly improve the quality of your beer. Midwest offers several [partial mash recipe kits](#) for you to try, so brew away!

Some Partial Mash Kits to try:



American Light Ale



Cascade Pale Ale



Traditional Stout



Dubbel 'em' Up
(Belgian Dubbel)