

## What is mashing?

Mashing is an essential step in brewing. Up till now, the makers of your beer concentrates, malt extract and crystal malts have done this step for you, now you are about to start doing some mashing yourself.

People have mashed in different ways at different times. The Sumerians and Egyptians used to form loaves out of sprouted barley/wheat/rye/oat corns then would bake these in a low oven. The Indians of Central and South America make chicha by, in our terms, masticating wet polenta, then spitting that into the fermenter, the ptyalin enzyme in human spit being the only starch converting enzyme they have. Kava is likewise made by masticating tapioca or other starchy tubers in some of the Pacific islands.

Luckily, we have malsters that make barley, wheat, rye and oat malt for us! The malsters steep the grain so that it starts germinating, wait until the grain has reached the stage where it has activated the amylase enzymes, then dry the grain, so killing it, then kiln it for color, flavor and aroma. Some green malt is mixed with water in a vessel that is then sealed and heated to 66°C for an hour. This “mashes” the grain on the inside of the grains, creating sugars and sugar-nitrogen compounds. The water is then drained out of the vessel which is raised to a higher temperature to dry and color the changed malt. The sugars created inside each grain crystallise out—forming crystal malt!

As mashers we mix (mash) this malt, after crushing, with hot water, so the whole mass arrives at a specific temperature (usually in the 64-70°C range) where the amylase enzymes, till now present but inactive in the malt, are activated. These activated enzymes turn the starch in the malt and *in* any unmalted adjuncts into sugars. See the Chapter on Enzymes for Mashing theory.

An hour is usually sufficient, then we start running the sweet wort from out the mash tun, the first runnings are usually poured back over the top of the grains, to sink through the grains which filter out the solid bits, clarifying the wort. When the wort is clear, it is run into the kettle. More hot water is added to the mash tun to wash out the remaining sugars (sparging) and this wort is also added to the kettle. The full wort is then boiled partly to denature (“kill”) the enzymes.

Not hard is it? Mix hot water and crushed grain, keep at target temperature for sixty minutes (easy in an esky) then mix in more hot water, the wort thus formed is boiled..

The next chapter shows why we mash, the chapter after that shows how we can do a small mash using just normal kitchen implements. The theory is given in the last chapter, read it when you have done a part mash or two. No need to be frightened, onwards!