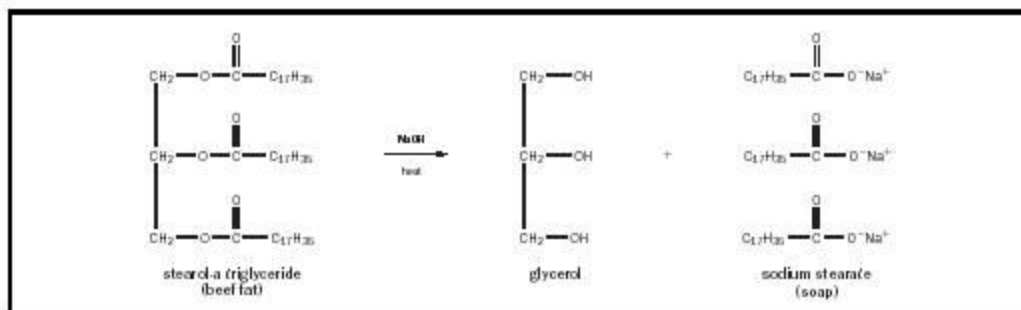


History and Science of Soap Making

Evidence of soap usage in society dates back to ancient Babylon (2200 BC) and a recipe for ash, fat and alkali can be found on clay jars from ancient Egypt. Societies have been using soap for thousands of years and it is rumored that it was named after Mount Sapo in Rome because animal sacrifices cooked over a fire and the runoff from the ashes and fat into water of the Tiber River made a soapy lather that helped them to clean their clothes. (Chemistry Encyclopedia, chemistryexplained.com)

The process of soap making is called Saponification. In simple terms it means mixing the exact right amount of fatty acids with the exact right amount of an alkali so that you end up with a new substance and there is none of the original reactants left when you are done. This is an exothermic reaction, meaning it gives off heat (and lots of it) when the lye is mixed with the water and then the fatty acids. The process of saponification actually makes two new substances: soap and glycerine. Often in commercial soaps the glycerine is removed, but in home soapmaking you get the added bonus of keeping it in there. In order to understand a little about soapmaking and the process of saponification you need to understand how the pH scale works. The pH scale runs from 0 being the most acidic to 14 being the most alkaline (basic). Seven is somewhere in the middle making it the most neutral (ex: water).

The goal of soapmaking is to mix some kind of an acid with some kind of an alkali. In home soapmaking the alkali can be Sodium Hydroxide (NaOH) which would make a solid bar of soap, or Potassium Hydroxide (KOH) which would make a liquid soap like hand soap. **Please note: both of these things are very CAUSTIC, please follow all safety instructions when using them. Please see the lesson on Safety Instructions.** The acids come from fatty acids and can either be plant based like cocoa butter, or they can come from animal products like lard or tallow.



(image source: Chemistry Encyclopedia, chemistryexplained.com)

For the purposes of this course, we will be using Sodium Hydroxide or lye and Coconut Oil, Olive Oil and ethically sourced Palm Oil. Here on our farm we use Tallow often which is the rendered fat of cows. Lard is the rendered fat of pigs. Since we raise cows for beef production we try to use all parts of the animal and therefore, we use our rendered tallow when available. This makes a beautiful hard bar of soap that will not dissolve quickly.

In home soapmaking it is not a bad idea to Super Fat your soap, meaning to use a larger fat to lye ratio. This is an extra cautious step and helps to ensure that you have no caustic/reactant lye leftover when you are done, and that it has actually saponified and will not irritate your skin. This is very scientific and you will need to be exact when figuring this out. The easiest way to do this is to use a lye calculator and there are many available on the internet. Here are a few examples of where to find them: [Brambleberry Lye Calcuator](#), [Soap Guild Lye Calculator](#), [Summer Bee Meadow Lye Calculator](#). Super Fating the soap also makes the soap have a great lather among other benefits. Each different oil/fat has different properties and will add different benefits to your soap. There are many resources out there on this, here is a good one from [Lovin' Soap](#). Our favorite oils to use are Coconut Oil, Shea Butter, Cocoa Butter, Olive Oil, Palm Oil, Lard, Tallow, and Almond Oil.

