

## What is Soap

Soap is an anionic surfactant used in conjunction with water for washing and cleaning. Soap acts as a link between dirt and water. On a molecular level one end of the soap is attracted to water and the other end is attracted to non-soluble ingredients such as dirt particles -- allowing the dirt to be taken away with the water. Soap is made in a process called Saponification. In saponification, fatty acids are combined with an alkali, (*lye*). The two alkali used in the soap making process are the same used when making biodiesel. Sodium hydroxide (*NaOH*), also known as caustic soda, is typically used to produce bar soaps. Potassium hydroxide (*KOH*), also known as caustic potash, is used when making liquid soap. During the saponification process, oil is broken into two components, fatty acids and glycerin. The fatty acids then combine with the lye creating soap. The Glycerin is “freed” from the oil just like it is when producing biodiesel, but the glycerin stays mixed with the soap rather than forming a separate layer. Most commercial soaps have had the glycerin separated to be sold or used in other products. Soap made from whole oils typically produce 10 – 15 percent glycerin.

## Bar Soap

Bar soap is made by combining whole oils and/or fatty acids with sodium hydroxide (*NaOH*). Most bar soaps use oils that are high in stearic, myristic, lauric or palmitic acids. Most “good” all weather biodiesel is made from as much non-saturated oils as possible. Making a good firm bar of soap with the biodiesel byproducts can sometimes be difficult. If the soaps that are in the byproducts are mostly from non-saturated oils, a nice firm bar can be made by adding just a few other ingredients to our bar soaps.

## Liquid Soap

Liquid soap is made by combining whole oils and/or fatty acids with potassium hydroxide (*KOH*). The consistency of liquid soaps can be paste, gel or liquid. Most traditional and commercial liquid soaps are made with coconut oil or it's derivatives as the main ingredient. The soaps created during biodiesel production lend themselves well to making liquid soap as most use non-saturated oils in the production of biodiesel. Since the biodiesel byproducts are made from a composite of different oils, we cannot