

Oil or Fat	$\left(\frac{g \text{ NaOH}}{g \text{ fat}}\right)$	$\left(\frac{g \text{ KOH}}{g \text{ fat}}\right)$
Lard	0.1380	0.1935
Olive Oil	0.1340	0.1879
Shortening	0.1360	0.1907
Tallow	0.1405	0.1971

Saponification Table

Different fats will have different saponification values depending on the proportion of fat components that can become soap in your oil as opposed to components that cannot. An oil with a low value such as canola oil will take a long time to set and may have lots of oils left over. You can increase the saponification value of a vegetable oil by adding a source of saturated fat such as palm oil or coconut oil, or stearic acid.

Making Tallow

When you get fat from an animal, if it is not already rendered, you will have to render it. Before rendering, animal fat (suet) will not keep at room temperature but will spoil. It will have bits of meat and contaminants. After rendering, the fat will be cleaner and will keep at room temperature.

Put the fat in a pot of boiling water with some salt. The impurities will sink out. Let the fat cool and solidify then scoop it off the water. You can also melt it again and filter it. Repeat as necessary. You can use vegetable oil without further preparation.

Resources

Make soap

<http://www.motherearthnews.com/diy/homegrown-101-how-to-make-cold-process-lye-soap.aspx>

http://67.222.53.210/frontierfreedom/index.php?option=com_content&task=view&id=105&Itemid=57

<http://candleandsoap.about.com>

<http://www.soapmakingforum.com>

Make lye

<http://www.motherearthnews.com/homesteading-and-livestock/how-to-make-soap-from-ashes-zmaz72jzfre.aspx>

Render fat

http://67.222.53.210/frontierfreedom/index.php?option=com_content&task=view&id=106&Itemid=60

What is soap

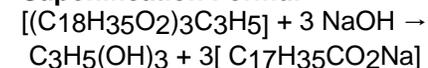
Fat or oil and lye are the essential ingredients for all soap. Any base (lye) with a triglyceride (fat) and water will form a neutral salt (the soap) and glycerine. Usually for lye one uses sodium hydroxide (NaOH), available from some hardware stores or online sources. Drano has been used for some soaps, but contains flecks of aluminum; it is controversial if this soap should be used on the body, but it is an option in a pinch

Today, with wood ash, we will be using KOH which gives a soft soap.

All soaps cut the grease that the skin of germs is made of. Then the germs die. Wash your hands!



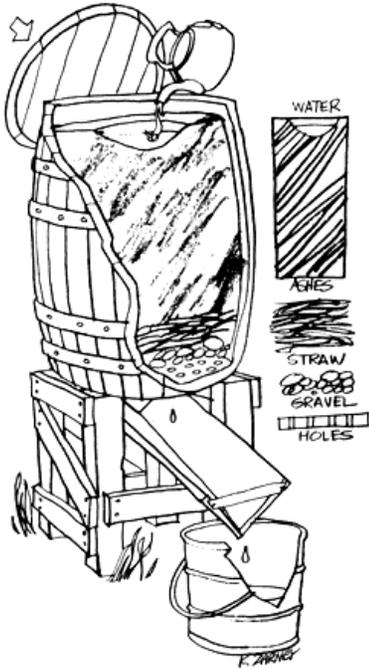
Saponification Formul



Stearic acid combines with Lye to create glycerin and sodium stearate (soap)

Making Lye from ashes

Before the early 1800s ashes were used to make lye. Lye from ashes is potassium hydroxide. Its formula is KOH instead of NaOH. It will make a softer soap than standard lye. You may also have less consistent results.



Boil the water before soaking it in ashes from hardwood fires. You can soak several batches of ashes in the same boiling water. Then, boil it down until an egg or a potato will float.

Mother Earth News presents this lye barrel, which saves energy by producing

finished lye from one batch of boiling water. The barrel is filled with ashes, with some straw and stones at the bottom for filtration. The link with all the information is at the Resources section of this pamphlet.

Making Soap

Hot Process

Lye and fat are at the same temperature short curing period (minutes to days). Saponification happens during the cooking rather than the curing. After taking off the stove, insulate the soap for a few hours to keep it warm and encourage the reaction to finish.

Cold process

The lye and water are combined and left to cool. The oil is cold, or just warm enough to be melted into a liquid. This method requires precise measurements and a longer curing period (2 to 6 weeks). A little sugar will speed the reaction. Usually one uses 5% less lye than necessary, it's better to have a soap that moisturizes than one that burns.

A cold process tallow and olive oil soap

- 9.6 oz. olive oil
- 22.4 oz. beef tallow
- 10.5 oz. water
- 4.2 oz. lye
- Assemble all of your equipment and ingredients.

Mix your lye solution and set it aside to cool
Measure and heat tallow until melted
Measure and add olive oil to tallow
When lye and oils are 100-120f (36-38 C), slowly pour lye into oils. Stir with a stick blender, alternating between short blasts and stirring
Mix the soap until it reaches a light trace.
Pour raw soap into your mold and let sit for 12-24 hours until cool and is hard enough to cut.
Remove from mold and slice into bars. Let cure for 2-4 weeks. **From candleandsoap.about.com**

Safety

Lye is a strong alkaline. It is caustic and can burn you. Always use hand and eye protection, and wear long pants, tight-fitting sleeves and shoes. Keep vinegar

around in case you are burned with lye. Do not use water on a burn from lye crystals. If the lye is liquid you may use water to rinse but vinegar will be more effective.

Lye will dissolve tin and aluminum containers. Always use steel, food-grade plastic, crockery or glass to handle lye or curing soap.

Always add lye to cold water, not water to lye. Remember that lye crystals will become hot when added to water, and use proper ventilation. Making soap is not dangerous if you have a tidy workspace and follow basic precautions.



