

# Handcrafted Soap

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## What is Soap?



# Soapmaking Process (Saponification)

Soap is the **sodium** or **potassium** salt of a fatty acid.

Fatty acids - **fats/oils**  
Alkali - **lye**

Alkali splits fats/oils into two major parts:  
**fatty acids and glycerin**

Every molecule of oil partners with a molecule of lye.  
This combination becomes the **sodium salt** of the fatty acid.

## Oils/Fats

Oil/Fat	Soap properties
Avocado Oil (specialty)	Rich, soothing to skin (superfat)
Castor Oil (specialty)	Wild & rich. A humectant - draws moisture to the skin. Makes thick, large bubbles - used in most shampoo bar recipes (superfat)
Cocoa Butter	Creamy & hard. Contains natural antioxidants. Helps retain & restore the moisture in skin.
Coconut Oil	One of the most common raw materials used in the soap. Creamy lather, yields a medium-hard soap, tends to dry skin.
Hemp Oil (specialty)	An antioxidant - protects skin from excessive water & moisture loss. Silky smooth bar - excellent lather.
Macadamia Nut Oil (specialty)	Easily absorbed into the skin and acts as an effective emollient.
Olive Oil	All grades suitable for soapmaking. Soaps are hard, brittle, mild, long-lasting, & lathers abundantly.
Palm Oil	Produces long-lasting bubbles - kind to skin - excellent facial soap.
Palm Kernel Oil	Hardens soap.
Sesame Oil (specialty)	High in antioxidants - great moisturizing qualities.

Oil/Fat	Soap properties
Shea butter (specialty)	Melts on contact with the skin, making it an excellent choice for lip balms and lotion bars - creates a hard bar.
Sunflower oil	High amount of Vitamin E. - an alternative to olive oil. Provide a stable, conditioning lather.
Sweet Almond Oil (specialty)	Adds moisturizing properties
Vegetable Oils -	30% olive oil and 90% either corn, soy or peanut, or a combination of these. Economical - yields a decent soap, lathers well, but generally softer than using all olive oil.
Vegetable Shortening -	Alternative to animal fats. Produce a soft, low lathering soap.
Vitamin E (specialty)	An antioxidant.
Beef tallow	Softer but more difficult to work with. Best used as a laundry soap.
Mutton tallow	Produces a more brittle soap than beef tallow.
Lard (pig fat)	Best used for making laundry soap. Mild but does not lather well.
Rendered Kitchen Fats	Produce too soft soap - quality is limited. Not recommended.
Suet	The preferred fat of all tallows - produces a mild soap.

## Lye

1. NaOH - Sodium Hydroxide (caustic soda)

2. KOH - Potassium Hydroxide (caustic potash)

caustic, corrosive, highly hazardous



## Additives

1. Fragrance
  - a) Essential oils
  - b) Fragrance oils
2. Colorants
3. Other
  1. Herbs/botanicals
  2. Exfoliating ingredients

## Soapmaking Process

1. Cold Process (CP)



## Melt/Combine Fats & Oils



Temperature: 90 - 110° F

## Dissolve Lye in Distilled Water



Cool to 90 - 110° F

## Combine Fats & Lye



Saponification Begins

## Trace



1 - 2 minutes

Add fragrance, etc.



Pour into Mold



Cover, keep warm - 24 hours

## Soapmaking Process

1. Cold Process (CP)
  - CPOP
2. Hot Process (HP)
3. Melt & Pour (M&P)

## pH (scale 1 - 14)

- Degree of acidity or alkalinity of a substance in water
- Pure water has a pH of 7 (neutral)
- Acids decrease pH
- Alkali increases pH

The scale of 1-14 is logarithmic, meaning each full unit is different by a factor of 10 from the one adjacent to it. For example, a pH of 9 is ten times more alkaline than a pH of 8. So it follows that a pH of 10 is 1000 times more alkaline than a pH of 7 ( $10 \times 10 \times 10 = 1000$ ).



## Handcrafted VS Commercial

1. Superfatting - excess fat used to consume the alkali - moisturizing, emollient
2. Glycerin - is not removed, leaving a naturally moisturizing soap that draws moisture to skin

### Commercial Soap

Environmental Working Group  
[www.cosmeticsdatabase.com](http://www.cosmeticsdatabase.com)

1. **SODIUM LAURETH SULFATE**- a detergent & foaming agent (Human irritant - strong evidence products for use around the eyes, on the skin, or (lungs) may be aerosolized (airborne))
2. **LAURAMIDE DEA** - foam booster; viscosity increasing agent (thickener) (Determined safe for use in cosmetics, subject to concentration or use limitations - Safe for use in cosmetics with some qualifications)
3. **TEA COCOYL GLUTAMATE** - hair conditioning agent; surfactant - cleansing agent (Not assessed for safety in cosmetics by industry panel)
4. **COCAMIDOPROPYL BETAINE** - hair conditioning agent; skin-conditioning agent; foam booster; viscosity increasing agent (Known human immune system toxicant, Suspected to be an environmental toxin)

## Commercial Soap

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1. **SODIUM PCA** - hair conditioning agent; humectant; skin-conditioning agent (Determined safe for use in cosmetics, **subject to concentration or use limitations** - Safe for use in cosmetics with some qualifications)
2. **PROPYLENE GLYCOL** - fragrance ingredient; humectant; skin-conditioning agent (Classified as **skin irritant**)
3. **METHYLPARABEN** - fragrance ingredient; preservative (Human **skin toxicant** - strong evidence)
4. **METHYLCHLOROISOTHIAZOLINONE** - preservative (Known human **immune system toxicant**, Human **skin toxicant** - strong evidence, Determined safe for use in cosmetics, **subject to concentration or use limitations** - Safe for use in cosmetics with some qualifications)

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