

Bar Soap: A Chemically Accurate Recipe

Software

- Lye (sodium hydroxide)
- Distilled Water
- Oil (see chart below)
- Fragrance Oil (optional, see below)
- Colorant (optional, **not** food coloring)

Hardware

- Stick Blender
- Thermometer (non-metallic)
- Plastic Bucket (or other non-metallic bowl) ~1 gallon
- Silicone Mold(s) (see below)
- Digital Food Scale (accurate to 0.1 ounces)
- Protective Laboratory Goggles
- Protective Gloves (surgical gloves, etc.)
- Apron (that you won't miss if ruined)
- Glass jar (1 pint [small batch] or 1 quart [large batch])

If you need to round, round UP for oils, DOWN for lye. If you mix and match oils, calculate the amount of lye you would use for each oil individually and add it all up.

For fragrance oils, use 1-2 tsp for each ounce (wt.) of oil used (less for potent fragrances, more for not-as-potent).

For every ounce of lye used, use the number in the "Lye X" column for the oil. Example: if you used 1 ounce of lye, use 7.72872 ounces of corn oil. If you measured out 15 ounces of coconut oil, use $15/5.362 = 2.79751$ ounces of lye.

Instructions

1. Measure, by weight, the amount of oil to be used in this recipe (around 8-24 oz for home-scale batch).
2. Use the chart below to calculate and then measure enough lye.
3. However much lye you use, multiply by 2.5 and that is how much distilled water to measure out.
4. Add the lye to the water in the glass jar and stir with the thermometer to get the lye to dissolve. This step will produce significant heat and some odors that will burn the nose. Final temperature will be ~200°F.
5. Cool the lye-water to 100-120°F.
6. Add the oils (except for the fragrance oil) the bucket. If the oils are solid, melt them carefully on the stove or in the microwave. The oils should be no more than 120 °F in the bucket.
7. Add the lye-water into the bucket with the oils. Using the stick blender, blend the contents of the bucket until it traces (appears like a pudding). If unsure if complete, it is safer to err on the side of too much blending rather than not-enough.
8. Add any fragrance oils and colorant once the mix begins to become pudding-like, and continue blending until finished.
9. Pour mix into the silicone molds, cover the top with parchment or wax paper, and allow the mixture to set for at least 24 hours.
10. Remove the solid bars of soap from the molds and allow them to air-dry on a cooling rack for 1-2 weeks before using.

Oils

<i>Oil</i>	<i>Lye X</i>	<i>Oil</i>	<i>Lye X</i>	<i>Oil</i>	<i>Lye X</i>	<i>Oil</i>	<i>Lye X</i>
Almond	7.323175	Cottonseed	7.195693	Palm	7.069577	Shea Nut	7.34747
Beef Tallow	6.960742	Flaxseed	7.301639	Palm Kernel	5.958338	Soybean	7.275292
Canola	7.332913	Grapeseed	7.292328	Palm Olein	7.118553	Sunflower	7.300848
Cocoa Butter	7.231038	Illipe	7.288818	Peanut	7.147537	Walnut	7.279319
Coconut	5.36191	Lard (Pork)	6.96884	Safflower	7.295316		
Corn	7.278317	Olive	7.288103	Sesame	7.299089		