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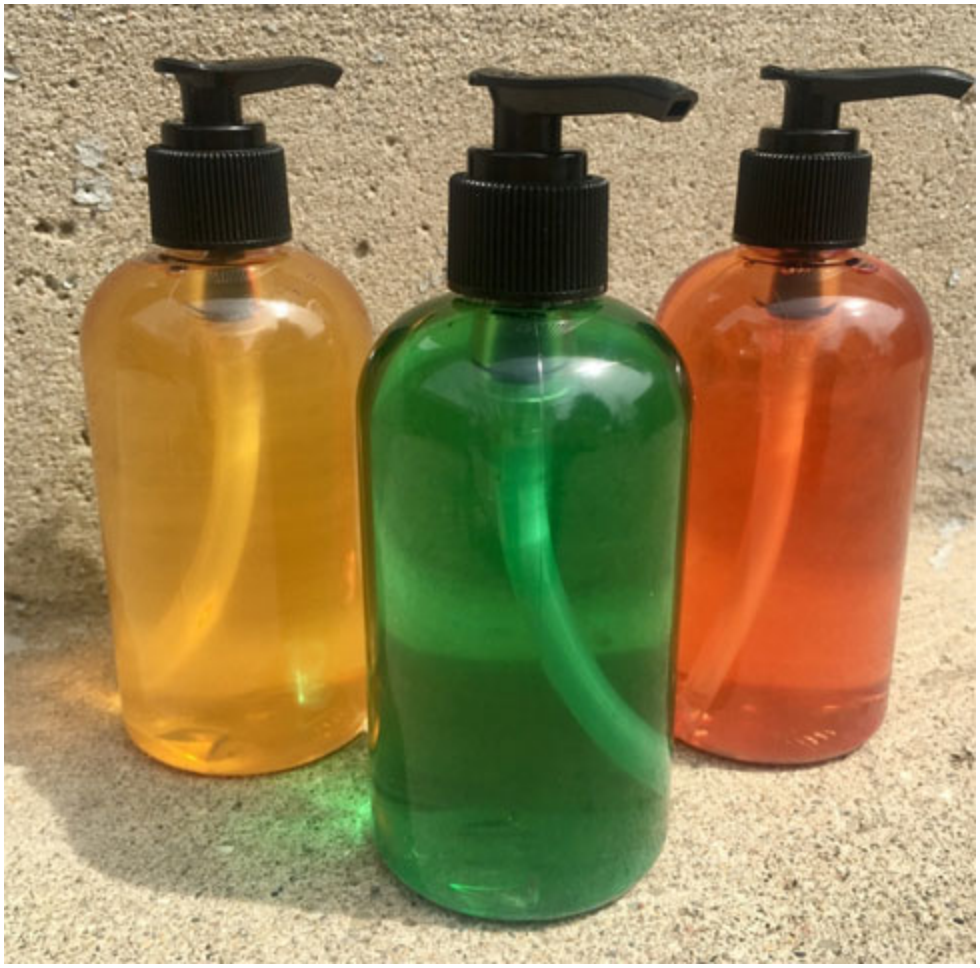
Hot Process Glycerin Liquid Soap Recipe



Perfectly transparent liquid soap eludes many soap makers. This recipe will demystify the process of making beautiful liquid soap that is as gentle as it is transparent. The key to this recipe is choosing oils with fewer unsaponifiables to ensure the clarity of the final product. Coconut oil provides cleansing and bubbles. Olive and sunflower oil are mild and conditioning on the skin. Finally, castor oil boosts the lather in this soap recipe. In addition to choosing the right oils, the superfat of this soap is kept relatively low (2.5%) to promote clarity.

Liquid soaps are made with Potassium Hydroxide (KOH) instead of sodium hydroxide (NaOH) to create a soft paste that dissolves readily in water. The issue with using KOH in soaps is that it can take a very long time to trace—more than 30-60 minutes of stick blending! On top of this, these soaps can also take many hours to cook. To make this more manageable, this recipe swaps the water used in a typical lye solution for glycerin which results in a soap batter that comes rapidly to trace. As a side benefit, glycerin is a wonderful humectant for the skin and slightly thickens the final product. The only downside of using glycerin as your solvent in liquid soap is that KOH is poorly soluble in glycerin and the mixture must be heated on the stovetop. It's may seem daunting to heat lye on the stovetop, but this tutorial walks you through the process.

Thickening liquid soap can be a little challenging. This tutorial shows you how to use a simple saline solution to thicken your soaps. How much saline you use will depend on which fragrance oil or essential oils that you use. Different fragrances change the texture of the soap.

You will notice that this recipe makes A LOT of liquid soap - over 175 oz. (5 kg)! This is because this is the smallest volume of oils that can be comfortably stick blended in a 6 qt. slow cooker. If you would like to make a smaller batch, you will need to use a smaller cooker. If you would like to double the batch, you will need to transfer the cooked soap paste to a very large stock pot, add the distilled water and gently heat it in a 200^{o}F oven to dissolve the soap paste. The benefit of making a large batch of soap is that you can scent it with many different fragrances. You can store your liquid soap in an empty distilled water jug and refill your bottles as you need them. You'll never want to use store bought liquid soap again!

INFORMATION

- Difficulty: Advanced
- Yield: About 175 oz of Liquid Soap (22 x 8 oz Bottles)

TIMING

- Prep Time / Clean Up: 25 Minutes
- Perform Time: 2 Hours
- Sit Time: 9 Hours (hands off to allow ingredients to dissolve)
- Total Time: 11 Hours 25 Minutes, 2 Hours 25 Minutes Active Time

SUPPLIES

- Digital Scale
- 6 qt. Slow Cooker
- Safety Goggles
- Latex or Nitrile Gloves
- 2-3 qt. Stainless Steel Saucepan (DO NOT USE ALUMINUM)
- Large Stock Pot
- 5 Liter Pitcher (optional)
- Small Microwaveable Bowl or Measuring Cup
- 1 qt. Measuring Cup or Small Pitcher
- Silicone Spatula
- Plastic Wrap
- Stainless Steel Spoons
- Pipettes (for essential oil)
- Paper Towels
- Timer
- Stovetop
- Microwave Oven
- 22 x Clear 8 oz Boston Round Bottles
- 22 x 24/410 Black Saddle Pump

INGREDIENTS

- 10 oz / 283.5 g Coconut Oil (25% of oils)
- 16 oz / 453.6 g Olive Oil (40% of oils)
- 10 oz / 283.5 g Sunflower Oil, High Oleic (25% of oils)
- 4 oz / 113.4 g Castor Oil (5% of oils)
- 8.91 oz / 252.5 g Potassium Hydroxide (KOH), 90% Purity
- 26.71 oz / 757.4 g Glycerin (Available from Pharmacies) (3:1 ratio of Glycerin: KOH)
- 1 Gallon / 3.79 L Distilled or Deionized Water
- 3.5 oz / 99.2 g Essential Oil or Fragrance Oil of Choice
- 3.53 oz / 100 g Table Salt
- Several Drops Water-Soluble Liquid Colorant (optional)

DIRECTIONS

Before starting this tutorial please make sure to read all instructions. Wear safety goggles, closed-toed shoes, long sleeves, long pants and gloves when working with lye or raw soap. Make sure there are no small children or pets in the room and that you are undistracted. Make your lye solution in a stainless steel (NOT ALUMINUM) saucepan. Do not leave your lye and glycerin solution unattended on the stove. Use caution when handling heated oils and boiling water. Use disposable pipets when dispensing essential oils. Do not place undiluted essential oils in plastic ware. Carefully weigh all ingredients and gather your equipment before you start working.

Step 1 – Melt the Butters and Oils and Make the Lye Solution

Combine the coconut oil, sunflower oil, castor oil, and the olive oil in the slow cooker. Turn the oil on high, cover and allow the oils to melt, about 15 minutes, depending on how hot your cooker is.

While your oils melt, make your lye solution. Combine the potassium hydroxide and the glycerin in a 2-3 qt. stainless steel saucepan.

Bring the lye mixture to a simmer on low/medium heat. DO NOT WALK AWAY WHILE HEATING THE LYE SOLUTION. The glycerin will foam and may even crackle a little. Do not be alarmed! Keep stirring the lye solution constantly until the lye dissolves, 5-8 minutes. If you see any remaining undissolved chips of lye, turn the heat back on and stir some more.

Step 2 – Bring the Soap to Trace and Cook the Soap

Pour the lye solution into the oils.

Stick blend on high until all of the oil has been emulsified, about one minute. Don't worry about over stick blending. The batter will be at a thin trace.

Cover and cook the soap on high for about 20 minutes. Stir the soap with a spatula. You will notice it start to thicken up a bit. Cook the soap another 20-40 more minutes, stirring every 15 minutes, or so. The soap is done when it forms a clear, amber-colored liquid covered in a layer of foam.

When you remove a bit of the soap on a spoon, it will harden into a soft, transparent paste. The easiest way to check for doneness is to take a tiny bit of the soap on a spoon and touch it to your tongue. If it "zaps" like touching your tongue to a battery, cook the soap another 10-20 minutes. Alternatively, you can use phenolphthalein drops or make a 1% solution of soap paste in distilled water and check the pH with a pH meter The pH will be at or below pH 10. One final way to check for doneness of the soap is to take a tiny bit of the soap and dissolve it in hot distilled water. It should form a transparent product. If it is cloudy, cook the soap a little longer.

Step 3 – Dissolve the Soap Paste

Bring 3 quarts of water just to a boil in a large stock pot. VERY SLOWLY pour boiled water into the slow cooker to within a half inch of the top. (If you pour too quickly, you will have a soapy volcano on your hands!) The soap will seize up into large blobs of soap paste. Don't even bother stirring it at this point - it's too sticky!

Cover the cooker with plastic wrap and cover with the lid and reduce the heat to low. The plastic wrap is optional, but prevents evaporation, so you don't need to keep adding distilled water. Allow the soap to cook undisturbed for 2-3 hours.

Peel back the plastic wrap and stir the soap with a spatula. Scrape the bottom of the cooker and break up some of the lumps.

Replace the plastic wrap and replace the lid. Cook on low one more hour and stir once again. At this point, it's easiest to just cover the soap, turn off the crock pot and leave it overnight. The next day, stir it thoroughly. If there are any remaining lumps of soap paste, add a little more water and turn the cooker on low again and cook another 30-60 minutes.

Place a 5 L pitcher or a stock pot on your scale and zero it. Carefully transfer your soap to the pitcher or stock pot with a ladle or measuring cup.

Add distilled water to bring the total weight of the soap to 175 oz. (4.96 kg). Stir with a spatula to combine.

Step 4 – Fragrance and Thicken the Soap

While the soap is diluting make a 20% saline solution. Combine 14.11 oz. (400 mL) of distilled water and 3.5 oz. (100g) of table salt in a microwaveable bowl or measuring cup. Microwave on high for about 2 minutes, stirring after 1 minute or until dissolved. Set aside.

It's easiest to fragrance and scent only a liter at a time of your liquid soap until you know how it will behave. You don't want to risk your entire batch! Weigh 980g (34.6 oz.) of soap in a 4 qt. measuring cup or pitcher and add 20g (0.71 oz.) (2%) of your favorite essential oil or fragrance oil to the soap. Stir well with the spatula.

Use the saline to thicken the soap. Keep the soap on the scale and zero it out. Add 30g of the saline and stir well. Check for thickening. Add more saline 2-4 g at a time, stirring with every addition. At some point, you will notice the soap thicken a bit to the consistency of warm honey. For reference, check it against unfragranced soap. Stop adding salt to the soap when it gets thick. There is a very narrow window of how much salt is required to thicken the soap. If you go past this limit, the soap will precipitate into chunks, ruining that batch. This is why it is important to start with small batches and go slowly. Take a note of how much saline you add for each particular fragrance, to make the next batch of soap easier to thicken. Typically, it takes 40-100g of saline to thicken 1 L of soap. Unfortunately, every fragrance and essential oil will behave a little differently. If desired, add 2-3 drops of Liquid Colorant. Keep in mind, that the soap is gold-colored and will blend with your color selection. Purple is probably not a great color choice! Pour the soap into bottles.

If your soap is still warm, allow it to cool to room temperature before you screw the tops on tightly to prevent condensation. Rinse the outsides of the bottles with hot water to clean them. Your soap is ready to enjoy!