Making Soap Using Beeswax and Honey

How Beekeepers Clean up with Value-Added Products

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Why Make Soap?

• Luxury Value-Added Product
• Excellent return for small amount of beeswax or honey
• Fun to make
• Adds to variety in product line
• Smells great!
• Like your honey, handmade soaps are of the very best quality – milder than any commercial soap – and you and your customers will become addicted to them!
How do Beeswax and Honey Make Soap Better?

• All handmade soaps, even those with no beeswax or honey, are naturally 1/3 glycerin, a humectant which attracts moisture to the skin

• Honey is hygroscopic. Adding it to any cosmetic increases that product’s conditioning/moisturizing properties

• Beeswax does three things in soap:
  – It makes the soap gentler on the skin
  – It makes the soap harder and longer-lasting
  – It helps the soapmaker by decreasing the time it takes the soap to “trace.” (More on this later.)
What is Soap?

• Soap is a salt of a fatty acid used as a surfactant for washing, bathing, and cleaning.

• Soap is the result of a chemical process called saponification.

• Soapmakers combine various fats and oils with lye (sodium hydroxide) and water to create soap.
All Soap is Made with Lye

• BUT, correctly made soap does not CONTAIN lye!
• Transparent (glycerin) soaps are also made using lye and are then further treated with alcohol.
• All the lye added in soapmaking, if the correct amount is used, is chemically bound with the fatty acids in the oils and fats and becomes.....soap! Only if too much lye is used in the first place will there be lye in your soap.
Basic Soapmaking 101

• WEIGH the fats and oils in your recipe, put them in a pot and set them to melt. Then let them cool.
• WEIGH the correct amount of lye.
• MEASURE the right amount of water.
• COMBINE the lye and water and set it aside to cool.
• When the lye water and the fats have cooled to the right temperature, COMBINE them and STIR. This starts the chemical reaction.
• When the soap TRACES, pour it into your MOLDS.
• Next day, unmold and cut the soap into bars. Let cure.
“Trace”: What is it?

- Tracing is a change in the texture of the liquid soap in the pot. It becomes thicker so that a spoonful of the soap drizzled on the surface will leave a “trace.”
- When the soap has traced, the chemical reaction has advanced to the point that the soap can be poured into the molds.
- Beeswax makes soap trace much faster!
Soapmaking Tools

- Digital scale
- Pyrex measuring cup
- Thermometer
- Large pot
- Paper towel
- Bucket
- Wooden box
- Spatula
Your Most Important Tool

• Choose a scale that has the capacity to weigh the largest batch of soap you think you might want to make.
• Accuracy to .02 pounds for larger scales or .01 ounce (.006 pounds) for smaller capacity scales.
• Should have a “tare” feature.
• Should have an A/C outlet.
• Should be big enough to securely hold your pot.
What fats go into soap?

- All fats are composed of different combinations of fatty acids, like oleic acid, linoleic acid, lauric acid, etc. These fatty acids contribute different properties to soap such as hardness, conditioning, lathering.
- If you “get into it” and design your own soap recipes, you will need to have a working knowledge of the properties of the various fats and what they contribute to your soap.
- You, can, however, make a great soap by incorporating several basic, important fats.
- There are many excellent proven recipes on-line and in books.
Commonly Used Fats

- **Coconut Oil:** Makes for a quick, fluffy lather. Essential in a soap that lathers well. Too much can be drying. Most recipes contain coconut oil.
- **Palm Oil:** Makes smaller, long-lasting bubbles. Makes a brittle, hard soap that is mild.
- **Olive Oil:** Great moisturizing properties. Poor lathering qualities. Soap made with all olive oil is “castile” soap and is very mild. Use “pure” grade, not extra virgin. Used alone, takes very long to trace (sometimes weeks!)
And More Fats....

- **Castor Oil**: Makes a beautifully emollient, hard bar of soap when used in combination with other oils.
- **Palm Kernel Oil**: Makes a white, very hard soap with great lather but can be drying if used in excess. Similar to coconut.
- **Other oils**: Cottonseed, soy, hemp, cocoa butter, sunflower, tallow, lard, peanut, safflower, jojoba, corn, etc.
- **Beeswax** is treated as a fat in soapmaking.
- We COMBINE fats to get the qualities we want. Note that the majority of the fats in your recipe should be SOLID (hydrogenated) at room temperature.
Saponification Values (SAP)

- SAP = Milligrams of potassium hydroxide required to saponify 1g of a particular fat.
- SAP values are used to calculate how much lye is needed in your soap recipe.
- Most “soapers” use sodium hydroxide (lye), not potassium hydroxide, so a little math is needed to convert the units.
- There are many easy-to-use lye calculators available on-line: www.thesage.com or www.brambleberry.com are two websites with good ones.
Lye Discounting or “Super-fatting”

- These terms mean the same thing and refer to the practice of adding a little less lye than you need to saponify all the fats in your recipe. In practice, it means adding a little more fat than you need. Lye discounting is a guarantee that you will not have an excess of lye in your soap.

- Most soapers add 5% to 8% extra fat as a lye discount. Less than this risks a harsh soap. More will result in a soap that is soft or greasy.
Let’s Design a Soap!

• Most soap recipes are designed by the pound, and then the “unit recipe” is just multiplied for production. Let’s try:
  – 6 ounces palm oil (long-lasting lather, hardness)
  – 5 ounces coconut oil (big bubbles right away)
  – 4 ½ ounces pure olive oil (great conditioning)
  – ½ ounce beeswax (conditioning, hardness)

• 16 ounces total

• This should produce a hard, mild soap with good lather. How much lye will we need?
Use [www.thesage.com’s](http://www.thesage.com) lye calculator:

We enter the amounts of the various fats and oils, known as “fixed oils” by soapmakers, and hit the “calculate lye” button at the bottom, and....
Voila! Out pops the answer!

We’ll use 2.36 oz of lye, a 6% lye discount.
Making the Soap Smell Wonderful

- Many people comment on how great our Honey House smells, and are drawn to our booth at craft fairs and farm markets.
- Use essential oils for all-natural fragrance.
- Use fragrance oils for some great smells not available in essential oils (like vanilla.)
- Be careful with certain spicy or citrus essential oils and some fragrance oils. They can make your soap curdle, separate, or seize. ALWAYS make a test batch of a pound or two!
Adding Fragrance

- Rule of thumb: Add 1 tablespoon of fragrance/essential oil per pound of soap
- Use less for things like clove or cinnamon e.o.
- ALWAYS test a new recipe in a small one or two pound batch.
- Add fragrance to your fats just before combining with the lye-water.
Adding Botanicals

• “Botanicals” are dried goodies like oatmeal, flower petals, herbs, ground scrubby things (like apricot kernel) that act as an exfoliant and/or make the soap prettier.
• Add them to the cooled fats when you add your fragrance.
• Be aware that many botanicals will discolor under the action of the lye. Always make a TEST batch!
Soap Colorants

• Soap can be colored in many ways, or not at all.
• Some use natural colorants like carrot juice or beet juice. Honey added to the lye water colors soap a rich brown.
• Natural mineral pigments such as iron oxide or ultramarine make beautiful colors, as do mica powders.
• FD & C colors are artificial, but very vivid.
• Some soapers even use crayons!
• Colors can be layered or marbleized for a dramatic touch.
• All colorants are either water-soluble and added to the lye water or fat-soluble and blended into the melted fats. Glycerin is a good vehicle for pre-mixing both types.
• Follow recommended usage guidelines for the type of color you are using. Do not use so much that the soap’s lather is not white or color comes off on a washcloth. In the case of soap coloring, less is more! ½ to 1 tsp per pound is a good starting point.
Now let’s make some soap!
First we weigh the fats.

- The pot is the “tare.” It goes directly on the scale.
- Be neat and precise. Accurate measurements are critical for making good soap.
- Don’t walk away in the middle of a measurement. Many scales automatically turn off if left for a period of time.
- Put the pot of fats on the stove over medium heat to melt.
Next, we weigh out the lye and measure the water.

- It’s a good idea to wear safety goggles and plastic gloves whenever handling lye, even in the dry phase.
- We usually measure 6 to 8 fluid ounces of water per pound of soap in the batch. The higher amount will take longer to cure but is less likely to do undesirable things like curdle or seize.
- Precision measurement of water is not as important as accuracy in weighing lye and fats.
Pour the water into a thick plastic bucket or container

- Remember that once you add the lye, the mixture will get very hot – almost boiling! Do NOT use glass or anything that might break.

- You can test a container by pouring boiling water into it and letting it sit for a while.
Now we combine the lye and the water and stir

- ALWAYS ADD LYE TO WATER, NOT WATER TO LYE! (unless you are fond of explosions.) Remember:
- “It’s always smart to add lye to water. Add water to lye, and you may die!”
- Wear safety goggles, gloves, shoes.
- Smoothly pour the lye into a thick plastic container containing the water, hold your breath, and stir the mixture until combined.
- The fumes are VERY CHOKEY. Do not breath them. Do not let children or animals near the area.
- It’s best to do this outside if possible.
Unhappy, but safe!
More Safety Notes

• Lye is the scariest part of making soap. Stings are the reason more people don’t keep bees and lye is the reason more people don’t make soap.
• Lye is a caustic chemical that can burn or blind you.
• Use basic common sense and you will be fine.
• Adding lye to water is an exothermic process, i.e., it generates HEAT. The lye water will immediately heat up to around 200º. Water boils at 212º.
• Even a slight whiff of the caustic fumes will set you coughing. Test the direction of the wind and stand upwind. Hold your breath as an added precaution. Mixing the lye water only takes a few seconds. Do it and walk away.