

Homemade Soap

Compiled by Kathy Miller - see info at <http://millerssoap.com/pennwaltetc.html>

In trying to put together this handout, I realize I have a ton of stuff posted on the web! This is just part of it and to get you started. If you'd like to visit the web page for more information on soapmaking, the URL is: <<http://millerssoap.com/soapinfo.html>>.

Notes on Soapmaking (Some from old Pennwalt Corp. leaflet)

1. Never use lye on aluminum utensils (lye acts upon them). For small batches of soap, enameled or granite ware is suitable and for larger batches, an iron kettle may be used.
2. All grease should be pure and clean to obtain soap with a clean, wholesome odor.
3. Measure accurately. Be careful about temperatures.
4. Ammonia, kerosene, carbolic acid, etc., when added to soap help it little, if any, as the lye usually neutralizes them. They increase cost and may make soap harsh on skin.
5. Coldness makes a hard, brittle soap.
6. Excess lye makes a coarse, flinty soap that will crumble when shaved. Soap should have a smooth, velvety texture that curls when shaved. It should not bite the tongue when aged.
7. Use the all-purpose soap for toilet soap, a shampoo, for washing prints, lingerie, hose and other delicate fabrics.
8. The following fats (for soapmaking) are listed in the order of their desirability: Tallow, lard and their combinations, olive oil, other vegetable oils. Mineral oils will not make soap.
9. Poultry fat should be combined with other fats, as soap made from it alone is soft and spongy.
10. Aging always improves soap. Soap made from lard or soap that has been boiled requires longer aging before it becomes hard and ready for use.
11. Instead of storing rinds and meats scraps, extract the fat; store in a tightly covered container in a cool, dry place.
12. Make the fat into soap as it accumulates and let the soap age rather than allow the fat to get too old and rancid.
13. There need never be a failure in soapmaking. If separation occurs, it can be reclaimed.
14. Where you find your grease has become rancid or contains materials other than fats, boil in large quantity of water, allow to cool, skim off grease, and then follow the directions in the recipe for soapmaking.

Fats or Grease to Use

You must have fat or grease to make soap; it cannot be made from lean meat scraps. Tallow and lard make the best soap. Fats that have no cooking value, such as meat fryings, cracklings, meat trimmings and other refuse fat can be used. Certain vegetable oils are sometimes used. Mineral oil or mineral grease will not make soap.

Preparing Fat

Good soap requires fats that are free from dirt, rancidity, lean meat, salt and other impurities. Fats may be grouped in three classes:

1. *Fat rendered from tallows, meat trimmings, rinds and other meat scraps.* This fat is ready for soap.
2. *Meat fryings and other refuse fats.* This class of fat should be washed as follows: Add an equal amount of water and bring it to the boiling point. Remove from fire, stir, add cold water (1 qt. to 1 gal. of the hot liquid). The cold water precipitates foreign substances. The clean fat comes to the top. Remove the fat when firm. Note: Some fats require a second washing. Wash a very rancid fat at least twice.
3. *Cracklings. For pressed cracklings remove fat as follows:* To every four pounds or one gallon of pressed cracklings, add one level tablespoon of lye, and water to twice the depth of the cracklings. Cover and boil one hour. Remove from fire and when it stops boiling pour cold water over it and proceed as in 2 above. Treat unpressed cracklings the same as pressed cracklings, except use one level teaspoon of lye instead of one tablespoon to four pounds of cracklings. Note: Sixteen pounds of cracklings - (approximately four gallons) can be boiled at one time. Remove fat from the cracklings after butchering and store until ready.
Compiler's Note: The above sounds pretty messy and is. I usually have bought pure fat from the butcher or have friends that have given me their lard/tallow after purchasing sides of meat. If you order fat from a local butcher, be sure to get beef kidney fat. You might have to buy a certain quantity for him to order (I ordered 40 pounds last time and paid approximately 50 cents per pound, but it renders out almost 95% and is a great buy). The easiest rendering method for me is to cut the fat up into chunks and melt it down in my microwave oven. I use a covered heat-proof casserole dish for this purpose and after the cracklings are getting brown and are shrinking toward the center (but not burning yet!), I lift them out and pour the fat through a sieve. This method allows you to render what you need and do smaller batches without tying up your kitchen for the whole day (such as using the stove method or in the oven). It smells, for sure, but it's easier to deal with the leftover scraps for me when they are all crispy than to have to pull them out of a pot of water when they look pretty disgusting! If you don't have a source for lard (pig fat) you can buy that ready-to-go at many grocery stores in the baking section or possibly in the dairy case.

Tallow or Lard Recipe with Basic Instructions (Original from Pennwalt Corp.):

To make about 9 pounds of pure, hard, smooth soap suitable for toilet, laundry or soap flakes, follow this simple recipe:

- One 12 ounce can of lye
 - 2 1/2 pints cold water
 - 5 pounds 10 oz. clean fat (tallow or lard or some combination of tallow and lard)
- Note: (Approximately 6.5 pints or 13 standard cups of liquid fat.)

Dissolve lye in water (never use an aluminum container). Stir until dissolved and let cool to correct temperature (temperature chart is below). Melt fat to clear liquid and let cool gradually to correct temperature. Stir from time to time to prevent the crystals of fat reforming. After both are in the correct temperature range, pour the lye solution into the fat in a thin, steady, stream with, even stirring. (Note: I've found that transferring the lye solution to a Rubbermaid plastic pitcher...with a pouring spout...makes this easy to control myself. I mix the soap in a large stainless steel mixing bowl or spaghetti cooker (which is nicer because it is narrower and deeper) right on the stove where I melted the fat [with the burner OFF] and use a portable electric mixer for the first 10 minutes, after which I switch to a large spoon. If you are working in a cold room and your soap starts looking like the fat is setting up before saponification has really happened, you can turn the burner onto low briefly to warm the stuff up, if need be. This is usually not necessary.) A honey-like texture is formed which in about 10 or 20 minutes (for this recipe, in my experience, usually 20 to 30 minutes, but contrary to their instructions, faster blending is usually much better than doing it too slow. Using a stick blender has convinced me of that. If you're hand stirring, just don't get wild and splatter the stuff all over you and the stove!) becomes thick with all the lye incorporated into the fat. (If you are adding scent to your soap, this is the time to stir it in. When the soap is thick enough to "trace" or gently draw a

line on the top of it with a spoon, it's time to stir in the scent. When the soap is close to being ready to pour, it will usually start looking duller on top and form a bit of a fine ring around the edges of the bowl or pan it's in.) Pour this mixture into a mold or molds and insulate them by putting into a covered cardboard box, covering and wrapping with a blanket, or whatever works for you. In the summer, insulating should be minimal and sometimes not necessary. Let it remain undisturbed for 24 hours - then cut and lift from mold, or vice versa!

I have found that a cat litter box (unused) makes a dandy mold for a full batch of cold method soap if you want it to be in a single layer. You can lightly oil it ahead with non-stick coating or a tiny bit of one of the fats you are using in your soap before pouring. For a deeper mold that places the bars on their sides or ends, you can use a cardboard box (or make your own out of wood) that is approximately 8 1/2" X 8" X 3 1/2" deep. This allows for 32 bars that are around 4 ounces each when using recipes based on a 12 ounce can of lye. Put a piece of plastic wrap, freezer paper or saran on the bottom of whichever mold you use cross or lengthwise, being sure it is long enough to hang off the sides and is carefully pressed against the bottom and sides of the pan with all the wrinkles smoothed out. This will make taking the soap out of the pan SO much easier! I can't believe it took so many years of sometimes struggling to get the stuff to "drop" out of the pan for me to think of trying this! :(I have gotten lazier the more soap I've made and now put two pieces of trimmed freezer paper perpendicular to each other and both hanging over the sides of the mold, where I tape them down. This allows a small amount of soap to escape into the corners of the box I use, but I don't have to take time to mitre corners. You can use one sheet if you mitre the corners, and be sure to put the coated side up (toward the raw soap). Note: If you pour into some sort of plastic mold other than food grade, you could have a problem with your soap becoming discolored after unmolding.

As long as you have out the plastic wrap, I'll pass on that some people put it on TOP of the soap also to prevent it from forming ash. You can release air bubbles by gently poking it with a needle. I have not yet done this myself, but I'm told that after the soap sets, it will peel off easily. You might have a few wrinkles left behind, but maybe the trade off will be worth it if you've had much trouble with ash forming on top of your soap. Some batches are terrible for this, but most are not too bad. I think I'd make sure the soap was a little thicker before placing the plastic...a bit beyond the pudding stage.

To remove the soap from the mold, lift it by the ends of the overhanging cotton (saran or freezer paper) lining. Cut into bars by wrapping the soap once with a fine wire or string (dental floss is good), crossing ends and pulling. Place soap so air can reach it, but avoid drafts and cold. Soap protected from drafts and cold lathers better. In 10-14 days it is ready for use. Actually, I would recommend aging it for a month before trying it...sometimes six weeks. Aging improves soap.

Note: Do not let soap freeze during the first two weeks. (Lately, I've often read the suggestion to put your molded soaps into the freezer for about an hour if they are stubborn about popping out of the molds...contradicts this warning.)

TEMPERATURE CHART (I really don't adhere to this anymore, but include it anyway)

Types of Fat	Temperature of Fats	Temp of Lye Solution
Sweet rancid fat	97 to 100 degrees F.	75 to 80 degrees F.
Sweet lard or other soft fats	80 to 85 degrees F.	70 to 75 degrees F.
Half lard and half tallow	100 to 110 degrees F.	80 to 85 degrees F.
All tallow	120 to 130 degrees F.	90 to 95 degrees F.
Vegetable Fats	100 to 110 degrees F.	90 to 95 degrees F.

Correct temperatures are extremely important for making the finest soap. Follow these temperatures closely. Use a dairy or floating thermometer.

In hot weather or in a hot room if the soap mixture remains greasy, set it in a pan of cold water and continue stirring until thick, when it is ready to pour. If temperatures are too low, lumps of soap will form and separation will occur. In that case, set the mixture in a pan of warm water and stir gently until it is of the right consistency, and all the lye is reincorporated.

Note: Avoid hardening of the mixture on the sides and bottom of the pan.
(End of old Pennwalt Information)

Compiler's Note: I mark lines for soap bars the back of the large slab of soap using a straight edge and knife and then either cut the bars with a thin-bladed sharp knife, if the soap is soft and smooth, or a piece of dental floss, pulled taught between your hands, if it's more brittle or mealy/crumblly. If cutting with floss, it helps a lot to have someone hold the slab of soap on edge while you make the first few cuts to separate the "rows" of soap bars. Then you can cut the long strips apart yourself by setting each piece on edge and cutting down from the top. It's a good idea to put something on the table like plastic or waxed paper wrap not just to protect the table, but to make it easier to pick up that large piece for cutting! You can lift one of the ends of the plastic to get your hand underneath. If your soap is smooth enough to cut with a knife (lucky you!) you can just leave it flat on the table where you marked it and carefully draw the knife from back to front, sighting on the lines that you scored. After separating the rows, you handle it like above, by setting each one on edge and cutting down on the lines to separate the individual bars. To test for brittleness before cutting I just make a tiny cut toward the edge on one of the lines and see how the soap responds. Sometimes this is not necessary, because the soap came out of the pan in pieces and it's obvious that it's BRITTLE! :-). Since I've been using a stick blender to mix the soap, it has always come out pretty smooth and easy to cut with a knife.

In the case of a deeper mold, like the box I've been using lately: After removing the piece of soap from the box, make light scored lines (using the ruler to make dividing marks and then as a straight edge to get straight lines), dividing it into four rows and then making bar lines across all, approximately 1 inch apart...a total of 32 bars from the box I'm using (roughly 8" X 8" x 4"...I rounded off...mine is a bit wider and shallower). Once I've used a ruler and knife tip to draw the lines, I set the piece on edge and cut the four rows apart. Then I take each row and turn it sideways (with this mold that works better) and cut each of the bars off, sighting on the line I drew, which is now on the front and looking at my knife position from above to make sure it looks straight and even before pushing it down. They are not perfectly square and usually need a little trimming on the top side to even out, but aren't too bad.

To cure, I usually set the bars on edge in rows in the litter pan the soap had been poured into since racks take up a lot of space. If I've poured some of the soap into molds (which I always do when using the litter pan...as many as I can without the bars from the pan being too shallow...usually about 16 molded soaps of the sizes that I have) I put them on racks to dry after unmolding since you can't really set them on edge. If they are stubborn about coming out after 24 hours, just let them set another day or two and they should pop out without too much difficulty.

*After another day, I sit in a comfortable spot with the soap bars, a potato peeler and a bowl and bevel the edges of each bar. Some people prefer to use a cheese slicer instead of a potato peeler. It would certainly do a smoother job on the large flat face of the bars (for anyone else but me...tried it and went back to the peeler!). At this time you can even out rough spots on the sides or shave off *ash, which some batches will develop more than others. (If it's going to, it generally forms on the surfaces that have contact with air while the soap is setting.) The shavings can be sprinkled lightly with water and shaped into soap balls after mixing and kneading the soap. The bars that have been beveled are left out in open air to cure and I turn them all each day until they have finished "drying" out and hardening. After about two to three weeks, they can be stored in ziploc bags (to hold in some of the smell).*

**ASH - It has been suggested that using some beeswax in the recipe in place of some of the fat will prevent ash from forming, or that soaps made with beeswax will not ash. I have not tried this yet, but if you would like to do it, I would suggest substituting 4 ounces of beeswax for 2 ounces of a fat in the original recipe. Some people have success with placing Saran Wrap on top of the soap after it's poured. Release air bubbles by gently poking it with a needle. I have not yet done this, but I'm told that after the soap sets for 24 hours, the plastic will peel off easily. If you use some sort of plastic other than food grade, you could have a problem with your soap becoming discolored after unmolding.*

A third suggestion I recently read about on a soaplist was to put your freshly poured soap mold into the oven with a pan of water and the light left on (NO heat...only the light). Be sure to put a sign on the door so that no one (including yourself) turns it on! The water provides humidity while the light provides gentle heat. No need for blankets and such this way.

When Disaster Strikes... SEPARATION!

Sometimes, even when you've been careful, you will have a severe problem in the soap and it will separate. This could be from incorrect temperatures, incomplete mixing, too much honey... who knows? :-). Separation is usually indicated when there is liquid at the bottom and greasy soap on top, or substantial pockets of liquid in the soap and a strong odor. If you have tiny little pockets of lye water in the soap (hard to see but leaving the knife damp when cutting), these will absorb with curing and the soap will be okay. I don't remelt it in that case. But if you have a severe separation, you will need to "reclaim" your soap.

The easiest thing is to shave it up, if it is partially firm and put into a large stainless roaster pan. A small amount of water may be added if necessary, but I would wait to see if you need it as you go along. If the soap is grainy, a potato masher does a good job of breaking it up even further to hasten melting. Place this *covered* pan in a slow oven... around 200-225 degrees F. is good... and every so often stir and mush it around with a large spoon. Within the space of an hour or two, it should be completely jelly like and blended. Try not to whip in lots of air when you stir unless you want your soap to float! When this is well blended, you can turn it out into your mold and let it cool. You might have to smooth it out... it will probably be rather thick and pasty... unlike how it was the first time around! After it cools and sets you can cut it right away. **Never throw away a batch of soap...** it can always be fixed!

About Handling Lye

Many people are put off by the lye that is used in homemade soap. As far as the mildness of the finished product... if you use proper measurements and age your soap before use, it will be milder than anything you buy over the counter. Before lye has been combined with fats to make soap (a process that is completed during the curing period), it is caustic and potentially dangerous. You should always take care when handling it. Mix your solution in a well ventilated area so you don't breathe the fumes. When your lye is stirred into cold water, it heats up very quickly and throws off fumes for about a minute or two. After that, they are gone. These are not to be breathed and your body will do its very best to keep you from doing that! :-). Never leave lye solution unattended or in a container that could be confused for plain water and consumed by an unknowing party. Take care not to spill small crystals anywhere... a pet or small child could suffer seriously from ingesting the pure crystal form... this is the most dangerous thing. Properly dispose of containers.. I usually put the cap back on the can before tossing it into the garbage. If you splash lye solution or raw soap on yourself accidently, rinse it immediately... do not allow to stay on the skin. Prolonged exposure is what can cause a chemical burn. You will usually know when you get anything on yourself... it will burn and feel irritating. Attend to it immediately. Another good idea is to have some vinegar or lemon juice handy in the case of a splatter. Putting some of this on the spot will neutralize the lye solution. Some people use goggles and rubber gloves as a protection when they mix lye. This is often recommended. I have to be honest in saying, I've never done that... but I'm extremely mindful when doing the lye stages of soapmaking. In the twenty years I've been making soap... there have been no major misfortunes. Just use good sense. Then enjoy your soap!

Some Other Animal Fats Recipes:

Oatmeal and Honey Soap (Kathy Miller)

32 oz. cold water (4 cups)
12 oz. lye crystals
2 oz. beeswax (melt with fats)
4 pounds lard (64 oz.)
12 oz. olive oil
8 oz. coconut oil
4 oz. cocoa butter
Fats and lye solution between 95-100 degrees, the lye a bit cooler.

Add at trace:

1/4 cup honey (I confess, I found out at the last minute, I was short!)
1-2 T. bitter almond fragrance oil (you might prefer to use some cinnamon oil and/or ground cinnamon, or clove oil) Do not use bitter almond essential oil... it will mutate in the soap and smell rancid after cure! :-P
1 cup pulverized (fine) oatmeal or rolled oats - measure AFTER pulverizing

The oats can be pulverized with the blender. If you have one of those small jars that come with your blender, this works especially well for blending oatmeal and herbs for soapmaking. This soap has a gentle wholesome smell after curing and a nice scrubby quality for your face. There was a thin whitish layer on top that was hard...like a glaze almost. Might be from the beeswax? If you use cinnamon oil to scent this soap, don't worry if it smells strange for a couple of weeks. Cinnamon is notorious for this and will cure out just fine.

Milk and Honey Soap (Rachael Levitan from Port Angeles)

Rachael: I made this a couple of days ago and it's looking and smelling very nice. It's kind of glossy, firm, and smells like warmed milk and honey, with cloves. In fact, it looks like a winner, so I thought I'd share it. It's not fancy or anything, or expensive either... and it's not vegan but it is only eo's. (I almost sound like im apologizing, huh?) I'd almost forgotten how good cloves and honey can smell!

1 can shortening (3#)
14 oz. jar coconut oil
11 oz. of one or any combination of the following: soybean, olive, canola, corn, peanut, or sunflower oil
16 oz. package of lard
12 oz. can of concentrated homo/goat milk (evaporated cow's milk will work also)
1/2 cup honey
1 oz. clove essential oil (I confessed to Rachael...I'd probably go with bitter almond FO :-)
16 oz. water (fluid measure)
12 oz. can of lye
Temps 120 oils and room temp lye water.

Get the lye into the water (in two or more rounds cooling between if you feel it necessary) and set aside way before you do the rest. Melt honey into oils, heat and mix well. Cool lye solution to room temperature. Add lye slowly, really slowly. Add clove eo at a light trace, and keep mixing (by hand here). Add concentrated milk at medium-full trace. Mix well and **don't** use a stick blender.

This is a nice recipe using a frying shortening that I purchased at Cash and Carry (tallow and cottonseed mix) Makes a nice hard bar of soap that is long lasting.

Soap with Beef Shortening - Extra Coconut (Kathy Miller)

45 oz. beef shortening (tallow/cottonseed mix) OR lard
20 oz. olive oil
20 oz. coconut oil
12 oz. lye crystals
30-32 oz. cold water

Temps around 115 degrees.

If you have questions in the future, you can email me at: kathy@millerssoap.com.