

Learn How to Make Natural Soap!

— with love from Gentle Living Shop



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Soapmaking is a science and an art. Here, we will share with you what we know about making cold-process soap. Hopefully this will help you begin your own journey of creating natural soaps!

We will first start by introducing you to the **basics of soapmaking**. Secondly, we will teach you how to **calculate and create your own recipes** to successfully make your first batch. Then, we will provide a **detailed soapmaking process** for reference. And lastly, you will get a **list of tools and materials** you need and very importantly -- **safety gear** to have on hand.

The end of the document contains a few of **our own recipes for inspiration**, a non exhaustive **list of websites** mentioned in the body of the document to help you further your learning and a **glossary of foreign terms** and their definitions. Enjoy!

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If you have any questions, you can email us at gentlelivingshop@protonmail.com -- we will do our best to get back to you!



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Soapmaking Basics

Science of Soapmaking

Soap is made by a process of combining oils with an alkali, which is called **saponification (SAP)**. The two different alkalis used to make soap are called lye -- **sodium hydroxide (NaOH)** and **potassium hydroxide (KOH)**. NaOH creates solid bars of soap and KOH creates liquid soap.

Saponification

During saponification, lye will turn a specific amount of oils into soap. Therefore, **the amount of lye used in making a batch of soap is precise** because too much lye will make soap irritating and not enough lye will result in unsaponified oils, which in large amounts tend to go rancid in storage. The amount of lye needed is calculated using the oil's saponification **value (SAP value)**. Each type and brand of oil has its own SAP range, which is then used to calculate into **two SAP values respectively for NaOH and KOH.**

Superfat

As excess lye is not desirable in a soap, **it is vital to have superfat in a recipe.** It is an **extra amount of oils added to the recipe without changing the amount of lye.** This is also known as a **lye discount** -- using less lye in a recipe where amounts of oils stay the same. Having superfat in the recipe will almost always **guarantee a non-irritating soap.** What's more, **increasing superfat in a recipe will make soap more moisturising whereas decreasing superfat values will make soap more cleansing.**

Read on Page 6 about how to calculate and work with SAP values and superfat.

Water in Soapmaking

Water is a vital part of a soap recipe as lye needs to be dissolved in water before use. **To completely dissolve lye crystals, it is a must to use the same amount of water in weight or more.** The type of water used will also affect the quality of soap.

Hard Water

Hard water is water with high levels of dissolved minerals; an example would be ground water. The dissolved minerals result in a soap that is hard to lather and leaves chalky residues (soap scum) in sinks. Minerals in hard water also shorten the lifespan of soaps making them go rancid quicker.

Soft Water

Soft water such as rain water has low levels of dissolved minerals. It is more suitable for soapmaking as soaps will lather well. **A simple way to know whether you have hard tap water is by checking for any white chalky residues on the kettle or water faucets.** **Distilled water is often used instead when tap water is hard.** **Chelators such as citric acid can also be used to counter hard water.** They bind with metals in water to suppress their activities hence reducing soap scum and help to lengthen the shelf life of soaps made with hard water.

Read more on water in soapmaking: <https://inmysoappot.co.nz/2019/10/05/lets-talk-about-water/>

Methods of Soapmaking

Cold Process

Cold process soapmaking does not involve any extra heat added in the process. Heat is still generated during saponification. This method is perfect for **creating intricate patterns** as the batter can be poured into moulds at various viscosities and textures. It usually takes **under an hour to make** but the finished cold process soap **requires 4+ weeks of curing to allow its alkalinity to drop and soap to harden**.

Hot Process

Hot process soapmaking involves '**cooking**' the soap on low heat. The heat speeds up the saponification process to **produce a saponified thick batter in an hour or two if using a stick blender**. Because of its thickness when poured into moulds, hot process soap has a **more rustic look**. It **can be used immediately** after setting, but **a week of curing will help to harden it up and last longer**. This method produces **softer soaps** compared to cold process. It tends to **dissolve faster** when in contact with water.

Melt and Pour

Melt and pour soaps are made by **melting pre-made soap blocks** and adding fragrances and colours then letting it set. It is the only method that **does not involve lye** hence it is **suitable as an activity to do with children**.

Stages of Soap

What happens during the soapmaking process? After you combine oils with lye that has been dissolved in water, here are the stages it goes through to become soap as we know it:

Stage 1 -- Emulsification

Emulsification is when oils are well-blended with lye solution where you won't be able to see oil trails when stirring. There should be no more free oils floating atop the surface. Opacity and colour of batter is even and the same throughout. This is the earliest stage where you can pour the batter into moulds without oil and lye separating.

Stage 2 -- Trace

The degree of trace is more of a spectrum than distinct stages. It is separated into three main parts -- light, medium and thick. Different soapers have their own version of trace stages. Develop your own 'sense of trace' to help you work better according to what pattern you want to create and when to add particular additives into the soap batter.

Light trace: when you lift your blending tool up, soap dripping down from tool should draw a thin trail on top of the batter but immediately disappears.

Medium Trace: when you lift your blending tool up, soap dripping down from tool should draw a trail that is more raised on top of the batter and does not immediately disappear. You can tap the container to make the soap trail disappear.

Thick trace: pudding-like texture, you are able to scoop up batter in big quantities and it becomes more difficult to even out the surface.

Note on false trace and seizing:

- ❖ False trace is when soap batter appears to be thick but it has not yet reached emulsification. This is due to hard oils solidifying when in contact with cold lye solution.
- ❖ Seizing is when soap goes beyond thick trace to a point where it is difficult to transfer into moulds. It is possible to soften seized soap with heat but it would be not viable to do designs with it.

Stage 3 -- Gel Phase

This stage happens after soap has been poured into moulds for cold-process whereas hot-process soaps go through gel phase during making. During this stage, soap heats up to more than 80°C due to saponification. The final soap will become more translucent and have darkened colours as a result of gel phase. In cold-process soap:

- ❖ To aid this phase in taking place: insulate soap mould with towels.
- ❖ To avoid this phase: place soap mould in the fridge for a few hours.

Be aware! Because the temperatures get so high during saponification, soaps with certain ingredients have a tendency to 'volcano'. So it is important to choose whether to insulate/cool down soaps intently.

For visual references on different stages of soap: https://youtu.be/o_VCYiDmOJs & <http://www.bathalchemylab.com/2016/03/knowning-your-trace-in-soap.html>

Modern vs Traditional Soapmaking

Many tutorials of cold and hot process soapmaking you find will involve using a stick blender. But soaps have been around for thousands of years, it is only recently when people started to incorporate modern technologies in the making process. **Traditional soapmaking uses the hot-process and cold-process. The main difference is that soapers back in the day would stir the batter for hours (with breaks in between!) until emulsion. Stick blender is therefore not a necessity in soapmaking -- only a tool to save you time.** So if you are just starting out and do not want to invest in a stick blender, you can dedicate a few hours for making a batch of soap and really see the whole process of soap forming in real-time. There is a beauty in hand stirring soap that stick blenders cannot match!

Traditional Soapmaking: <https://korenelbig.com/homemade-soap-traditional-castile/>

An Important Note on Lye Safety

Lye is corrosive, meaning it can cause chemical burns and severe injuries if handled incorrectly. It is vital that you take the following safety procedures when handling lye:

- ★ Prevent eye and skin contact
- ★ Prevent inhalation of fumes
- ★ Wash contaminated skin and remove contaminated clothes immediately
- ★ ALWAYS add lye to water
- ★ Do not operate near children or pets
- ★ Always store lye in an appropriate and sealed container in a safe place
- ★ Lye is a hazardous waste, do not pour lye down the drain or throw it in the rubbish bin.

In the event of contact...

- ★ **Eyes:** Immediately wash the eyes. Get medical attention immediately.
- ★ **Skin:** Immediately flush the skin with water (NOT vinegar). Seek medical attention if necessary.
- ★ **Difficulty breathing:** Get respiratory support.
- ★ **Ingestion:** Rinse mouth. Do NOT induce vomiting. Drink plenty of water. Get medical attention immediately.

Source: www.soapguild.org/how-to/make-soap/lye-safety.php

Read more about proper tools for lye and safe handling on Page 11.

Creating Your Own Recipe

A little lye goes a long way! Any error in the amount of lye you use will either make the soap too alkaline or stop it from setting properly. Therefore, **it is highly recommended that you make your own recipes or to at least check over other people's recipes before using them.** In this section, we will teach you the basics of how to create safe recipes and recommend some online tools to make that process easier.

Saponification Values

Each oil and butter has a SAP range that can be calculated into two different SAP values -- one for NaOH and one for KOH. There are many charts of SAP values you can find online, for example, www.fromnaturewithlove.com/resources/sapon.asp.

Please note that **SAP range may be different for the same oil if from different brands. The best practise is to acquire the accurate SAP range/value from the manufacturer.** With the SAP range, you can then calculate the SAP values like so:

Solid Soap (NaOH) SAP value (round up to 0.001 decimal point) = average value of SAP range ÷ 1402.50

Liquid soap (KOH) SAP value (round up to 0.001 decimal point) = average value of SAP range ÷ 1000

With the SAP value in hand, you can then use the following formula to **calculate exactly how much lye is needed to saponify the amount of oils in the recipe:**

oil weight (grams) x SAP value = lye needed (grams) (round to 0.001 decimal point)

Oils and Butters

Which Oil & Butter?

Choosing which oil and butter you use to make soap will drastically change the properties of the bar in its hardness, lather, cleansing power, conditioning ability and shelf life. This is because each oil and butter has its own fatty acid profile. There are many formulas out there and each soaper has their own preferences. Read more about properties of oils in soapmaking: www.lovinsoap.com/oils-chart/

For your first batch, we recommend making a single oil soap. This is an uncomplicated way to start your soapmaking journey and you do not have to invest in many different oils. We think **100% coconut oil soap (with 20% superfat) and 100% olive oil soap (or also known as castile soap) are two good starting points.** Examples of single oil soaps: olive oil <https://youtu.be/MzDZts9hjKw> & coconut oil https://m.youtube.com/watch?v=5uXbEPy_Xao

Superfat = Lye Discount

Adding superfat in your recipe is vital in guaranteeing a safe soap. For ease of calculation, **superfat is included in recipes as a lye discount.** Meaning, instead of increasing the amount of oils you use, you **decrease the amount of lye you use:**

5% superfat = 100% of lye - 5% lye = 95% lye (round to 0.001 decimal point)

Superfat/lye discount is also a **great way to fine-tune the properties you want in a soap**:

less superfat = a more cleansing soap, more superfat = a more moisturising soap

The default superfat value is 5%, but the **optimal value will depend on the recipe you use and personal preferences**. For example, a **100% coconut oil soap is very cleansing so a 20% superfat is often used**. You can also **experiment with adding different oils as superfat, especially oils that make up for the shortcomings of the recipe**. For instance, **Shea butter (very moisturising) as superfatting oil in a coconut oil soap**.

Water

To thoroughly dissolve all lye crystals, you must use the same amount or more water than lye in weight. But how much more water you add to the recipe is for you to decide. For cold-process soaps, the amount of water used ranges from 3 water : 1 lye to 1 water : 1 lye.

There is the concept of 'full water' in soapmaking and any recipes using less than full water are called having a 'water discount'. However, this concept can be inaccurate and inconsistent. It is best to calculate water in your recipes using the water:lye ratio method. Read more: <https://classicbells.com/soap/waterInSoap.asp>.

Finding the perfect water amount in your recipe will take time. You also have to take into account the environment you are in. We make soaps in a hot and humid climate, when we first made 100% coconut oil soap with 20% superfat, a 2:1 water:NaOH ratio resulted in sticky soaps that are difficult to un mould and a 1.5:1 ratio resulted in hard non-sticky bars that came out of the mould in 24 hours after pouring. This is because less water in a recipe results in harder bars of soap with less moisture, which compensated for the high humidity. **If you are having problems with sticky or brittle soaps, adjusting the water:lye ratio may solve your problem**.

Note: water is a carrier of heat, high water content in soap may result in bubbling or even 'volcano'. Please proceed with care.

Chelator - Citric acid (optional)

Citric acid is an optional but good addition in a soap recipe as it helps counter hard water issues such as soap scum and it increase shelf life of soaps:

1-2% of citric acid of total oil weight is a good amount to add

(dissolve citric acid in water equal to its weight to add to lye solution)

As an acid, it will neutralise some of the lye in a recipe so we will need to add more lye to balance that out:

Lye for citric acid (grams) = Citric acid weight in grams X 0.624

Total lye needed in a recipe (grams) = Lye for citric acid + Lye for saponification of oil(s)

Masterbatching Lye (optional but recommended to frequent soapers)

To reduce the times you come into contact with lye crystals (therefore fumes) and to reduce overall waiting time for lye to cool down during soaping, you can prepare lye and water solution in advance -- called masterbatching. Please read on Page 11 for containers safe for lye storage.

Ratio of water:lye for masterbatch depends on your use case. We prefer to soap at 1.5:1 water:NaOH ratio and we do not add other liquids other than water, therefore our masterbatch ratio is 1.5:1. When we make soap, no extra water is added, the total weight of masterbatch solution we use is:

Lye (with discount/superfat) + water (@ 1.5:1 water:lye ratio) = masterbatch solution needed

If you plan on adding other liquids or are unsure of the exact water:lye ratio to use when soaping, you can make a masterbatch at 1:1 ratio. Any liquid or water to add can always be added in later but it would not be wise to add more lye to an already made masterbatch as it may have issues dissolving properly.

Note: citric acid does not dissolve well in lye water solution so always dissolve citric acid in water (equal to its weight) if you use masterbatch solution.

Natural Additives (optional)

You can include some additives in your recipe to give soaps colour and fragrance. They are easily added when soap reaches emulsion. Take some batter out into a small container and add the additive then whisk to get rid of lumps.

Natural Additive	How much to add
Turmeric adds colour and scent	from 0.5% of total oil weight for light brown colour to 5% of total oil weight or more for a dark brown colour or anywhere in between. Picture of soap with turmeric @ 1.5% on Page 13.
Clays adds colour (red, green, white, pink...), provides exfoliating properties and more	around 1-2% of total oil weight depending on personal desires
Activated Charcoal adds a grey to deep black colour	as little as 0.05% of total oil weight will give grey colour, picture of 0.2% on Page 13
Infused Oil infuse spices and herbs in oil for colour and scents	depends on personal preferences

And Many More!

Colouring soap naturally (extensive guide): <https://lovelygreens.com/how-to-naturally-color-handmade-soap/>

Visual Guide to using clay in soapmaking:

https://naturalbeautyworkshop.com/my_weblog/2018/06/using-cosmetic-clays-in-cold-process-soap.html

Essential Oil

Essential oils are a natural way to give fragrances to your soaps. It is an art in itself to create blends of oils with deep complexity and brings on various moods and atmospheres. It is important to note that essential oils are concentrated and very powerful. **There is a safety aspect to how much to use when making soap for a non-irritating product.** Please refer to the following websites and conduct your own research:

Essential Oil Chart - <https://lovelygreens.com/make-soap-with-essential-oils/>

Essential Oil Calculator: <https://www.eocalc.com/enter-your-own-blend/>

Note on additives: additives high in sugar such as fruit purees tend to increase the soap's temperature during saponification and lead to 'volcanoes'. Please proceed with care!

Sample Soap Recipe Chart

Ingredients	Quantity (gram)	Lye needed	Notes
Oil/butter 1		Oil 1 weight x SAP value	SAP Value
Oil/butter 2		Oil 2 weight x SAP value	SAP Value
Additive 1			% of total oil weight
Additive 2			% of total oil weight
Lye (with discount)			Lye discount/superfat %
Water			Water:lye ratio
*Masterbatch solution			*Optional
Total batch weight	oils + butters + additives + lye + water		

This sample chart has a good format you can use for when using a spreadsheet to create recipes.

Download the sample spreadsheet here:

https://gentlelivingshop.org/resources/downloads/soap-recipe-sample-chart_gentlelivingshop.org.ods

(it is in the [OpenDocument](#) Spreadsheet format – a **free and open source** format that can be opened with Microsoft Excel and Google Sheets or **consider using free software like [LibreOffice](#) on PC or [Collabora Office](#) on mobile**)

Total batch weight can be helpful in figuring out how big of a mould you need. In our experience:

Weight of water to fill mould x 0.7 = weight of oils & butters needed in grams

Weight of water to fill mould ÷ 0.9 = estimated total batch weight required for mould in grams

Online Tools to Help with Recipe Creation

An online lye calculator can help you double check your maths, we like to use:
<https://www.soapmakingfriend.com/soap-making-recipe-builder-lye-calculator/>

The following are two video playlists about soapmaking that may be of help to you:

Playlist of introduction to soapmaking by Elly's Everyday Soap Making

https://youtube.com/playlist?list=PLMq0_yjUn5OuXPpRKWhZuhC__2vRChyfF

Playlist of How to & why (techniques and tips) of soapmaking by I Dream In Soap

<https://youtube.com/playlist?list=PLLJ9LYi4Ay2yOSerBAwL0goxh9hOqeLZH>

Various pouring techniques

You can be very creative in soapmaking! There are many techniques to create different patterns, to name a few: Taiwan Swirls, In the Pot Swirl, Drop Swirl, hanger swirl, Ombre, Kaleidoscope, Confetti (using soap scraps)...

Here is a photo of a swirl we did (recipe is on Page 14):



Amazing soapmaking techniques by Oh 我的雙牛寶貝兒/Yvonne: <https://www.youtube.com/channel/UCw3VIYGcB1ly4KAYpA3tuBA>

Inspirational soap making techniques by Holly's Soapmaking - Kapia Mera: <https://www.youtube.com/channel/UC4UJQaFweq6MFpSFVPgtXg>

Safety Gear, Tools & Ingredients

★ Safety Gear (VERY IMPORTANT!)


- o safety glasses
- o rubber gloves
- o long sleeves and trousers & closed toe shoes
- o safety mask

To avoid cross-contamination, please dedicate all tools for only to make soap, do not mix them with eating utensils and kitchen tools!

Tools

- **lye-safe containers** (read more: <https://classicbells.com/soap/lyeStorage.asp>)

Lye may melt/shatter or react badly with some materials. For example, lye's fluctuation in temperature may shatter glass containers and it will react with aluminium containers to give off toxic fumes. **Please only use the following materials to handle lye:**

- o stainless steel
- o polypropylene plastic 
- o high-density polyethylene

plastic 

- **containers for other ingredients**
 - o glass container for essential oils as they are powerful enough to brake down plastic
- **Stirring Utensils**
 - o (*nothing wooden as lye eats it up and leaves splinters in your soap)
 - o silicone spatula
- **Mixing Tools**
 - o stick blender (preferably stainless steel) is recommended for quickly achieving emulsion and trace

- o whisk (for mixing additives and for hand-stirred soap)

- **Measuring Tools**

- o digital scale (with 0.01g precision for lye)
- o measuring spoons

- **Soap Moulds**

- o silicone
- o wooden mould with liner
- o use your imagination! (soy milk carton, PVC pipe, Pringles can etc.)

Soap Ingredients

- NaOH - make sure you know its purity, preferably 99%
- oil(s) and/or butters
- water, never use hot water! (read about hard/soft water on Page 2)
- optional additives
 - o colourants (clays, natural mica, infused oil)
 - o fragrances (essential oils)
 - o others (spices, clays, dried plants; use your imagination!)
 - o we do not recommend artificial additives (fragrance oils, artificial dyes etc.)

Step-By-Step Cold Process Soapmaking

1. Do **research** and make up your own **recipe**, make sure math is correct
2. **Prepare your workstation**, gather all tools and ingredients AND **SAFETY GEAR**. Make sure you are in a safe environment before proceeding. (lye is corrosive so please make sure that no children or pets are near by)
3. Put on your safety gear!
4. **In a well-ventilated area, measure out lye precisely** with a scale (OR skip Step 4-6 if using masterbatch solution)
5. **Slowly** pour lye into water. **NEVER pour water onto lye** as water will boil and splash explosively! Also, **take care to avoid inhaling fumes**.
6. **Let lye solution cool** to room or desired temperature
7. **Measure** out the rest of ingredients accurately with a scale
8. **Prepare** those ingredients (melting & combine oils & butters etc.)
9. Pour lye into oil(s) down shaft of blender/spatula to avoid splashing
10. First, mix by hand and then,
11. Use a **stick blender to mix soap batter by pulsing in short intervals** (take care to remove air trapped in stick blender head, also called 'burping' the blender) OR **hand stir with whisk in intervals of few minutes of stirring and few minutes of rest**
12. **Stir until batter reaches emulsion** -- stick blending takes less than 5 minutes, hand-stirring takes 20 minutes to more than an hour depending on batch size
13. Optional: **add additives** (fragrance, colour etc.) Take out a small portion of batter and combine additive thoroughly with no clumps and then mix into main container
14. When batter reaches desired consistency, **pour into moulds** (optional: create patterns and swirls with various techniques, read on page 10)
15. **Cover top of the mould** to keep away dust and insects, **choose whether or not to insulate** with towels to encourage gel phase
16. Let set for 12-24 hours or more
17. **Un-mould hardened soap, inspect & cut!** You may need to wear gloves as the soap can still be very alkaline.
18. Place on racks to **cure for 4-6 weeks** in a cool dry place

Cleaning Up

Remember to keep your protective gear on as there is still active lye in your soap batter!

- ★ Method 1: scrape your containers empty with a spatula and clean tools with a towel. Put any soap collected into an extra mould. Wash everything with warm water and mild soap. Wait 24 hours for saponification to be completed before washing the towels to prevent any active lye going down the drain.
- ★ Method 2 (recommended): leave all your tools in a safe place for at least 24 hours to let everything saponify and then do the clean up, you won't need any extra soap!

Other Ways to Make Soap

Hot process soapmaking: <https://www.youtube.com/watch?v=scokYOkLcQo&t=514>

Read our guide on liquid soapmaking: <https://gentlelivingshop.org/liquid-soap-tutorial.html> (our video on cold process liquid soap: <https://youtu.be/4ZXG9WBK0yA>)

See Page 14 for our liquid soap recipe using potassium hydroxide.

A Few of Our Recipes for Inspiration

We do not provide precise measurements for each ingredient because different oils you use may have different SAP values, lye purity may be different, and most importantly you will benefit from calculating your own recipes. We make our soaps in a humid environment at around 26°C. The soaps are minimally insulated in silicone moulds and they all went through gel phase (except the liquid soap). We hope they will be of help in your own recipe creations!

100% Coconut Oil Household Soap, unscented

This coconut oil soap has a low superfat, as it is designed to be a very hard and cleansing soap. It is perfect to use when washing dishes with a loofah; grate into small pieces to wash laundry or clean surfaces with a wet cloth.

- Virgin coconut oil
- Sodium hydroxide @ 5% discount (superfat)
- Citric acid @ 1% of total oil weight
- Water @ 1.5:1 water:NaOH

Tip: you may have to unmould and cut this soap within 12 hours or increase superfat %.

Activated Charcoal Soap with Essential Oils

- Virgin coconut oil
- Activated charcoal @ 0.2% of total oil weight
- Rosemary essential oil @ 0.5% of total oil weight
- Tangerine essential oil @ 0.5% of total oil weight
- Citric acid @ 1% of total oil weight
- Sodium hydroxide @ 20% discount (superfat)
- Water @ 1.5:1 water:NaOH



Turmeric Red Clay Soap with Shea Butter

- Virgin coconut oil
- Shea butter @ 10% of coconut oil weight
- Moroccan red clay @ 1% of total oil weight
- Clove essential oil @ 0.5% of total oil weight
- Turmeric @ 1.5% of total oil weight
- Citric acid @ 1% of total oil weight
- Sodium hydroxide @ 20% discount (superfat)
- Water @ 1.5:1 water:NaOH



Gentle Kaolin Clay Soap with Shea Butter, unscented

- (Organic) Virgin coconut oil
- (Organic) Shea Butter @ 10% of coconut oil
- White kaolin clay @ 1% of total oil weight
- Citric acid @ 1% of total oil weight
- Sodium hydroxide @ 20% discount (superfat)
- Water @ 1.5:1 water:NaOH

Red & White Clay Sea Salt Soap

- Virgin coconut oil
- Shea butter @ 10% of coconut oil weight
- Moroccan red clay @ 2% of total oil weight
- White kaolin clay @ 2% of total oil weight
- Essential oils of your choice
- Organic sea salt @ 20% of total oil weight
- Citric acid @ 1% of total oil weight
- Sodium hydroxide @ 20% discount (superfat)
- Water @ 1.5:1 water:NaOH



Tip: in humid climates, this soap will 'sweat' if left out. Keep it in airtight containers to avoid that.

Household Liquid Soap Paste

Read our tutorial on liquid soap: <https://gentlelivingshop.org/liquid-soap-tutorial.html>

Liquid soap paste can be dissolved in water -- 1:1 for dishes, 1:1.5 for gentle laundry soap etc.

- Virgin coconut oil
- Water @ 3:1 water:Na
- Potassium hydroxide (90% purity) @ 1% discount (superfat)

Summary of Links & Resources

Amazing soapmaking techniques: <https://www.youtube.com/channel/UCw3VIYGcB1ly4KAYpA3tuBA> & <https://www.youtube.com/channel/UC4UJQaFweg6MFpSFVPqtXg>

Cold Process liquid soap: <https://youtu.be/4ZXG9WBK0yA>

Colouring soap naturally (extensive guide): <https://lovelygreens.com/how-to-naturally-color-handmade-soap/>

Containers for Lye: <https://classicbells.com/soap/lyeStorage.asp>

Essential Oil Calculator: <https://www.eocalc.com/enter-your-own-blend/>

Essential Oil Chart: <https://lovelygreens.com/make-soap-with-essential-oils/>

Hot process soapmaking: <https://www.youtube.com/watch?v=scokYOkLcQo&t=514>

Liquid Soap Tutorial: <https://gentlelivingshop.org/liquid-soap-tutorial.html>

Lye Calculator: <https://www.soapmakingfriend.com/soap-making-recipe-builder-lye-calculator/>

Lye Safety: <https://www.soapguild.org/how-to/make-soap/lye-safety.php>

Oil properties: www.lovinsoap.com/oils-chart/

Playlist of How to & why (techniques and tips) of soapmaking by I Dream In Soap:

<https://youtube.com/playlist?list=PLLJ9LYi4Ay2yOSerBAwL0qoxh9hOqeLZH>

Playlist of introduction to soapmaking by Elly's Everyday Soap Making: https://youtube.com/playlist?list=PLMq0_yjUn5OuXPsrKWhZuhC__2vRChyf

Saponification Values: <https://www.fromnaturewithlove.com/resources/sapon.asp>

Single oil soaps: olive oil <https://youtu.be/MzDZts9hjKw> & coconut oil https://m.youtube.com/watch?v=5uXbEPy_Xao

Stages of soap (emulsification and trace): https://youtu.be/o_VCYiDmOJs & <http://www.bathalchemylab.com/2016/03/knowing-your-trace-in-soap.html>

Traditional Soapmaking: <https://korenhelbig.com/homemade-soap-traditional-castile/>

Visual Guide to using clay in soapmaking: https://naturalbeautyworkshop.com/my_weblog/2018/06/using-cosmetic-clays-in-cold-process-soap.html

Water in Soapmaking: <https://inmysoappot.co.nz/2019/10/05/lets-talk-about-water/> & <https://classicbells.com/soap/waterInSoap.asp>

Glossary of Terms (sources: merriam-webster.com & en.wiktionary.org)

Alkaline: having a pH of 7 or more

Caustic: see **Corrosive**

Caustic soda: see **sodium hydroxide**

Chelator: an agent that binds with metals to suppress their activities

Corrosive: being able to corrode, meaning can weaken or wear away gradually by chemical action

Hard oil: an oil or butter that is semi-solid at room temperature (around 20°C), such as coconut oil, shea butter, and palm oil

Hard water: water with a high content of dissolved minerals, especially calcium, which reduces lathering in soap

Lye: an alkaline substance used to make soap, i.e. sodium hydroxide or potassium hydroxide

Lye Discount: using less lye in a recipe where amounts of oils stay the same. Also known as **superfat**.

Potassium hydroxide: a caustic alkali used to make liquid soap, bleach and etc.

Saponification (SAP): the process in which fatty substances, through combination with an alkali, form soap

Soap scum: a chalky residue buildup on sink surfaces due to minerals in hard water reacting with soap

Sodium hydroxide: a caustic alkali used to make solid soap, paper and etc., also known as caustic soda

Soft water: water with low levels of dissolved minerals, making it easier to lather with soap

Superfat or Superfating: using extra oil in soap recipe with unchanged amount of lye in order to result in unsaponified oils. Also known as **lye discount**.

♥Thank you for reading and happy soaping!😊