



The Methodology of Making Soap



Ingredients for the Soap



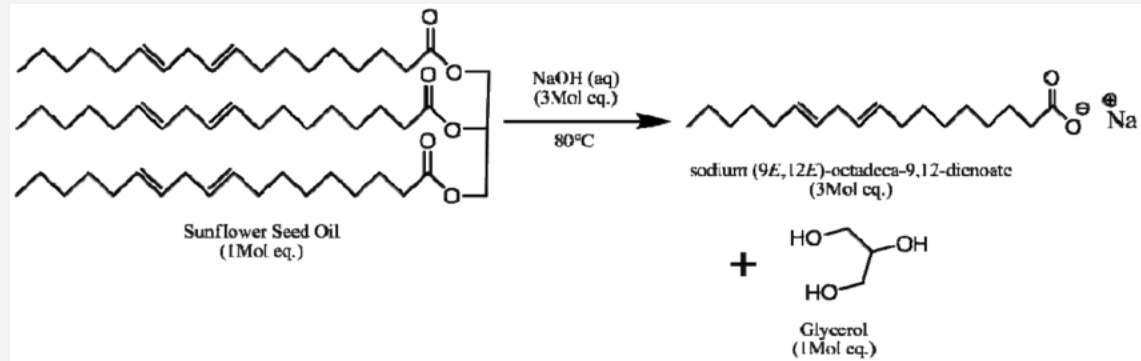
Soap pricing



Soap packaging



The Methodology of Making Soap



- The reaction involves reacting triglycerides with lye solution.
- Lye solution can be made by mixing water with Potassium Hydroxide or Sodium Hydroxide.
- It produces glycerol and fatty acid salts which can be called soap.



The Methodology of Making Soap



Hot Process

- Oils are heated, and lye reaction is exothermic.
- Both mixtures are placed into the same container with heat added.
- The heat in this process speeds up the saponification process.



Cold Process

- Oils are heated, and lye reaction is exothermic.
- Both mixtures are brought to the same temperature and mixed until the trace is reached.
- The soap is then placed into a mold and let to set and solidify.

Mixture of hot process and cold process has been selected for the soap making process.

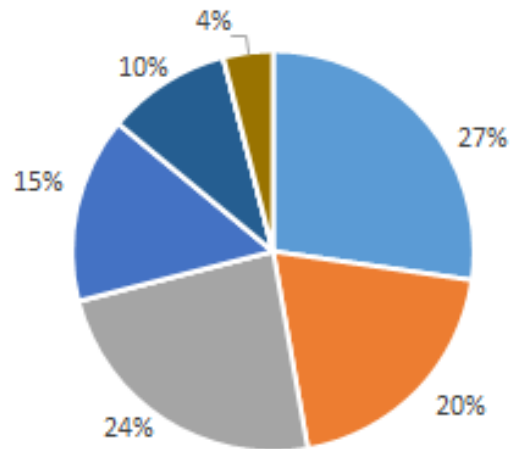


Ingredients for the Soap

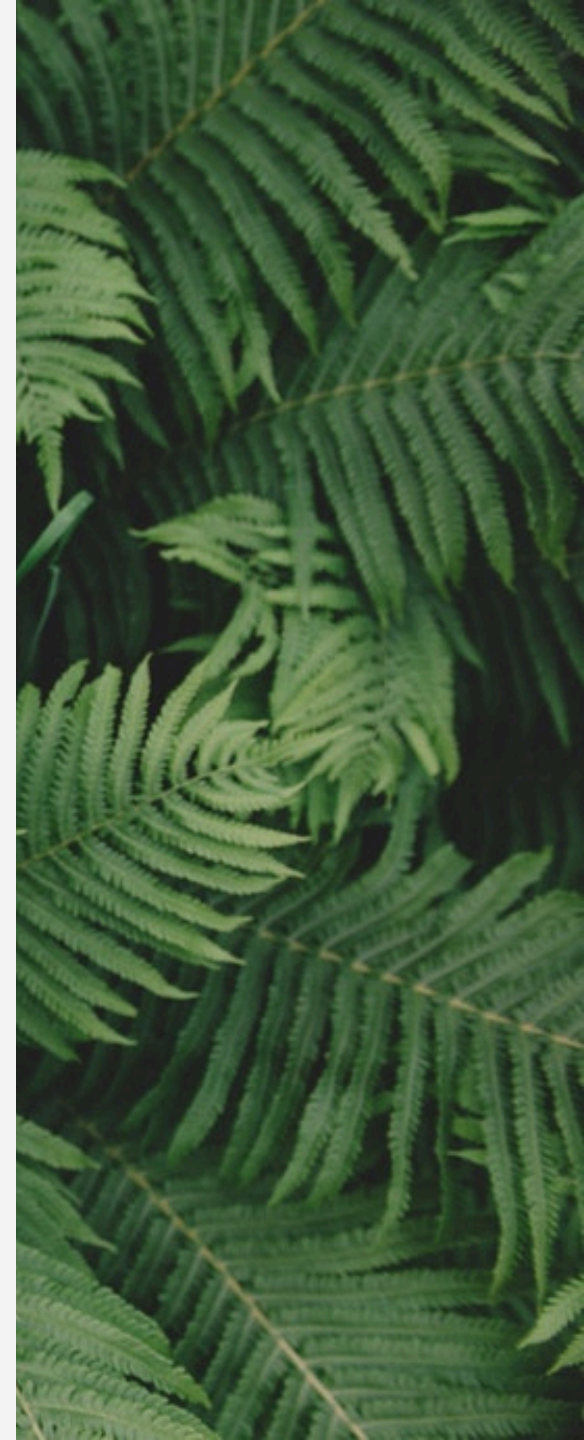
Main components of the soap

- Water 190g
- NaOH 73.15g
- Coconut oil 136.4g
- Crisco oil 118.8g
- Ghee oil 99.7g
- Olive oil 75g
- Corn oil 50g
- Canola oil 20g

Percentage of Each Oil in the Soap



■ Coconut Oil, 76 deg ■ Ghee, any bovine ■ Crisco, old ■ Olive Oil ■ Corn Oil ■ Canola Oil





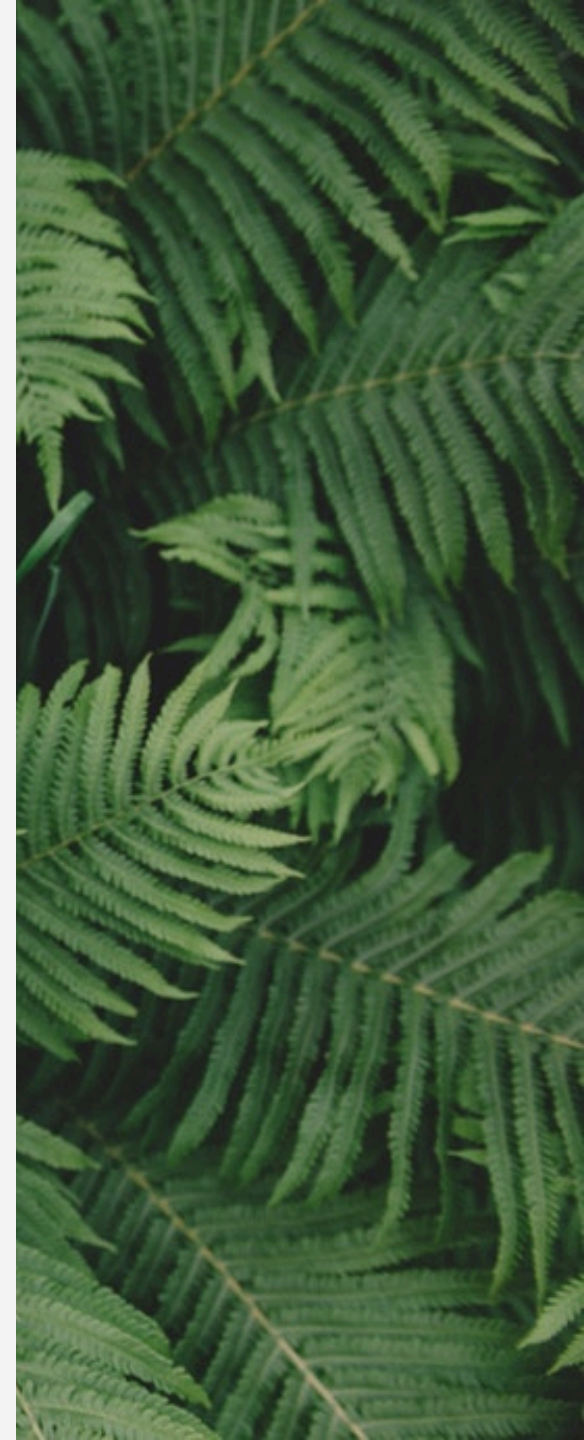
Ingredients for the Soap

Bubbly Lather and Cleansing

- Based on the soap calculator, **coconut oil** has an outstanding ability to create bubbles when it is included in a soap
- **Ghee oil** was also added to the soap to assist coconut oil in the bubbly lather and cleansing
- Since the bubbly lather and cleansing are what represents the function of the soap, 27% of coconut oil and 20% of ghee oil has been added.

Conditioning

- **Canola oil** was the best at conditioning compared to other oils.
- Since the target for the conditioning was relatively small, only 4% of the Canola oil has been added.





Ingredients for the Soap

Creamy Lather and Hardness

- These components has been fulfilled by diverse types of oils.
- Since we had to make 500g of oil mixture:

24% of **Crisco oil**

15% of **Olive oil**

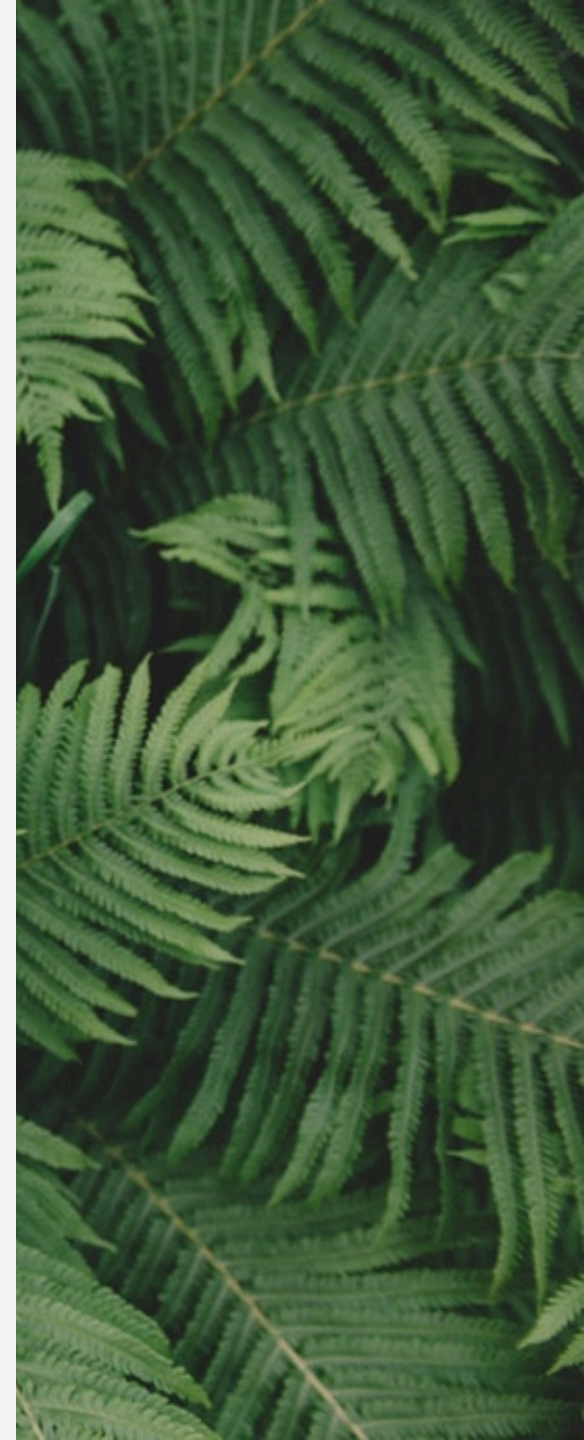
10% of **Corn oil**

Has been added to the soap to fulfill the requirements.

- These oils also take part in the cleansing of the soap.

Phase of the oil

- Since the coconut oil and Crisco oil was solid in room temperature, heating up the oil was mandatory.





Ingredients for the Soap

Eucalyptus essential oil

- Used as a **fragrance** for the soap, which is natural mint and pine style scent.
- It is anti-inflammatory and a decongestant.
- It helps de-stress an individual when used in aromatherapy.

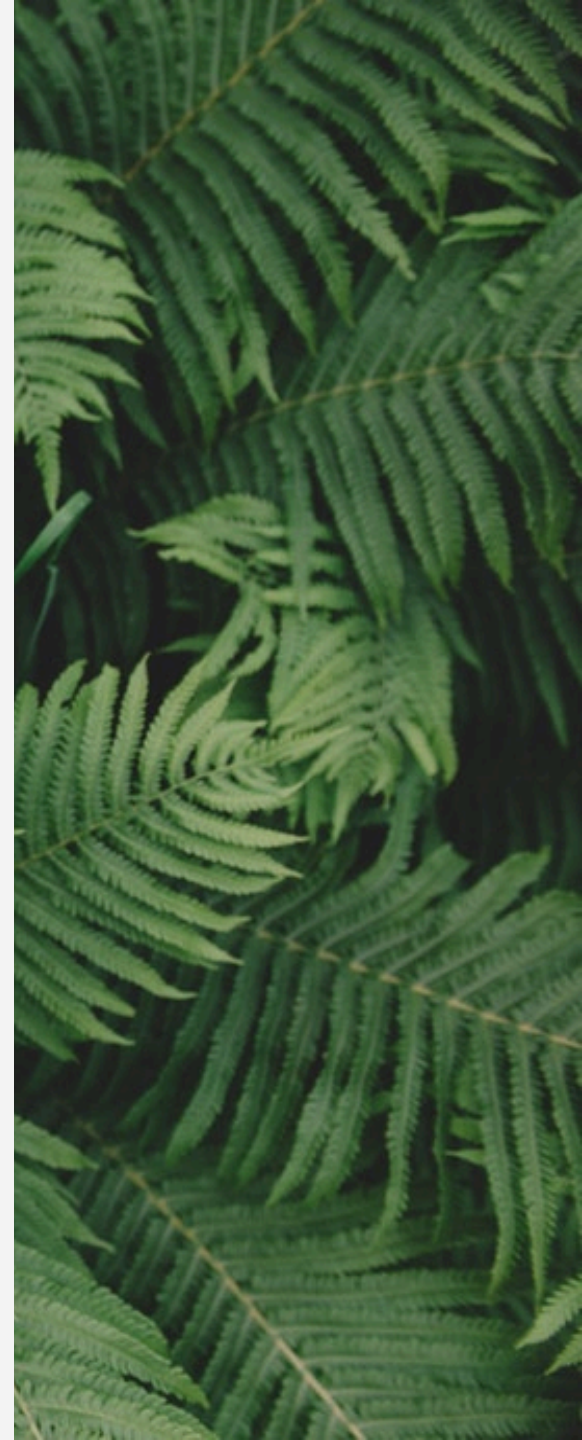
Mould

- **Flower** shaped, which corresponds to the theme of nature.

Colours

- **Yellow** and **green**, which represents the colour of plants.

These three components follow the theme of **nature**.





Soap Pricing

Prices for the Oils

Oil	Unit price per 100g (\$)	Amount (g)	Price (\$)
Coconut oil	1.63	136.4	2.32
Crisco oil	0.42	118.8	0.62
Ghee oil	1.67	99.7	1.65
Olive oil	0.60	75	0.49
Corn oil	0.27	50	0.15
Canola oil	0.21	20	0.05

- Total cost for the oil is \$ **5.28** for 500g of soap.



Soap Pricing

Sodium Hydroxide

- Price of Sodium Hydroxide : \$ 14.93 for 500g
- Amount used : 73.15g
- Price of used Sodium Hydroxide: \$ **2.18**

Eucalyptus essential oil

- Mass of essential oil needed for 100g of soap : 2.25g
- Density : 0.909 g/mL
- Price of the oil : \$16 for 118mL
- Amount used : 15mL
- Price of the used Eucalyptus essential oil : \$ **2.03**

Packaging

- Price of packaging bags : \$ **0.6** for 6 bags



Soap Pricing

Total Price

- Total Oil : \$ 5.28
- Eucalyptus essential oil : \$ 2.03
- Sodium Hydroxide : \$ 2.18
- Packaging : \$ 0.6
- **Total price : \$ 10.09**

Soap pricing

- 6 bars of soap has been created.
- Each bar of soap cost around \$1.6
- After checking the soap pricing in the market (\$4 to \$10 per bar), and considering the work we put in, we decided to make each bar \$4 so the price is reasonable for us, but also cheaper than most of the handmade soap in store and online.



- | Soap Optimizer | | |
|---------------------|-------------|--------------|
| Oils | Percentage | Quantity (g) |
| Coconut Oil, 76 deg | 27% | 136.4452869 |
| Ghee, any bovine | 20% | 99.74315189 |
| Crisco, old | 24% | 118.8115562 |
| Avocado Oil | 0% | 0 |
| Olive Oil | 15% | 75 |
| Sesame Oil | 0% | 0 |
| Corn Oil | 10% | 50 |
| Grapeseed Oil | 0% | 0 |
| Sunflower Oil | 0% | 0 |
| Canola Oil | 4% | 20 |
| Total | 100% | 500 |

	Mass of NaOH (g)	Mass of KOH (g)	Hardness	Cleansing	Bubbly Lather	Creamy Lather	Conditioning	Cost
Total	77	108	43	21	21	22	48	\$ 5.36
	Recommended Ranges		29-54	12-22	14-46	16-48	44-69	
	Targets		41.5	17	30	32	52	
	Objective Function		2.25E+02					
	Mass of Eucalyptus Essential Oil Needed Per 100g of Soap (g)						2.25	
	Density of Eucalyptus Essential Oil (g/mL)						0.909	
	Volume of Eucalyptus Essential Oil Needed Per 100g of Soap (mL)						2.475247525	
					118mL of Eucalyptus			\$16
					cost for 1 ml of Eucalyptus			\$0.14
					cost of Eucalyptus for 100 ml Soap			\$0.35
					Cost of Eucalyptus for the lab			\$2.37
					Total Cost			\$7.74



Final Look





Soap packaging

*Bubble
Blooms*



*Stress Relieving
Eucalyptus
Made for Students
by Students*

INGREDIENTS: Water, coconut oil, Crisco oil,
ghee oil, Sodium Hydroxide, olive oil, corn oil,
Canola oil, Eucalyptus Essential oil, Colouring
-Made by Group 36
FOR EXTERNAL USE ONLY

- Title : Bubble Blooms
- Theme of nature
- Shows how the soap is used for stress relieving
- Since the weight is different for each of the soap bars, it will be written individually.
- Using a bag for package :
 - Eco-friendly since it is re-usable
 - After taking out the soap, it can be used for diverse purposes

