Crown Lather

Wash royal, feel royal.

About Our Soap

Our Crown Lather soap maximizes the creaminess and the bubbliness for the most pleasurable wash. We avoid fragrances and other synthetic ingredients so that even the most sensitive skins can wash without a problem.

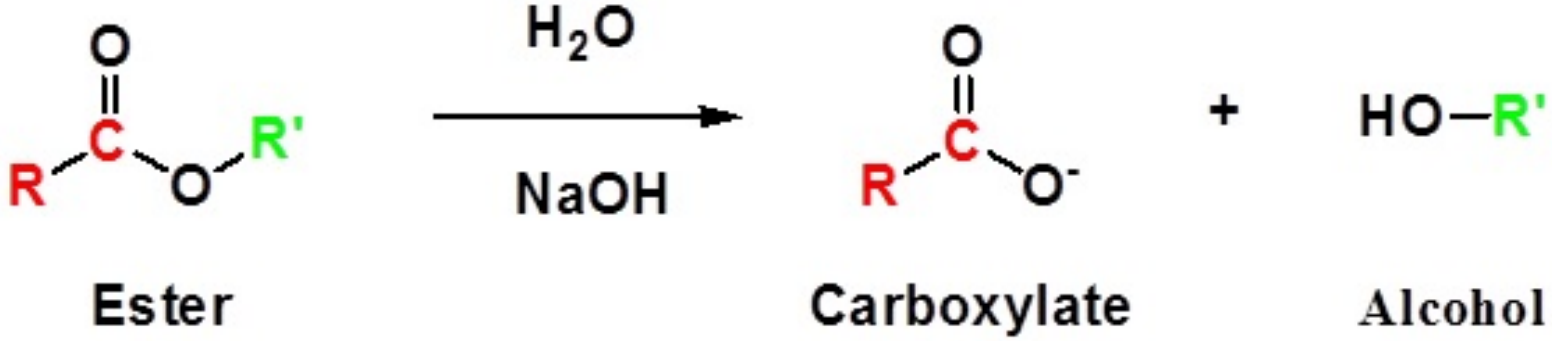
Our soap is also a **glycerine soap.**

What is a glycerine soap?

Glycerine soaps have unfiltered glycerol left in the soap bar. Glycerine soaps are known to be smoother and better for sensitive and dry skins compared to normal soaps.

Context: How are Soaps Made?

All of the soap we use are created through a chemical process called **Saponification.** Saponification is when the ester bond in the triglyceride (oil) is cleaved by the alkali salt ($NaOH_{(aq)}$ or $KOH_{(aq)}$) and forms three carboxylate ions and glycerol.



Design Criteria

To maximize the creaminess and bubbliness, we used the soap calculator that was developed in class. The soap calculator determines the ratio of oils and the characteristics resulting from the ratio. It calculated the amount of lye required (NaOH or KOH) to convert a specified amount of oils to soap. We were then able to optimize the values to get the desired characteristics.

			Mass of Oils (g)	500						
		Percentage of Water as a Percentage of Oils		38%						
			Mass of Water (g)	190						
				Mass of NaOH (g)	Mass of KOH (g)	Hardness	Cleansing	Bubbly Lather	Creamy Lather	Conditionning	Cost
			Totals	75.21092587	105.48283	41	20	20	22	52	$ 4.42
					Recommended Ranges	29-54	12-22	14-46	16-48	44-69	
					Targets	41.5	18	25	28	55	
					Objective Function	9.50E+01					

Process: Cold Process

Soap created through this process tends to look more polished and shiny, both of which are desirable properties as they create a more luxurious and eye-catching product.

Constraints

One of the biggest constraints we had was the type of oil that was available. We were allowed 10 different types of oil: coconut, ghee, crisco, avocado, olive, sesame, corn, grapeseed, sunflower and canola.

This restricted how creamy or bubbly the soap could get because each soap had fixed ratios of the 5 characters mentioned before.

Ingredients

Coconut oil (29% of total oil)

- Main source of bubbly lather
- Extracted from copra, the dried meat of the coconut

Crisco oil (71% of total oil)

- Provides conditioning, and mediates the hardness from the coconut oil
- Very inexpensive
- Composed of assorted vegetable oils

Essential Oil

- Lavender oil contributes to the unique scent of our soap
- Produced via distillation

Sodium Hydroxide (NaOH)

- Used to make most soap bars
- Creates a more solid soap rather than KOH soaps

Mold Selection and Packaging Design

Mold

A Pringles container was used for the soap mold. A Pringles can has the following advantages:

- Readily available
- Fairly easy to remove the soap once it sets
- No inner coating required because it is already coated inside

So, the mold used was convenient, efficient, and recycled.

Packaging

Our aim is to introduce packaging that is easily removable, aesthetic, and produces the least amount of waste.

- Soap will be wrapped in wax paper
- Sticker with logo on the front
- Sticker with ingredients on the back

Front sticker

Back sticker

Overall Packaging Cost:

- Printable sticker paper $0.25/bar
- Wax paper $0.03/bar

Total $0.28/bar

Soap Raw Material Cost

Net weight of one bar of soap: 90g

One batch is approximately 750g and makes about 8 bars of soap

Main oils	$4.42/batch = $0.55/bar
Essential oil	$5.33/batch = $0.67/bar
Distilled water	$0.53/batch = $0.07/bar
Sodium Hydroxide	$14.93/500g = $2.14/batch = $0.27/bar
Total Raw Material Cost	**$1.56/bar = $0.0173/g**

Final Price

After researching about the market for handmade soaps, the prices ranged from $5-13/100g. The raw material cost and the packaging price adds up to $1.84/bar. The bar will be sold for $5.50 per bar.

Overall Packaging Cost:

- Printable sticker paper $0.25/bar
- Wax paper $0.03/bar

Total $0.28/bar

$ 5.50 per bar

Raw Data Affiliated to Ingredients

- Showcased different properties of oil and other components used in their soap designs and preparation

Soap Optimizer										
					Oil Properties					
Oils	SAP (NaOH)	SAP (KOH)	Hardness	Cleansing	Bubbly Lather	Creamy Lather	Conditionning	Density	Cost	SAP (NaOH)
Coconut Oil, 76 deg	0.183	0.257	79	67	67	12	10	0.92	1.63	27.07064862
Ghee, any bovine	0.162	0.227	55	15	15	40	22	1.01	1.67	0
Crisco, old	0.137	0.192	26	0	0	26	70	0.81	0.42	47.10370361
Avocado Oil	0.133	0.186	22	0	0	22	70	0.92	1.86	0
Olive Oil	0.135	0.19	17	0	0	17	82	0.92	0.6	0
Sesame Oil	0.134	0.188	15	0	0	15	83	0.92	1.77	0.001762863
Corn Oil	0.137	0.192	14	0	0	14	84	0.92	0.27	1.128489659
Grapeseed Oil	0.129	0.181	12	0	0	12	88	0.92	0.86	0
Sunflower Oil	0.135	0.189	11	0	0	11	87	0.92	0.28	0
Canola Oil	0.133	0.186	6	0	0	6	91	0.92	0.21	0

Soap calculator: as designed vs as made

The original intent was to create a soap with a lavender scent. However, the crisco and coconut oil mixed with lavender oil to produce a smell in between the smell of gin and lavender.

We took advantage of this coincidence and decided to market it as gin scent as it sounds more unique and catches people’s attention.

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