The Rising Spring

Derek Wong
Mohammed Tauqir
Ian Kwok

Natural Ingredients Selection

Turmeric Powder

-> to avoid using synthetic compounds

Soap Conditions

Bubbly lather

-> to create...

Creamy lather

-> to create ...

Conditioning

-> to achieve

Benefits

Body healing

->

Skin moisturized

-> anti-inflammatory

Rationale for Soap Design

Rational for Packaging

Environmental cost

cardboard and the paper in wax paper made from recycled paper

wax is a byproduct from the production of oils

Product Protection

Cardboard shell and wax protects soap from damage, moisture and contamination with unsanitary surfaces

Packaging Cost

2 sheets of 5inch x 7inch cardboard each piece $0.13
wax paper is $2.99 per 250 square feet which is a lot more than we need per bar of soap

Ingredients and Why They Are Chosen

- - The majority of the soap was made from coconut oil because of its properties that give it a bubbly lather when saponified
- - Ghee was added because of its ability to give the soap a creamy lather when saponified
- - Corn oil, Olive oil, Grapeseed oil, and Sunflower oil and Crisco was added for its ability to give moisture to the soap aka conditioning

- Sodium Hydroxide was added because it's a required component for

the saponification of soap

- Turmeric powder and Citrus essential oils were added to make the soap stand out as well as to give the soap the swirl pattern and different colour

Marketing

Theme – Body Healing, Calmness

- Blend of Light yellow and orange
  - Balance between aggression and peacefulness
  - Promotes general wellness and emotional energy
  - Sense of warmth and joy

Circular Shape

- Ergonomic - Good for repetitive motion
- Promotes happiness and completeness

Vanilla Smell

- Help with anxiety
- used as part of an aromatherapy treatment

History

- The history of soap making started with the discovery of soap. Soap was discovered according to a roman legend where when women washed their clothes in the river, they discovered that washing their clothes in different parts of the river would result in the clothes getting cleaner in certain parts so this was the first real use of soap. After that, soap was found to have been made as early as 2800 b.c. when soap like materials were found in clay cylinders that were excavated from ancient Babylon. Inscriptions on the cylinders talked about the method of making this soap which was by boiling fats with ashes. After that, in the seventh century, soap makers that lived in Spain and Italy, created soap using goat fat and Beech tree ashes. The French however, during the same period created an official recipe for making soap which was using olive oil. Next, in 1791, the French chemist Nicolas Leblanc discovered a chemical process of transforming common salt (sodium chloride) into an alkali called soda ash.

History(Continued)

- This was a critically important discovery because alkali is a key component in making soap. In the United States, at the beginning of the 19th century, made soap by saving ashes for months and then using the fat leftover from butchering hogs. The most challenging part of early soapmaking was determining if the lye was the correct strength. The lye water was considered strong enough if a potato placed into the water floated halfway. Detergents were made by German scientists during World War 1 and were made using petroleum by-products. In the 1900's, a process called continuous process was created and decreased soap production time to less than a day. After that, soap makers then learned that the chemical that gave the soap its moisturizing properties glycerin could be removed which would improve shelf life of the soap.

Reason for physical design of the soap

- The reason for choosing the circular shape of the soap was for ergonomic design that would make the soap easy to hold and less likely to drop when using it

Modern Market for soap products

- The leading soap brands in todays market is Dove, Olay, Dial, Irish Spring etc.. The trend for soap in the present is soap that is made from natural ingredients including the chemical glycerin which gives soap its moisturizing properties. One of the marketing strategies that top soap brands like Dove employs is a wide range of products that cover most needs that consumers would have when using soap such as easily irritated skin. However, another tactic used is selling bars of soap that isn't completely soap.

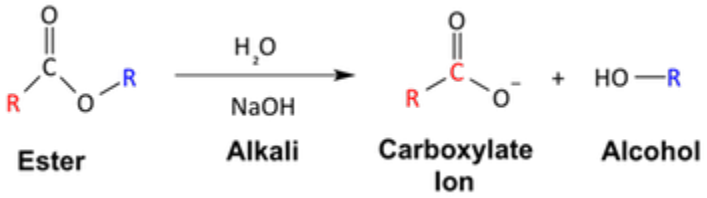
Chemistry behind soap

- The basic chemical principle soap follows to serve its function is dual amphiphilic character, meaning possessing both hydrophilic and lipophilic. Saponification, which is an alkaline hydrolysis reaction that splits ester linkage between fatty acids and triglycerides is involved to produce soap salt molecule that possess dual amphiphilic character. Reactants includes base such as sodium and potassium salt and acid commonly used with fat containing 3 fatty acids and triglycerides. The resulted soap salt molecule contains a hydrocarbon chain tail. Saturated chains are used to produces soap that provides hardness, for example letting soap to last longer in shower. Unsaturated chains used act as moisturizer within the soap. The non-polar tail allows interactions with oil and grease, attaching oils to the molecules. The tendency of this attraction is due to reduction of surface area of interaction of the polar and non-polar substances, letting polar solvent to form more bonds and associate more. The head of the soap molecule is polar. When dissolved in water, the sodium or potassium ions float apart creating a negatively-charged head. This allows ion-dipole force to occur and attract the negative ion and positive hydrogen side of H2O molecule, and more significantly hydrogen bonding of oxygen. Micelles are formed when carboxylate head groups form a spherical surface. The hydrocarbon chains fill the inside the sphere. The inside filled the hydrocarbon chain contains oils are trapped inside the micelles.

Chemical Process of making Soap

- Saponification is the process of combining lipids and alkaline substances to produce soap. More specifically, saponification involves the triglycerides found in animal and vegetable fats treated with strong bases such as sodium or potassium hydroxide
- The process first begins with simple triglycerides, the type of triglyceride and the individual fatty acids that comprise the triglyceride are what ultimately determine the properties of the soap. Then lye - a strong base typically consisting of a metal hydroxide is added to the mixture of the triglycerides, typically this metallic salt is in the form of potassium hydroxide or sodium hydroxide. Following the addition of the alkali to the solution, a reaction then takes place between the hydroxide functional group of the alkaline salt and the ester functional group of the triglyceride. Alkaline salts break the esters into carboxyl groups and alcohol functional groups with the addition of water. This process is called hydrolysis

Chemical Process of making Soap (continued)



Soap Calculator

- - We used a soap calculator because we wanted to have an optimized ingredient list for making soap with emphasis on the properties that we felt was the most important in soap. Also, using a soap calculator is more convenient than adding everything up yourself.