SOAP

A brief discussion on the History, Base Construction, Formulating and Manufacturing

HISTORY

- Said to be oldest hand manufactured product by mankind
- Improved hygiene
- Reduced infection and disease
- Twincraft started in 1974 in Montreal opened plant in Winooski, VT 1978
- Hard milled soap bars and liquids

SOAP BASE CONSTRUCTION

- Saponification – Oil saponification & Fatty Acid Neutralization
- Acid Base Reaction – Fat + Alkali → Salt Soap + Water + Glycerin
- Type of fat is relative to supply – Asia = Coconut/Palm, Southern Europe = Olive (Castile) and America = Tallow
- Early Industrial Revolution in America – Meat Packing Industry – Soap Manufacturing and Soap Operas
- Large companies such as Unilever, P&G and Colgate all were large players in mass market soap manufacturing
- Tallow soap the main stay in America up to late 1980's
- Twincraft first to go all vegetable base in mid 1990's

OIL SAPONIFICATION

- Optimum oil type for manufacturing soap base ranges between the C12 and C18 carbon chain length. S P M L
- Examples: Palm, Coconut, Palm Kernel, Tallow, Rapeseed, Sunflower, safflower and Olive
- Oil saponification was responsible for glycerin production in early industrial times
- Customize soap performance by mixing different ratios of oils to tailor fit a soap to the desired quality, performance and price. 90/10, 80/20, 60/40 etc.…
- Oil Ratio → Kettle → Add Alkali (exothermic Reaction) → Liquid Soap + Salt + Glycerin + Water → Spray Dryer → Refiner (Soap Plodder) → Pellets
- Oil saponification produces glycerin which can be left in the soap base or washed out with a brine solution to get between 60-80% of the total glycerin produced
- Oldest form of manufacturing. Pros and Cons

FATTY ACID NEUTRALIZATION

- Palm & Palm Kernel Oil fractionated into individual fatty acids. Refined and purified
- Fatty Acids blended in custom ratios then reacted with alkali to produce soap pellets to similar process as oil saponification.
- FAN does not produce glycerin since the glycerin is removed during the fractionation process to recover around 95-99% of the total glycerin. More efficient then Oil Sap
- Low Color, low odor and very white noodles in comparison.
- The process is more modern, efficient, highly flexible and able to sell more profitable
- TWC is highly invested in this process.

BAR SOAP BASE MANUFACTURING

- Hard milled or extruded base highly concentrated cleaner. 60-90%
- Self preserved but contains chelates to protect from rancidity
- Certified sustainable and organic versions
- Translucent and opaque bases
- Opaque standard. Translucent base contains elevated levels of water, glycerin and sugar for translucency
- Translucent soap is refined with high shear extrusion equipment to convert from opaque to translucent

LIQUID SOAP BASE MANUFACTURING

- Can be formulated with just oils, oil and fatty acid combination or just fatty acid
- Saponification process the same without spray drying
- Mostly performed in kettles similar to oil saponification
- Less active in solution in comparison to hard milled soap bars. 30-40% compared to 60-90%
- Comes in Transparent, translucent and opaque
- Self preserving above 30%
- Sustainable and organic certifiable
- Contains natural chelates to protect soap from rancidity

SOAP FORMULATING - BAR

- TWC marries the soap base formulation to the equipment – elevated water, glycerin and FFA
- TWC uses strictly extrusion plodders which are different from rolling mills
- The soap base we choose to use in our formulations produce higher quality finish, luxurious foam and greater productivity
- The average pH ranges from 9-11
- Fragrance load between 0.1 – 3.5
- Highly compatible with hydrophilic and lipophilic ingredients
- Most naturally certified wash product – organic
- Extrusion techniques modified to produce varying aesthetics – Marble, Soap in Soap, Striped, Rope and Multi-layers
- Packaged in paper wrap, boxes, plastic and various style containers

LIQUID SOAP FORMULATION

- Solubility is key. More hydrophilic than lipophilic due to the reduced concentration of soap or increased water content
- Range from transparent to opaque types
- pH range from 8-11
- Can be certified sustainable and organic
- Fragrance load depends on solubility of fragrance in soap formulation. Safe range is between 0.1 – 5.0%
- Can be packaged in bottles, tubes and jars

SOAP MANUFACTURING

- Soap bar manufacturing steps: Mixing → Plodding → Extrusion → Cutting → Pressing
- Liquid soap manufacturing steps: Mixing (Saponification or Compounding) → Pumping → Filling
- TWC has invested in utilizing manufacturing equipment that is highly flexible to produce the quality standards that our customers demand.
- Can configure production lines to address formula and aesthetic complexities
- Offer a wide range of products that require a more diverse production capability

QUALITY

- Wet cracking, mushing, rancidity, efflorescence and discoloration
- Standard stability test include Accelerated Age (1-3 years), UV testing, Direct Sunlight and Scented/Unscented evaluation
- Other test include TWC developed performance testing such as foam volume, foam stability and wear rate
- Soap bars as it relates to their cleaning and foaming characteristics can be stable for a very long time. (100 years)