

Novelty in saponification, a chemistry of soap manufacturing process

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Abstract

Saponification is the hydrolysis of fats and oils with caustic alkali to yield propane 1, 2,3 triol and the corresponding sodium or potassium salt of the corresponding fatty acids. Vegetable oils or palm oil or groundnut oil are esters formed from a long chain organic acid known as octadecanoic and propane 1,2,3 triol an alkanol containing three OH groups in the molecule. When palm oil is boiled with an alkali such as sodium hydroxide solution, it breaks down releasing the organic acid and the alkanol. This is known as Saponification. The organic ester is immediately neutralized by the sodium hydroxide solution to form the sodium salt of the organic acid which is SOAP.

SOAP is a substance able to mix with both oil and water, used for cleaning, often in the form of a solid bar or in liquid form, derived from fats or made synthetically.

Novelty In Soap Manufacturing Process

The manufacturing process of making a bar soap are explain as follows.

Liquid and solid ingredients are combined in a large tank and mixed into a thick suspension called a slurry. The slurry is pumped to a tower and atomized through small nozzles under pressure to produce small drops which fall through a current of hot air, drying them into small granules or pellets. The pellets pass to a finishing line where they are blended with additional ingredients such as fragrances and coolants. The mixture is sent through collar for blending to a uniform texture. It is then extruded cut into bars and stamped into its final shape.

Each step in the process is called a unit operation. Mixing, separating, drying, cutting, heating and cooling are examples of unit operations.

A more general way of looking at a process is to develop a simple block diagram from description of the process. Block flow diagram are illustrated as a set of connected blocks or process units. Lines with arrows connect the block and indicate the direction of the process flow. Raw materials always enter on the left and products leave on the right. Only four kinds of process units are used in block flow diagram, mixtures, reactions, separator and splitters. Mixers combine two or more materials. One or more chemical reactions take place inside a reactor. An input streams is separated into two or more outputs by a separator. The output from a separator have different chemical composition from each other and from the input. The change in chemical composition is due to physical operations, not a chemical reaction. A splitter also separates an input into two of more outputs but now the outputs have the same chemical composition.

Biography

Ike Francis Ekene has completed his Nigerian Certificate In Education (NCE Chemistry/Physics) and Bachelor of Science in Chemistry (Bsc(Edu) at the age of 27. He written some projects as a graduating student and also many articles. He currently chemistry teacher at Anglican Comprehensive Secondary school kpeyeghi, Abuja.



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