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AIM

To find and calculate the percentage of fatty material in different soap samples.

PROCEDURE

1. Take 10 gm of quantity of each sample in which percentage of fatty material has to be determined.
2. Prepare the solution of each soap in water.
3. Add 10 to 12 drops of HCl in each solution and heat the solution for 5 to 10 min.
4. Fatty matter float on the soap solution surface by forming upper layer and how by filter paper are weighed for titration.
5. Now collect the fatty material from each solution by filtrate ion and again weigh the filter including filtrate (fatty material) are dissolved in the filterate (fatty material) in ether for calculating oil materials.
6. Now take the solution in separating flask on the surface of solution and remove the solution except oily material.
7. Now, remaining solution is exposed in sunlight to evaporate ether from solution.
8. Now oily matter can be easily weighed by weighing machine.
9. The percentage of oily materials can be easily calculate by following observation:

Soap – Soap are the sodium or potassium salt of higher fatty acids. The fatty acid contains long chain of 16-18 carbon atoms.

Structure of Soap –

Soap contains two parts:

1. A long hydrocarbon chain, which is water repelling called a non polar tail.
2. Anionic part which is water attracting called hydrophobic. It is called polar tail.

Soap may be represented as :

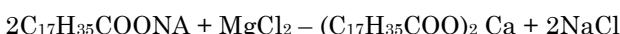
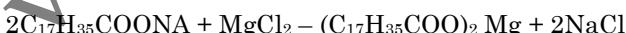


Soap are also made from animal fats and vegetable oil. Fats and oils are ester of higher fatty acids are called Glyceroles. When oils and fats are heated with a solution of NaOH, they break down to sodium salt of respective fatty acid soap and glycerol. This process of making soap by hydrolysis of fats and oil with alkalis is called saponification. The soap is separated from the solution by a addition of common salt NaCl. Salts is added in the soap solution to decrease the solubility of soap due to which soap separates out from the solution in the form of solid and starts floating on the surface. The crust of soap thus formed is removed and put it in moulds to get soap cakes. The solution left behind contains glycerol and NaCl.

Limitation Of Soap –

Soap is not suitable for washing clothes with hard water because of the following reasons:

Hard water contains salt of Ca and Mg, when soap is added to hard water, Ca and Mg ions of hard water react with soap forming insoluble Ca and Mg salt of fatty acids.



Therefore a lot of soap is washed if water is hard.

When hard water is used, soap forms insoluble precipitates of Ca and Mg salt from which sticks of clothes being washed. Therefore it interfere with the cleansing ability of the soap and makes the cleansing process difficult.

Cleansing Action of Soap –

The dirt in the cloth is due to presence of dust particle in fat or grease, which sticks to the cloth. When the dirty cloth is dipped in soap or detergent solution the soap and dust particle come in contact with each other the non polar tails of the soap begin to dissolve in non-polar oil or grease while the polar head part remains directed in water. As more particle enter the grease each fat or oil surround by a number of negatively charged polar head and the similar charge repel each other. The oil or grease droplets break off and are still surrounded by negatively charged polar head of the soap molecule. As a result the cloth get free from the dirt and the droplets are washed away with water.

Difference –

SOAP	DETERGENTS
<ol style="list-style-type: none"> 1) Soap are sodium salt of long chain carboxylic acids. 2) Soap are not suitable for washing purpose when water is hard. 3) Soap have relatively weak cleansing action. 	<ol style="list-style-type: none"> 1) Synthetic detergents are sodium salts of long chain benzene sulphonic acid. 2) Synthetic detergent can be used for washing even when water is hard. 3) Synthetic detergent have a strong cleansing action

Observations

S.NO.	NAME OF SOAP	WEIGHT OF FILTER PAPER (A)	WEIGHT OF FILTER FATTY MATERIAL (B)	FATTY MATERIAL (B-A)
1.	Santoor	0.3856	7.5856	7.2
2.	Lux	0.2956	7.5956	7.3
3.	Lux Int.	0.3203	7.2701	7.5
4.	Lifeboy	0.4701	7.2701	6.8

CONCLUSION

Soap contain alkali matter, which affects our skin and even skin may crack. To maintain the oily and moisture balance on our skin, fatty material required in soap. In general the fatty matter in soap is approximately 70% to 80% fatty matter below 70% made our skin dry, rough and skin may crack where as highest percentage [%] of fatty matter above 80% made the soap sticky and oily and washing become very difficult. From the table it is clear that the Lux international is the best soap for bathing purpose because it contain large amount of TFM or maximum percentage[%] of TFM.