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CERTIFICATED

A STUDY PROJECT ON
PREPARATION OF SOAP
DEPARTMENT OF CHEMICAL SCIECNCES-2022-2023

BY

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Manufacture of soap

Soap is either made by hot process or cold process. Usually laundry soap and toilet or bath soaps are manufactured by hot process transparent and other special types of soaps are produced by cold process. In most of the cases, soap obtained by the hot process is settled or grained and separated form the spent lye containing the glycerol solution. The glycerol is recovered as a by-product of soap industry.

The batch process is carried out in soap cattle made of riveted steel plates and having diameter varying between 5ft and 25ft and depth ranging from 8ft and 30ft.the kettle is fitted with seam pipes at the bottom for passing steam. Some of these pipes are per forted for bubbling steam for through mixing. It is also fitted with an outlet pipe at the bottom for taking out the spent lye and an opening at the side with stopper for taking out the soap. A mixture of melted fats, greases or oils in proper amount is introduced the cattle and 10-11 percent caustic soda solution is then pumped in to the kettle and steam is directly passed through mixture, witch chats of the mixture. The amount of caustic soda or lye is regulated so that it is sufficient to combine with all the fatty acids formed during the hydrolysis. Thus as charge continues to boil vigorously, more caustic soda is added and the addition is made gradually, because specifications is hampered in presence of large excess of alkali. This indicates that specification is complete. The final clear mass contains soap, water, glycerol, unused alkali and some sodium salts (Nacl, NaCo, NaSo) etc... as impurities. Sodium chloride forms brine solution with the water present in the mass. The boiling is again continued, until soap, which is insoluble in brine, gets precipitated and separated forming the upper layer. The lower layer contains glycerol, sodium chloride,

alkali and other soluble impurities. After each addition of the salt mass is vigorously boiled. As a result, clear mass gradually loses its transparency as the soap floats over the present lye. The addition of salt is stopped and steam is also cut off when the lye, that separates is found to be natural. The separate lye and the soap are boiled to form homogeneous mass and boiling stopped by cutting off the steam and whole mass is allowed to steam over-night. As a result of setting the mass separated into two layers the upper soap layer and the lower spent lye layer. The letter is withdrawn from the bottom and sent to glycerol recovery plan. The crude soap is boiled with; water and some caustic soda to remove free alkali salt glycerol etc., and again boiled by passing steam. The lower layer is run off from the bottom and is combined with spent lye. The last process of unspecified oil and fact are then precipitated as sodium soaps by first boiling with water and then with sodium, hydroxide several times. The soap is insoluble in strong alkyl and when it becomes grainy, the steam is cut off and the mass is allowed to settle. Th3e spent lye is withdrawn from the bottom and mixed with early spent lye. The soap is now hydrated by addition of large amount of water when water is absorbed by soap, with attims the proper quality. The whole mass is then boiled and then allowed to settle for several days. As a result, three layers are formed, the upper pure natural soap layer, the middle coloured soap layer and the bottom aqueous layer which contains some alkali. The upper melted layer, called neat soap is withdrawn (while warm) through the side pipe into the soap frames, where soap solidifies on cooling. The middle layer remains in the tank and is very often worked into the next batch. The bottom layer goes as waste. The solidified soap is next cut into slabs and bars wire either by hand or mechanically.

Report: of 100grams of oil contains, 90grams of soap is obtained.