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PROCESS OF MAKING SOAP

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This invention relates to processes of making soap, and particularly to accelerating saponification.

The objects of this invention are to provide a process of making soap, in accordance with which the saponification resulting from the reaction of fats or oils with a caustic alkali is greatly accelerated by the addition of an amine soap to the materials to be saponified; also to provide a process of this kind in which a hydroxyalkylamine is used to react with a fatty acid to form a soap which, in turn reacts with a mixture of caustic alkali and fats or oils to accelerate the saponification of the fats or oils; also to improve processes of making soap in other respects hereinafter specified.

It is well known that soaps can be made by the reaction on fatty acids of certain organic amines of sufficient basicity to combine with the fatty acids. While soaps can be made with various organic amines, I have found that good results can be obtained by the use of commercial tri-ethanolamine, which is a mixture of about 75 per cent tri-ethanolamine, 20 per cent di-ethanolamine and 5 per cent mono-ethanolamine. It will be understood, however, that it is not intended to limit this invention to use in connection with commercial tri-ethanolamine, since I have found that any of the ethanolamines can be used to accelerate saponification, as well as other hydroxyalkylamines.

The organic amine soap may be made in any suitable or desired manner by reacting upon a fatty acid with any suitable organic amine, particularly an ethanolamine. The resulting soap in most cases is of semi-liquid or jelly-like form. The ingredients for use in making the ordinary soap can be mixed in the same manner as has heretofore been customary, and the ethanolamine soap is added to this mixture, which is stirred until the amine soap is thoroughly dispersed throughout the mixture. Upon heating the mixture either by the application of external heat or by the heat evolved by the reaction of the materials, it will be found that the time required to complete the saponification of the mixture thus produced is greatly reduced.

I have, for example, found that by the presence of various percentages of ethanolamine-cocoanut oil fatty acid soap in a mixture of edible cocoanut oil and caustic alkali, the rate of saponification is more rapid if larger quantities of ethanolamine soap are present. For example, the time required for the complete saponification of a certain quantity of soda-cocoanut oil soap without the presence of any amine soap required 50 minutes. The time required for complete saponification of the same quantity of ingredients in which 2½ per cent of ethanolamine soap was present, was 27 minutes. By increasing the amount of ethanolamine soap to 10 per cent, the time for complete saponification was reduced to 20 minutes, and by using 34 per cent of ethanolamine soap, the time for complete saponification was reduced to 4½ minutes. Similar results have been experienced when organic amine soaps of other fatty acids were used in connection with fats or oils of other kinds and caustic alkali. For example, similar results were produced when tri-ethanolamine soap of oleic acid was added to a mixture of edible cocoanut oil and caustic soda, and when ethanolamine soap of palm kernel fatty acids is added to palm kernel oil and caustic soda.

I have also found that it is immaterial whether the ethanolamine soap is first completely made and then added to a mixture of fats or oils and caustic alkali, or whether a certain quantity of fatty acid is mixed with the fats or oils and the ethanolamine then added to this mixture. These ethanolamines form soaps only with fatty acids, so that a certain quantity of ethanolamine soap will thus be formed by the reaction of the ethanolamine on the fatty acid in the mixture. By then adding the usual caustic alkali to react with the fats or oils, similar results are obtained as heretofore described, namely, that the time for complete saponification of the mixture is materially reduced, depending upon the quantity of ethanolamine soap contained in the mixture.

The soaps produced in accordance with this process are superior to ordinary soaps as heretofore made from fats or oils and

caustic alkali, and particularly if larger quantities of ethanolamine soaps are embodied in the soap. Such a soap mixture has been found to have very greatly improved lathering properties, and is also much more readily soluble in sea water or in other very hard waters than soaps heretofore made. The ethanolamine soap contained in the soap thus formed appears to materially decrease the tendency of the caustic alkali soap, contained in the mixture, to form insoluble soaps with the calcium, magnesium and other hardness constituents of the sea or hard water, and such calcium and magnesium soaps as are formed are of entirely different texture than those produced by hard water soaps heretofore made and can be readily removed from the skin or from washed articles by rinsing.

While soaps containing larger quantities of ethanolamine soap (approximately 20 per cent or more of ethanolamine soap calculated on the total quantity of the mixed soap) have been found particularly desirable for use with hard water or sea water, it will be understood that this process is not limited to the production of hard water soap, since smaller quantities of ethanolamine soap may be used merely to accelerate the manufacture of soaps not intended specifically for use with hard water.

While ethanolamines are the only amines at present commercially available which have the property of accelerating saponification, it will be obvious that other hydroxyalkylamines, such for example as propanolamines and butanolamines, are equivalent of the ethanolamines and could, if commercially available, be used in place of ethanolamine.

Claims.

1. A process of making soap, which consists of mixing with the ingredients used in the manufacture of soap, a soap made by the reaction of a hydroxyalkylamine upon a fatty acid to accelerate the saponification of the mixture.

2. A process of accelerating the saponification of a mixture of caustic alkali and fats or oils, by carrying on the saponification in the presence of a hydroxyalkylamine-fatty acid soap.

3. A process of accelerating saponification, consisting of adding an hydroxyalkylamine soap to the materials to be saponified.

4. A process of making soap, which consists of adding a hydroxyalkylamine soap to a saponifiable mixture.

5. A process of accelerating saponification, which includes adding a tri-ethanolamine soap to the materials to be saponified.

6. A process of making soap, which includes forming a soap by reacting upon a fatty acid with tri-ethanolamine, and using the soap thus formed in a mixture of caustic soda and fats or oils to accelerate saponification.

7. A process of accelerating saponification, which includes the carrying on of the saponification in the presence of a fatty acid and a hydroxyalkylamine.

8. A process of making soap, which consists of adding a hydroxyalkylamine to the materials to be saponified including fatty acid and then completing the saponification with a caustic alkali.

9. A process of making soap, which includes forming a soap by reacting upon a fatty acid with an ethanolamine, and using the soap thus formed in a mixture of caustic soda and fats or oils to accelerate saponification.

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