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LUBRICANT MANUFACTURE

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4 Claims. (Cl. 252—41)

This invention relates to novel methods of preparing lubricants. More especially it relates to the manufacture of soda soap grease from an oil suspension of kerosene-dehydrated caustic soda.

Soda soap greases have heretofore generally been made by reacting aqueous caustic soda with a solution of fats or fatty acids in mineral oil, but one difficulty with such a process is that the resultant product must be cooked at a relatively high temperature for a substantial period of time in order to drive off the large amounts of water released from the caustic soda solution and formed by reaction of the caustic soda with fatty acids.

One object of the present invention is to eliminate the necessity of having such a large amount of water present in the initial stage of saponification, thus reducing the amount of heating time necessary to drive off all of the water, or to provide a method for manufacturing soda soap greases containing a small amount of water, without any substantial heating at a temperature above the boiling point of water. Another object of this invention is to provide a continuous method for manufacturing soda soap greases of high quality with relatively low cost equipment capable of producing large quantities of grease in a relatively short time and with relatively low manufacturing investment.

Broadly, the invention comprises using anhydrous alkali for the saponification. This anhydrous alkali is preferably used in the form of a suspension in mineral oil and is preferably made by evaporation of a caustic solution in the presence of kerosene or other suitable hydrocarbon liquid. A suitable method of manufacturing anhydrous alkali is described in Ind. and Eng. Chem., vol. 32, page 154 (1940). The anhydrous caustic soda made by such a process will generally contain a small amount of kerosene, such as 20% to 30% or so, and if desired this may be removed from the soda by washing with naphtha and then drying, and subsequently dispersing the dried caustic soda in a suitable mineral oil base stock.

Manufacture of soda soap grease according to this invention is preferably carried out by first dissolving or dispersing a saponifiable fatty material, such as stearic acid, hog fat, mutton tallow, etc., in a mineral oil base stock having a viscosity of about 35 to 200 seconds Saybolt at 210° F., with or without the use of heat, and adding to the resultant solution or dispersion a suspension of anhydrous caustic soda in mineral oil, heating the resultant mixture to 200°–500° F. until saponification has been completed and part or all of the water of neutralisation of fatty acid or glycerine from fats has been driven off. The saponification can be carried out in an ordinary mixing kettle, either steam jacketed or direct fired, or may be carried out continuously in suitable equipment such as a tube or pipe or centrifugal pump or in a Lancaster disperser, or other suitable high speed mixer.

In addition to using the fatty materials mentioned above, one may also use animal, vegetable, marine or synthetic fats or fatty acids derived therefrom, or synthetic fatty acids derived from the oxidation of paraffin wax or hydrogenated fish oil acids or other high molecular weight carboxylic acids containing at least 10 and preferably 15 or more carbon atoms per molecule, such as the naphthenic acids derived from petroleum.

The invention may be illustrated by the following example:

Anhydrous caustic sodium hydroxide containing 24% of kerosene was washed with naphtha, dried and dispersed in a mineral oil having a viscosity of about 50 seconds Saybolt at 210° F. and derived from a Coastal crude. This dispersion consisting of about 2.32 parts of anhydrous caustic soda and 7.11 parts of mineral oil, was thoroughly agitated by means of pump circulation with a blend composed of 7.11 parts of prime mutton tallow, 711 parts by weight of animal fatty acids (obtained from hogs), and 76.35 parts of bright stock mineral oil, having a viscosity of about 200 seconds Saybolt at 210° F. The recirculation was continued and the temperature raised to about 220° F. for about 1½ hours to complete the saponification. A grease of satisfactory consistency and texture was obtained. It had an unworked and worked A. S. T. M. penetration of about 240 and 290 respectively. The water content of this grease was about 0.1%, which is quite remarkable considering that it had been made at a temperature not exceeding about 220° F.

The above example was repeated identically except that hydrogenated fish oil acids were used instead of the animal fatty acids, and unwashed anhydrous alkali was used. The resulting grease was very satisfactory.

It is not intended that this invention be limited to any of the specific examples which have been given merely for the sake of illustration, but only by the appended claims in which it is intended to claim all novelty inherent in the invention as well as various modifications coming within the spirit and scope of the invention.

I claim:

1. Continuous process for manufacturing soda soap grease which comprises continuously suspending anhydrous alkali in a mineral lubricating oil base stock having a viscosity of about 35 to 200 seconds Saybolt at 210° F. and continuously mixing controlled proportions of said alkali-oil suspension with a solution of a saponifiable fatty material in a mineral lubricating oil base stock, in grease-making proportions, and continuously heating and stirring the mixture until saponification has been completed to the desired degree.

2. Process according to claim 1 in which the mineral oil suspension of anhydrous alkali was made by first dehydrating caustic soda in the presence of kerosene to produce an anhydrous caustic soda containing about 20% to 30% of kerosene, removing this residual kerosene by washing with naphtha and drying, and dispersing the resultant dried kerosene-free anhydrous caustic soda in a mineral oil having a lubricating oil viscosity.

3. Continuous process of manufacturing alkali soap grease which comprises continuously suspending anhydrous alkali made by dehydration of aqueous alkali in the presence of volatile hydrocarbon liquid in a mineral lubricating oil base stock having a viscosity of about 35 to 200 seconds Saybolt at 210° F., continuously mixing a mineral lubricating oil solution of a saponifiable fatty acid at a temperature not substantially above 220° F. with said mineral lubricating oil suspension of anhydrous alkali in grease-making proportions, continuously saponifying the acid and continuously recovering finished grease from the mixture.

4. Continuous process for manufacturing soda soap grease which comprises continuously suspending anhydrous alkali in a mineral lubricating oil base stock having a viscosity of about 35 to 200 seconds Saybolt at 210° F., continuously mixing controlled proportions of said alkali-oil suspension with a solution of a saponifiable fatty material in a mineral lubricating oil base stock in a high speed mixer in grease-making proportions, continuously stirring and heating the mixture in said high speed mixer at about 220° F. for about 1½ hours to complete saponification and continuously withdrawing finished grease from said high speed mixer.

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