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STABLE LIME SOAP GREASE

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This invention relates to solid or semi-solid lubricants and more particularly concerns an improved stable lime soap grease and method of making same.

Lime soap greases as heretofore manufactured are subject to discoloration and partial decomposition with separation of soap and oil on long standing or under severe working conditions of heavy loads or high temperatures.

The primary object of the present invention is the production of a lime soap grease which shall be relatively stable under aging or severe working conditions.

Another object is to provide a method of manufacturing a grease having the foregoing characteristics.

With the foregoing objects in view, the invention consists in the improved grease and method of manufacture as hereinafter described and more particularly defined by the accompanying claims.

As an example of the method of making a grease of the type forming the subject of the present invention, a mineral oil of 100–200 Saybolt viscosity at 100° F., and a fatty acid (or lard oil, tallow, etc.) may be mixed, and the mixture heated to about 220° F. with agitation. To the heated mixture there is added lime in amount sufficient to neutralize or substantially neutralize and saponify the fatty acid, which for example may be stearic acid. The heating and agitation is continued until a smooth homogeneous soap-oil mixture results, after which additional oil is gradually added to substantially equalize the proportions by weight of oil and soap. After gradually cooling the mixture to a temperature of about 150° F. while continuing the agitation, a small amount of water (1%–2%) is added together with additional mineral oil containing in solution from 0.1%–0.2% by weight of the finished grease of phenyl-alpha naphthylamine. The total volume of oil added to the soap is proportioned in accordance with the desired consistency of the finished grease. If more convenient, the fatty acids or fatty acid oils may be first saponified with lime to produce soap before any of the oil is added.

The discovery forming the basis of the invention is that the very small amount of phenyl-alpha-naphthylamine employed is effective in stabilizing the grease, apparently as a result of some strong stabilizing effect in holding the water in an emulsified dispersion even under severe working conditions. Another advantageous property of the phenyl-alpha-naphthylamine is that by its use no particular care has to be taken to completely saponify the fatty acid, such as is usually necessary in producing this type of grease; since phenyl-alpha-naphthlyamine present in the amount indicated seemingly inhibits any unstabilizing effect of as much as 0.3% to 0.4% unsaponified fatty acid in the grease.

The invention having been thus described, what is claimed as new is:

1. A grease comprising a semi-solid emulsion of heavy mineral oil, fatty acid-lime soap, 1–2% by weight of water, and 0.1%–0.2% phenyl-alpha-naphthylamine as a stabilizing agent for the emulsion adapted to prevent separation of its constituents.

2. A method of making grease comprising heating and agitating a mixture of fatty acid-lime soap and heavy mineral oil at a temperature of about 220° F. to produce a smooth homogeneous base mixture, cooling the mixture to about 150° F. and agitating while gradually admixing therewith about 1–2% by weight of water, 0.1%–0.2% of phenyl-alpha-naphthylamine as a stabilizing agent adapted to prevent separation of the constituents of the grease, and sufficient additional heavy oil to thin the grease to the desired consistency.

3. A grease composition comprising a homogeneous mixture of a lime soap, a mineral oil, and a relatively small proportion of phenyl-alpha-naphthylamine sufficient to stabilize the grease and maintain the same homogeneous under storage and use conditions.

4. The process of stabilizing greases containing a lime soap and mineral oil against separation of their constituents under storage and use conditions, which comprises intimately incorporating in the grease a relatively small proportion of phenyl-alpha-naphthylamine as a stabilizing agent adapted to prevent separation of the constituents of the grease.

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