

UNITED STATES PATENT OFFICE

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FATTY-OIL COMPOSITION

No Drawing.

Application filed January 17, 1927. Serial No. 161,709.

This invention relates to improvements in fatty oil compositions. The new fatty oil compositions are of particular value for use under conditions which normally produce rancidity in fatty oil compositions.

Many oil compositions, especially those adapted for special purposes, comprise fatty oil ingredients, i. e., ingredients containing glycerides of fatty acids or fatty acids per se. Such fatty oil ingredients may be of animal or vegetable origin. Fatty oil compositions for special purposes may vary widely in the percentage of fatty oil contained, and in special cases fatty oil compositions, such as belt dressings, pinion greases, etc. may consist entirely of fatty oils of animal and vegetable origin. Oil compositions for use at high temperatures or under conditions especially conducive to oxidation for general commercial purposes commonly comprise petroleum oils or greases as well as fatty oils.

The present invention provides an improved oil composition which can be kept or used for prolonged periods of time as compared with ordinary oil compositions comprising fatty oils, and which is stabilized, so that it will resist deterioration during storage or use. The improved fatty oil compositions can, in many cases, be used at high temperatures, or at lower temperatures where they are subjected during use to oxidation, with a greatly decreased tendency toward rancidity.

According to the present invention, the fatty oil, or the fatty oil composition, has compounded therewith a small amount of a condensation product of an aldehyde with a nitrogenous base. The fatty oil or fatty oil composition, to which the condensation product is added, may be the same as is now in general use, or may be a new composition, in which case larger quantities of animal and vegetable fatty oils may be added than is now in present use, due to the advantages resulting from this invention.

The condensation products which are added in small amounts to the fatty oils or fatty oil compositions of this invention should be non-volatile at the temperature at which the

compound is to be used, and, in general, should be soluble in the fatty oil or fatty oil composition to such an extent that they will form a homogeneous admixture therewith.

The condensation product or products may be added directly to the fatty oil or fatty oil composition if readily soluble therein, or the dissolving of the condensation product may be promoted by heating, or the ingredient may be first dissolved in a material such as benzol, and the benzol solution added to the oil with subsequent heating of the composition to drive off the benzol.

The amount of the condensation product which it is necessary to add is small. In general, a few percent at most will suffice, and as little as a fraction of one percent may be sufficient,—for example, five-tenths of one percent to one percent.

The new oil compositions of the present invention may consist entirely of fatty oils, i. e., glycerides of fatty acids, or fatty acids, or mixtures of glycerides and free fatty acids, or they may contain substantial amounts of such fatty oils, together with other ingredients, and particularly mineral oil ingredients. Fatty oils such as castor oil, sperm oil, lard, cotton-seed oil, linseed oil and other animal and vegetable oils and fats, can be stabilized and protected from becoming rancid, so that they can be kept for prolonged periods of time or so that in use they will undergo relatively little deterioration from rancidity over prolonged periods of time by having incorporated therewith a small amount of a condensation product of an aldehyde with a nitrogenous base.

Similarly, oil compositions containing substantial amounts of fatty oils admixed with mineral oils or other ingredients may be similarly stabilized and protected against becoming rancid.

Oil compositions used for special purposes, such as cutting oils, made up of admixed animal or vegetable oils and mineral oils can be stabilized in this way. Such cutting oils, when not stabilized against deterioration, tend to become rancid rapidly, particularly at elevated temperatures during use, and are objectionable, for example, when they are

spattered on the hands of the workmen. By incorporating in the cutting oil composition a small amount of a condensation product of the kind above mentioned, it is possible to use a considerably increased amount of fatty oil in the composition and still improve the stability of the composition and its resistance toward rancidity. In such cutting oil compositions the fatty oil may vary, for example, between 10 and 50%, although with the addition of the stabilizing agent the amount of fatty oil can be considerably increased as compared with similar cutting oil compositions which are not so stabilized.

Cutting oils vary widely in composition. The following examples are merely representative of suitable cutting oils containing an inhibitor, and are not to be considered as in any way limiting the scope of this invention. Other inhibitors than the condensation product of aldol with alpha-naphthylamine may be used satisfactorily.

1. A mixture of 50 parts lard oil and 50 parts of a mineral oil of low viscosity for example an oil having a viscosity between 100 seconds and 200 seconds Saybolt at 104° F., with 0.5 part of the condensation product of aldol with alpha-naphthylamine.

2. A mixture of 40 parts of low viscosity mineral oil, for example an oil having a viscosity between 100 seconds and 200 seconds Saybolt at 104° F., 30 parts lard oil and 30 parts of rape oil with 0.5 part of the condensation product of aldol with alpha-naphthylamine.

3. A mixture of 100 parts of lard oil with 0.5 part of the condensation product of aldol with alpha-naphthylamine.

Lubricating oils, containing varying amounts of glycerides or fatty acids, or both, can be similarly stabilized.

So-called denatured or inedible fats can similarly be stabilized, enabling them to be kept for long periods of time without the objectionable oxidation or rancidity commonly resulting from prolonged storage before use. Lard, for example, having one-half per cent of the condensation product of aldol with alpha-naphthylamine incorporated therewith can be kept for considerable periods of time without objectionable rancidity. The condensation product of acetaldehyde with aniline can be similarly used.

Among the condensation products of aldehydes with nitrogenous bases which can be employed according to the present invention, may be mentioned in addition to the condensation products of aldol with alpha-naphthylamine and of acetaldehyde with aniline, other condensation products of aldehydes, such as formaldehyde, acetaldehyde, benzaldehyde, butyraldehyde, furfuraldehyde, aldol, etc., with amines, both aliphatic and aromatic, e. g., anilin, alpha or beta naphthylamine, or with ammonia, etc. Ex-

amples of such condensation products in addition to those above mentioned, are the condensation product of formaldehyde with aniline, the condensation product of acetaldehyde with aniline (both the acid and the neutral condensate), the condensation product of acetaldehyde with ortho or para-toluidine, etc., the condensation product of furfuraldehyde with ammonia or with aniline or orthotoluidine, etc. The condensation of certain aldehydes and amines can be carried out either with or without an acid condensing agent, and the condensation product may be different in the different cases. When an acid condensing agent is used, it may be considered that the amine is used in the form of its salt, but when after the condensation the product is neutralized with caustic soda, the salt forming group will be removed. The condensation product may nevertheless in such case be different from that produced when no acid is used. Various amines, both aromatic and aliphatic, can be used for the condensation, as well as various aldehydes.

This application is in part a continuation of my prior application Serial No. 122,729, filed July 15, 1926, since issued as Patent No. 1,742,791.

I claim:

1. An oil composition comprising a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

2. An oil composition comprising a fatty oil and a small amount of a condensation product of an aldehyde with an amine.

3. A fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base mixed therewith to stabilize the fatty oil.

4. A fatty oil composition comprising a substantial amount of a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

5. A cutting oil composition comprising a mineral oil, a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base, the fatty oil being present in a preponderating amount.

6. An oil composition comprising at least fifty percent fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

7. A fatty oil and a small amount of a condensation product of an aldehyde with an amine mixed therewith to stabilize the fatty oil.

8. A fatty oil composition comprising a substantial amount of a fatty oil and a small amount of a condensation product of an aldehyde with an amine.

9. A cutting oil composition comprising a mineral oil, a fatty oil and a small amount of a condensation product of an aldehyde with

an amine, the fatty oil being present in a preponderating amount.

10. An oil composition comprising a mineral oil and a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base, the fatty oil being present in a preponderating amount.

11. An oil composition comprising a mineral oil, a fatty oil and a small amount of a condensation product of an aldehyde with an amine, the fatty oil being present in a preponderating amount.

12. An oil composition comprising ten to fifty percent of a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

13. A compound comprising a substantial amount of a glycerine of a fatty acid of animal or vegetable origin and a small amount of a condensation product of an aldehyde with a nitrogenous base.

14. An oil composition consisting of a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

15. A cutting oil composition containing a fatty oil and a small amount of a condensation product of an aldehyde with a nitrogenous base.

In testimony whereof I affix my signature.
ALBERT A. SOMERVILLE.