

UNITED STATES PATENT OFFICE

2,115,354

BLENDED OILS

Jones I. Wasson, Elizabeth, N. J., assignor to
Standard Oil Development Company, a corpo-
ration of Delaware

No Drawing. Application January 31, 1934,
Serial No. 709,115

7 Claims. (Cl. 87-9)

This invention relates to improved blended oil compositions and methods of preparing same, and more particularly it relates to improved methods of solubilizing polymerized fatty oils in mineral oils.

As is well known in the art, many animal and vegetable oils are ordinarily soluble in mineral oils but when polymerized many of them become partially or wholly insoluble in mineral oils, especially in paraffinic stocks, and often exhibit a cloud in mineral oil blends when such blends are cooled, due to precipitation or crystallization of one or more constituents resulting directly or indirectly from the polymerization. In many cases such precipitates can be removed by cold pressing, i. e., chilling and filtering, but such treatment is expensive.

It is the primary object of the present invention to overcome the above disadvantages so that blends of mineral oils with polymerized fatty oils may be used for many more purposes, such as the lubrication of automobile engines, aviation engines and many other types of industrial lubrication where it is desirable to supplement the valuable properties of the mineral oil with the additional valuable characteristics possessed by the polymerized fatty oils, as well as for the preparation of paints, varnishes, etc.

According to the present invention, a small amount of a blending agent comprising essentially an oxygenated organic compound is added to the mixture of mineral oil and polymerized fatty oil. Heat and agitation may be used to facilitate homogenization.

The mineral oil to be used may be of any preferred type such as naphthenic, paraffinic or synthetic oil and is not limited to any specific range of viscosity or boiling point other than that for lubricating and similar purposes. The oil to be used should be a substantially non-volatile one. The invention is of particular advantage when a mineral oil of fairly low viscosity is thickened up to the desired degree by the addition of a polymerized fatty oil of relatively high viscosity.

The polymerized fatty oil may be prepared by any desired method such as by treating an animal or vegetable oil with heat or a polymerizing catalyst, or by any suitable type of oxidizing agent, or by any other treatment which serves to thicken or polymerize the oil (such as treatment with high frequency silent electric discharge, ultraviolet light, etc.). For example, fatty oils including vegetable, animal and fish oils and the like and derivatives thereof, may be polymerized by treatment with a boron halide

catalyst at relatively low temperature as disclosed and claimed in co-pending application Serial No. 692,618 of J. M. Whiteley and L. B. Turner.

The blending agent may be any suitable type of oxygenated organic compound preferably having a fairly high boiling point so that it will not be volatilized during use, such as in the lubrication of internal combustion engines, although in the case of small amounts of low boiling compounds, it is fairly well established that considerable difficulty is encountered in driving them off. Among the various types of compounds the alcohols, ethers, esters and ketones appear to be most suitable. The particular type of blending agent to be used may vary to some extent according to the type of mineral oil being used and the type of fatty oil polymerized as well as the method and extent of polymerization. The effect of various blending agents will be apparent from the test results reproduced herebelow.

A blend was prepared by mixing 85 parts of a commercial aviation mineral lubricating oil together with 15 parts of a heat-polymerized soy bean oil having a Saybolt viscosity of 609 seconds at 210° F. This mixture is homogeneous when heated but separates or forms a "cloud" when cooled down to 100° F. Various blending agents when added to this mixture in amounts of 2% affected the cloud point as shown in the following table:

	Cloud °F.
Isopropyl alcohol 98%-----	*No cloud
Absolute ethyl alcohol-----	*No cloud
N-amyl alcohol-----	60
Methyl ethyl ketone-----	80
Methyl oleate-----	60

*No cloud means that the blend could be chilled to the pour point (25° F.) without forming any cloud.

According to the above results, 2% of either isopropyl alcohol or absolute ethyl alcohol are among the most satisfactory materials to be used as blending agents. The amount of the blending agent to be used is not limited to 2% but may be varied over a fairly wide range such as from 0.1% to about 5% or more depending upon the types and proportions of mineral and polymerized vegetable oils being blended. For example, 1.5% of methyl oleate has been found sufficient to homogenize the particular oil blend referred to above. In addition to the specific blending agents mentioned in the above examples, others may be used, for example, higher

boiling aliphatic esters such as amyl, hexyl or heptyl stearate and other alcohols such as secondary or tertiary butyl, amyl or higher alcohols and their esters, as well as aromatic oxygenated compounds such as benzyl alcohol, benzyl acetate, etc.

It is not intended that the invention be limited to the specific examples given nor to any theory of operation of the invention, but in the appended claims it is intended to claim all inherent novelty as broadly as the prior art permits.

I claim:

1. A blended oil composition, comprising a mineral oil, a polymerized fatty oil which tends to form a cloud when cooled in blends with mineral oil and a small amount of a monohydric aliphatic alcohol containing not more than five carbon atoms per molecule, the composition being substantially anhydrous.

2. An improved lubricating oil comprising a major proportion of a petroleum lubricating fraction with a minor proportion of polymerized soy bean oil and about 2% of isopropyl alcohol.

3. An improved lubricating oil comprising a major proportion of a petroleum lubricating frac-

tion with a minor proportion of a polymerized soy bean oil and about 2% of absolute ethyl alcohol.

4. An improved lubricating oil comprising a major proportion of a petroleum lubricating fraction with a minor proportion of polymerized soy bean oil and about 2% of n-amyl alcohol.

5. An improved lubricating oil comprising a major proportion of a petroleum lubricating fraction with a minor proportion of polymerized soy bean oil and about 2% of a monohydric aliphatic alcohol containing not more than five carbon atoms per molecule.

6. An improved lubricating oil comprising a major proportion of a petroleum lubricating fraction with a minor proportion of a polymerized vegetable oil and about 0.1 to about 5% of a monohydric aliphatic alcohol containing not more than five carbon atoms per molecule.

7. An improved lubricating oil comprising a blend of a major proportion of a mineral oil and a minor proportion of a polymerized fatty oil which is completely soluble in said mineral oil at temperatures above 100° F., and about 0.1 to about 5% of a monohydric aliphatic alcohol containing not more than five carbon atoms per molecule.

JONES I. WASSON.