

UNITED STATES PATENT OFFICE

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LUBRICANT OIL

No Drawing.

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In accordance with the present invention, the cold or pour test of a viscous hydrocarbon oil such as those used primarily for lubricating purposes is lowered by adding to the oil a compound of the acids formed by oxidation of paraffin wax. Such compounds include the acids themselves and the zinc and magnesium salts thereof. Their production may be affected by passing air or oxygen at a moderate rate through a body of the paraffin wax at a temperature slightly above its melting point until the treated wax has acquired a saponification number in excess of 75. A saponification number as high as 206 may be obtained. The material thus produced may be employed in accordance with the present invention; or the acids may be separated in a purified form by saponifying the resulting mixture with an alkali, removing the resulting salts and treating them with acid to form the corresponding acids; or with zinc or magnesium salts to form the corresponding salts of these metals.

In accordance with the present invention, the acids, or their zinc or magnesium salts, derived from the oxidation of paraffin wax are added to a viscous hydrocarbon oil in order to lower its cold or pour test. The amount added may suitably be up to 40 to 50 grams of the oxidized compound per liter of oil. Thus by the addition of 40 grams of the acids obtained by oxidation of paraffin wax per liter of a heavy automotive engine lubricant of about 400 to 450 sec. Saybolt viscosity at 100° F. the pour test is lowered from 30° F. to about 0° F. By the addition of 20 grams of such acids to a hydrocarbon oil of about 180 sec. Saybolt viscosity at 100° F., the pour test is lowered from about 30° F. to about 10° F. The addition of 5 grams of the zinc salt of such acids per liter of oil of the character of the less viscous oil above described lowers its cold test to about 10° F., and 10 grams of the zinc salt per liter of such oil lowers the cold test to about 0° F. 20 grams of the magnesium salt per liter produces a similar reduction in cold test to about 0° F. In each case the lowering in cold test is secured without substantial change in viscosity.

A simple procedure for effecting the oxidation of paraffin wax, the separation of the oxi-

dized products, and the recovery of the same as acids is described in a publication by Kelber-Berichte der deutschen chemischen Gesellschaft, 53, 66 (1920). Other references relative to the general procedure of oxidation of wax and separation of the oxidized products as acids or soaps are:

Bolley and Tuchschnid, Chem. Zentralblatt p. 500, 1868.

Grün—Ber. 53, 987 (1920).

Fischer & Schneider—Ber. 53, 922 (1920).

Frauck—Chem. Ztg., 44, 309 (1920).

Löffl—Chem. Ztg., 44, 561 (1920).

Bergmann—Ztsch. f. ang. chem., 31, 69 (1918).

Ubbelohde and Eisenstein—Chem. Zentralblatt p. 22, 1920 (II).

Solway and Williams—J. Chem. Soc., 121-122, 1343 (1922).

I claim:

1. The method of preparing a lubricant oil composition comprising in major part a viscous hydrocarbon oil, and having a lower cold test than the said hydrocarbon oil alone which comprises adding thereto a zinc salt of an acid derived from the oxidation of paraffin wax.

2. A lubricant composition comprising a viscous hydrocarbon oil and a zinc salt of an acid derived by the oxidation of paraffin wax, the composition having a pour test lower than that of the viscous hydrocarbon oil alone.

3. The method of preparing a lubricant oil composition comprising in major part a viscous hydrocarbon oil, and having a lower cold test than the said hydrocarbon oil alone which comprises adding thereto a compound of an acid derived by the oxidation of paraffin wax in which the radical of the acid is attached to an ion of the class consisting of zinc and magnesium.

4. The method of preparing a lubricant oil composition comprising in major part a viscous hydrocarbon oil, and having lower cold and pour tests than the said hydrocarbon oil alone which comprises adding thereto up to 50 grams per liter of a compound of an acid derived from the oxidation of paraffin wax in which the radical of the acid is at-

tached to an ion of the class consisting of zinc and magnesium.

5. A lubricant oil comprising a viscous hydrocarbon oil and a compound of an acid derived by the oxidation of paraffin wax in which the radical of the acid is attached to an ion of the class consisting of zinc and magnesium and having a cold test lower than that of the viscous oil alone.

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