

## UNITED STATES PATENT OFFICE

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LOW POUR POINT MINERAL OIL  
COMPOSITION

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19 Claims. (Cl. 87-9)

This invention relates to the methods of lowering pour points of mineral oils and is particularly concerned with the class of viscous lubricating oils containing waxy constituents.

The broad invention disclosed in my application Serial No. 678,716, of which this one is a continuation-in-part, resides in the discovery that pour points of mineral oils can be materially lowered by incorporating into the oils the organic substances whose molecules are built of one or more cyclic nuclei, containing either an oxygen or a nitrogen atom, or both, and one or more long aliphatic chains.

According to this invention, active pour point reducers were discovered among the simpler carbohydrates i. e., those which consist of one or two monosaccharose groups and particularly among disaccharose derivatives having one or more cyclic groupings in their molecules. These active substances were prepared by condensing such disaccharoses with aliphatic acids, of which saturated fatty acids, such as stearic acid, were found to be very suitable for the purpose. It is known, as an example, that a dihexose, e. g. sucrose, molecule has two etherally connected cyclic nuclei, each containing one oxygen atom; there are eight hydroxy groups in this molecule, so that upon condensation of this disaccharose with an aliphatic acid, it is possible to obtain a number of different compounds of ester type having different number of acyl radicles attached to each saccharose grouping.

The particular advantage of using acylsaccharoses in treating mineral oils is the absence of a darkening effect on the color of the oil. As these compounds are white, they cause no color change when dissolved in effective quantities (.25-1.5%) in a mineral oil for lowering its pour point.

The following table contains illustrative data showing the effect of adding .5% octastearylsaccharose to four different lubricating oils:

| Oil      | Engler viscosity at 50° C. | Pour point °C. |                          |
|----------|----------------------------|----------------|--------------------------|
|          |                            | Original       | After adding the reagent |
| 1. _____ | 4                          | +8             | -8                       |
| 2. _____ | 10                         | +11            | -5                       |
| 3. _____ | 14                         | +12            | -5                       |
| 4. _____ | 27                         | +7             | -1                       |

On adding .5% octastearyllactose to a lubricating oil having a pour point of +8° C. the latter was reduced to -5° C.; .5% of tetrastearyl-

lactose added to a Pennsylvanian lubricating oil having a pourpoint of +2° C. reduced this point to -10° C.

While these particular examples demonstrate the effectiveness of stearic acid-sucrose condensation compounds, the invention is not intended to be limited thereto, as other saturated and unsaturated monobasic aliphatic acids may be used instead of stearic acid, such as capric, lauric, myristic, palmitic, oleic, etc.

Instead of the particular dihexose, i. e. the sucrose, other disaccharoses may be used for treating some oils, such as maltose.

I claim as my invention:

1. A low pour point mineral oil composition comprising a wax containing mineral oil and a condensation product of a saccharose having at least one cyclic nucleus and not more than two monosaccharose groups in its molecule and an aliphatic acid the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil.

2. A low pour point mineral oil composition comprising a wax containing mineral oil and a condensation product of sucrose and an aliphatic acid the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil.

3. The composition of claim 2, wherein the acid used is a fatty acid.

4. The composition of claim 2, wherein the acid used is stearic acid.

5. The composition of claim 2, wherein the condensation product is octastearylsaccharose.

6. A low pour point mineral oil composition comprising a wax containing mineral oil and a condensation product of a disaccharose having at least one cyclic nucleus in its molecule and an aliphatic acid, the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the oil.

7. A low pour point mineral oil composition comprising a wax containing mineral oil and a condensation product of a monosaccharose having a cyclic nucleus in its molecule and an aliphatic acid, the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil.

8. The composition according to claim 7 in which the condensation product is tetrastearyl glucose.

9. A low pour point mineral oil composition comprising 400 parts of a wax containing mineral oil and between one and six parts of a condensa-

tion product of a saccharose having at least one cyclic nucleus and not more than two monosaccharose groups in its molecule and an aliphatic acid.

5 10. The composition of claim 9 wherein the condensation product is octastearyl saccharose.

11. The composition of claim 9 wherein the condensation product is tetrastearyl glucose.

10 12. A lubricating composition comprising a hydrocarbon oil and .25 to 1.5% of octastearyl saccharose.

13. A lubricating composition comprising a hydrocarbon oil and .25 to 1.5% of tetrastearyl glucose.

15 14. A low pour point mineral oil composition comprising a mineral oil and a condensation product of a saccharose having at least one cyclic nucleus and not more than two monosaccharose groups in its molecule and an aliphatic acid the condensation product being present in relatively 20 small amounts sufficient to cause a lowering of the pour point of the mineral oil.

15. A low pour point mineral oil composition comprising a mineral oil and a condensation

product of sucrose and an aliphatic acid the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil.

16. The composition of claim 15, wherein the condensation product is octastearylsaccharose.

17. A low pour point mineral oil composition comprising a mineral oil and a condensation product of a disaccharose having at least one cyclic nucleus in its molecule and an aliphatic 10 acid, the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the oil.

18. A low pour point mineral oil composition comprising a mineral oil and a condensation 15 product of a monosaccharose having a cyclic nucleus in its molecule and an aliphatic acid, the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil. 20

19. The composition according to claim 18 in which the condensation product is tetrastearyl glucose.

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### DISCLAIMER

2,022,990.—*Adrianus Johannes van Peski*, Bossum, Netherlands. LOW POUR POINT MINERAL OIL COMPOSITION. Patent dated December 3, 1935. Disclaimer filed July 3, 1937, by the assignee, *Shell Development Company*.

Hereby enters this disclaimer to claims 3 and 4 of said Letters Patent and to so much of claim 2 as is in excess of the following:

"A low pour point mineral oil composition comprising a wax containing mineral oil and octastearylsaccharose, the octastearylsaccharose being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil";

to as much of claim 15 as is in excess of the following:

"A low pour point mineral oil composition comprising a mineral oil and octastearylsaccharose, the condensation product being present in relatively small amounts sufficient to cause a lowering of the pour point of the mineral oil";

and from the scope of claims 1, 6, 9, 14, and 17 of said Letters Patent those low pour point mineral oil compositions therein defined wherein the only saccharose-aliphatic acid condensation product present is the condensation product of sucrose with an aliphatic acid, except where such condensation product is octastearylsaccharose,

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