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3,843,535

LUBRICATING COMPOSITIONS

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No Drawing. Continuation-in-part of application Ser. No. 204,329 Dec. 2, 1971, now Patent No. 3,773,668. This application May 25, 1973, Ser. No. 364,066
Claims priority, application France, Dec. 3, 1970, 43,605; Apr. 15, 1971, 13,437
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U.S. Cl. 252—57

41 Claims

ABSTRACT OF THE DISCLOSURE

Lubricating compositions, particularly useful for manufacturing multigrade oils, hydraulic fluids, oils for industrial gears and cutting oils, comprise (A) a hydrocarbon oil produced according to a conventional process and (B) at least one compound complying with the formula:



where m is 2 or 3, x is from 0.15 m to m inclusive; when m is 2, R_1 is a divalent aliphatic hydrocarbon radical and when m is 3, R_1 is a trivalent aliphatic hydrocarbon radical; R_2 is selected from the alkylene radicals having 2-5 carbon atoms, n is an integer from 2 to 50 and each of R_3 and R'_3 is a monovalent hydrocarbon radical, the proportion of said compound (B) with respect to said hydrocarbon oil (A) being sufficient to impart to said composition the desired viscosimetric characteristics.

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of copending application Ser. No. 204,329, filed Dec. 2, 1971, now U.S. Pat. No. 3,773,668 Nov. 20, 1973 and is directed to a non-elected distinct invention thereof pursuant to an election of species requirement.

This invention relates to new lubricating compositions consisting of mixtures of conventional hydrocarbon oils and derivatives of polyalkyleneglycols.

The conventional base oils are prepared according to different methods. The main processes for manufacturing these oils are the acid or solvent refining of vacuum distillates or deasphalted vacuum residues from crude oils, the hydrotreatment of the same petroleum cuts and the oligomerization of olefinic hydrocarbons.

In the first of these processes, a vacuum distillate or deasphalted vacuum residue can be subjected to a solvent extraction for example by means of furfural or phenol, so as to eliminate from the petroleum cut the aromatic compounds contained therein, then to a series of treatments such as dewaxing, clay bleaching and moderate hydrogenation, at a temperature of from 250° to 350° C., under a hydrogen pressure of 20 to 80 kg./cm.² in the presence of a catalyst.

In the case of certain crude oils containing a small proportion of aromatic compounds, it is possible to replace the solvent extraction by an acid treatment, generally with sulfuric acid.

The second process, the hydrotreatment of the above-mentioned petroleum cuts, may be achieved, for example, according to the teaching of U.S. Pat. No. 3,560,370, in the name of the applicant. In this patent, the hydrotreatment is conducted at a temperature of from 350 to 450° C., under a hydrogen pressure of from 80 to 240 kg./cm.² and in the presence of a catalyst.

In the third process, the oil is manufactured by oligomerizing olefinic hydrocarbons having from 2 to 20 and preferably from 9 to 16 carbon atoms per molecule.

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This oligomerization may be achieved by the action of catalysts consisting of aluminum halides, or by the action of heat, in the presence of organic peroxides acting as initiators.

The oils prepared according to the above-described processes generally exhibit viscosity indexes of from 50 to 160 and, more particularly, from 50 to 110 for solvent refined oils, from 50 to 150 for the hydrorefined oils and from 110 to 160 for the oligomerization oils.

It can be observed that the oils obtained in the two last above-described processes already exhibit must better characteristics than those obtained by the first process. For their various uses, all these oils require the addition, besides the conventional additives such as detergents or antioxidants, of more or less substantial amounts of viscosity additives, which however exhibit inherent disadvantages such as poor thermal stability and/or mechanical stability.

Moreover, these conventional oils necessitate a compromise between a low cold viscosity, a sufficient viscosity at high temperature (100-150° C.) and a low volatility.

It is known that the above-mentioned drawbacks have been partly avoided by adding to the conventional base oils a certain amount of synthetic oils consisting of esters of polycarboxylic acids or of polyols. The improvement achieved by the use of these products is however very limited, with respect to the viscosity index.

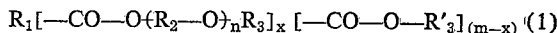
It is an object of this invention to provide new lubricating compositions exhibiting viscosity-temperature characteristics so improved that the amount of viscosity additives that must be incorporated thereto is very substantially decreased (or even nullified). Consequently, their thermal stability and mechanical resistance to shearing are also improved and their volatility is reduced. Moreover, they exhibit such an exceptional lubricating power that their use makes it possible to avoid mechanical difficulties such as seizing and pitting as well as to reduce the wear of the machines lubricated therewith. These qualities are particularly useful for lubricating engines operating under severe conditions, hydraulic circuits, gears of various types as well as in machining metals.

The present invention relates to new lubricating compositions which contain generally a compound (A) consisting of a hydrocarbon oil and a compound (B) selected amongst the esters of polyalkyleneglycol ethers.

The hydrocarbon oil (A) is selected among the mineral oils obtained either by solvent refining or by acid treatment, or by severe hydrotreatment of vacuum distillates or deasphalted vacuum residues from crude oils and the synthetic oils obtained by oligomerizing olefinic hydrocarbons having from 2 to 20 carbon atoms per molecule.

Generally, compound (B) results from the esterification of a di- or tri-carboxylic acid by at least one ether of a polyalkyleneglycol and a monoalcohol or monophenol, said ether being used either alone or in admixture with at least one monoalcohol or monophenol.

More particularly, compound (B) complies with the general formula:



wherein m is 2 or 3; x is from 0.15 m to m inclusive, preferably from 0.30 m to m inclusive; when m is 2, R_1 is the divalent aliphatic hydrocarbon radical of a dicarboxylic acid and when m is 3, R_1 is the trivalent aliphatic hydrocarbon radical of a tricarboxylic acid; R_2 is selected from the alkylene radicals having 2-5 carbon atoms, preferably ethylene or propylene; n is an integer from 2 to 50, preferably 5 to 30 and each of R_3 and R'_3 is the monovalent hydrocarbon radical of a monoalcohol or monophenol.

The dicarboxylic acids particularly contemplated in this invention are: saturated or unsaturated aliphatic dicarboxylic acids having 3 to 20 carbon atoms, as well as the saturated or unsaturated aliphatic dicarboxylic acids having 28-44 carbon atoms, such as those resulting from dimerization of unsaturated fatty acids of 14-22 carbon atoms, optionally followed with a hydrogenation.

The following dicarboxylic acids can be cited as examples: malonic, succinic, maleic, fumaric, glutaric, adipic, pimelic, suberic, azelaic, sebacic, dodecanedioic and isononadecanedioic acids as well as the saturated or unsaturated dicarboxylic acids obtained from dimerization of unsaturated fatty acids such as the following: tetradecenoic acids (e.g. myristoleic acid), hexadecenoic acids (e.g. palmitoleic acid), octadecenoic acids (e.g. oleic acid), octadecadienoic acids (e.g. linoleic acid), octadecatrienoic acids (e.g. linolenic acid), eicosenoic acids and docosenoic acids (e.g. crucic and brassidic acids) and natural or synthetic mixtures thereof. Natural mixtures of such unsaturated fatty acids are, for example, fatty acids from soya-bean, linseed oil, spermacetic oil or colza oil.

The tricarboxylic acids particularly contemplated in this invention are the saturated or unsaturated aliphatic tricarboxylic acids having 42-66 carbon atoms, such as those resulting from trimerization of unsaturated fatty acids of 14-22 carbon atoms, optionally followed with a hydrogenation. Examples of these carboxylic acids are those obtained from the trimerization of the specific unsaturated fatty acids or mixtures thereof as cited hereinabove. Among the di- (or tri-) carboxylic acids resulting from the di- (or tri-) merization of unsaturated fatty acids of 14-22 carbon atoms, particularly preferred are those which result from dimerization or trimerization of one or more C_{18} -unsaturated fatty acids, such as oleic, linoleic and linolenic acids, or natural or synthetic mixtures containing them in noticeable proportions. The di- and tri-carboxylic acids respectively contain 36 and 54 carbon atoms.

The monoalcohols are particularly aliphatic monoalcohols of 1-25 carbon atoms such as, for example, methanol, ethanol, n-butanol, 2-ethylhexanol, isononanol, isodecanol, dodecanol, isotridecanol or isopentadecanol, or alicyclic monoalcohols of 3-25 carbon atoms, such as, for example: cyclopropanol, cyclobutanol, cyclohexanol or methylcyclohexanol. The monophenols particularly contain 6-25 carbon atoms. Examples are: phenols unsubstituted or substituted with one or more alkyl radicals such as heptylphenol, nonylphenol or dodecylphenol.

The manufacture of compounds of formula (1) may be achieved, according to known methods, by the total esterification of the di- or tri-carboxylic acid with one or more ether of a polyalkyleneglycol and a monoalcohol or monophenol, said ether having the formula:



wherein R_2 , R_3 and n are as defined hereinabove, or with a mixture of one or more ether of such a type with one or more monoalcohol or monophenol having the formula:



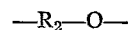
wherein R'_3 is as defined hereinabove, said mixture containing at least 15% by mole, preferably at least 30% by mole, of compound of formula (2). The esterification reaction may be carried out in the presence of a convenient catalyst, the water produced being removable by azeotropic entrainment by means of a solvent.

After the end of the reaction, the remaining acidic products may be removed either by washing with a hydroalcoholic potash solution and then with water or by clay treatment. The solvent is then expelled under vacuum and the residue, consisting in the ester of polyalkyleneglycol ether, may be recovered without having to be distilled.

As for ethers of polyalkyleneglycol and monoalcohol (or monophenol) of formula (2), they may be obtained, according to known methods, by the condensation of one or more alkylene oxide (particularly ethylene oxide or propylene oxide or mixtures thereof) on the convenient monoalcohol (or monophenol). The so-obtained ethers of polyalkyleneglycol and monoalcohol (or monophenyl) have generally an average molecular weight of about 100 to 2500, varying with the monoalcohol (or monophenol) used and the polycondensation grade of the alkylene oxide (n from 2 to 50, preferably from 5 to 30).

Compounds of formula (1) as defined hereinabove are liquids, the viscosity of which is generally from 20 to 500 cst. at 98.9° C., more particularly from 40 to 200 cst., and their density is generally around 1. Most of them are miscible with mineral or synthetic oils in rather large proportions, their miscibility being better with fluid oils than with more viscous oils, and better with naphthenic mineral oils than with paraffinic mineral oils.

Further, among compounds (B) in which $-R_2-O-$ groups are particularly derived from ethylene oxide and propylene oxide, as the derivatives of ethylene oxide are generally less miscible with a given oil than those of propylene oxide, there are preferably used compounds in which all $-R_2-O-$ groups are derived from propylene oxide or still mixed compounds in which the ratio of $-R_2-O-$ groups derived from ethylene oxide to

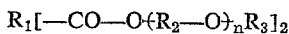


groups derived from propylene oxide does not exceed 1/1.

Still further, are also preferred compounds (B) of formula (1) in which radical R_1 and/or the major part of radicals R_3 and R'_3 , if any, contain at least 10 carbon atoms.

As specific examples for compound (B), the following can be cited.

(a) compounds complying with formula (1) in which m is 2 and x is m , i.e.:



malonates of ethers obtained by condensation of propylene oxide on isotridecanol.

decanedioates of ethers obtained by condensation of propylene oxide on decanol.

dodecanedioates of ethers obtained by condensation of propylene oxide on n-butanol.

dodecanedioates of ethers obtained by condensation of propylene oxide on 2-ethylhexanol.

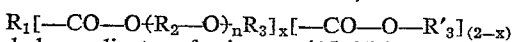
dodecanedioates of ethers obtained by condensation of a mixture (25/75 by weight) of ethylene oxide and propylene oxide on decanol.

dodecanedioates of ethers obtained by condensation of propylene oxide on cyclohexanol.

dodecanedioates of ethers obtained by condensation of propylene oxide on dodecylphenol.

esters of C_{36} dimeric fatty acids with ethers obtained by condensation of propylene oxide on 2-ethylhexanol.

(b) compounds complying with formula (1) in which m is 2 and x is different from m , i.e.:



dodecanedioates of mixtures (15-85 by moles) of ethers obtained by condensation of propylene oxide on 2-ethylhexanol with C_{13-15} saturated aliphatic monoalcohols.

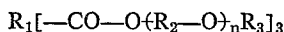
esters of C_{36} dimeric fatty acids with mixtures (30-70 by moles) of ethers obtained by condensation of propylene oxide on 2-ethylhexanol with C_{13-15} saturated aliphatic monoalcohols.

esters of C_{36} dimeric fatty acids with mixtures (50-50 by moles) of ethers obtained by condensation of propylene oxides on 2-ethylhexanol with C_{13-15} saturated aliphatic monoalcohols.

esters of C_{36} dimeric fatty acids with mixtures (70-30 by moles) of ethers obtained by condensation of propylene

oxide on C₁₃₋₁₅ saturated aliphatic monoalcohols with 2-ethylhexanol.

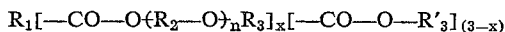
(c) compounds complying with formula (1), in which *m* is 3 and *x* is *m*, i.e.:



esters of C₅₄ trimeric fatty acids with ethers obtained by condensation of propylene oxide on *n*-butanol.

esters of C₅₄ trimeric fatty acids with ethers obtained by condensation of propylene oxide on C₁₃₋₁₅ saturated aliphatic monoalcohols.

(d) compounds complying with formula (1), in which *m* is 3 and *x* is different from *m*, i.e.:



esters of C₅₄ trimeric fatty acids with mixtures (30-70 by moles) of ethers obtained by condensation of propylene oxide on 2-ethyl hexanol with C₁₃₋₁₅ saturated aliphatic monoalcohols.

esters of C₅₄ trimeric fatty acids with mixtures (70-30 by moles) of ethers obtained by condensation of propylene oxide on C₁₃₋₁₅ saturated aliphatic monoalcohols and dodecanol.

In order to prepare lubricating compositions according to this invention, at least one compound (B) of formula (1) is added to a conventional hydrocarbon oil in such a proportion that the mixture exhibits the desired viscosimetric characteristics.

More particularly, the hydrocarbon oil may be selected among the mineral oils (solvent-refined paraffinic oils or hydrorefined oils) having for example a viscosity at 37.8° C. of at least about 100 SSU, more particularly from about 150 to 350 SSU. One or more compound (B) is added thereto until the desired viscosimetric characteristics are reached or approached as near as possible.

The convenient proportion of compound (B) so added may amount for example to 5-95% by weight of the resulting mixture. If necessary to adjust more closely the viscosimetric characteristics of the mixture, a conventional Vi-improver may be added thereto, this addition being made, however, in a very small amount, far lower in any case than that it would be necessary to add to a conventional mineral oil, in the absence of compound (B), in order to reach the same viscosimetric characteristics.

According to the nature of their components, the compositions according to the invention may contain the hydrocarbon oil (A) in a major proportion (50 to 95% by weight) as compared with the ester of polyalkyleneglycol ether (B) (5 to 50% by weight), or, on the contrary, the compound (B) may be present in a major proportion (50 to 95% by weight) as compared with the compound (A) (5 to 50% by weight).

In order to increase the miscibility of compound (B) with the hydrocarbon oil, an amount of about 2 to 20% by weight, in some cases as high as 30 by weight, of a "third solvent" such as an ester of an aliphatic dicarboxylic acid with an aliphatic monoalcohol or an ester of an aliphatic monocarboxylic acid with an aliphatic polyalcohol may be added to the composition.

Examples of "third solvents" are: isodecyl adipate trimethyl-hexyl azelate, 2-ethylhexyl sebacate, neopentylglycol pelargonate or trimethylolpropane pelargonate.

The compositions of the invention may be used for manufacturing motor oils and particularly multigrade oils; they are also advantageously used for manufacturing hydraulic fluids, oils for gear-boxes, oils for industrial gears or oils for the cutting or the forming of metals. In all these applications, the lubricating and anti-wear properties of the compositions according to the invention appear of particular interest since they permit a good working security and an extended life for the mechanisms lubricated therewith.

The following examples illustrate the invention:

PREPARATIONS I TO III

By condensation of propylene oxide on the convenient alcohol or mixture of alcohols, the following ethers of polypropyleneglycol have been prepared:

Ether I.—Ether from condensation of propylene oxide on *n*-butanol, having a viscosity at 37.8° C. of about 40 cst. Said ether contains about 8 propylene oxide units per molecule.

Ether II.—Ether from condensation of propylene oxide on *n*-butanol, having a viscosity at 37.8° C. of about 50 cst. Said ether contains about 10 propylene oxide units per molecule.

Ether III.—Ether from condensation of propylene oxide on a mixture of saturated aliphatic C₁₃₋₁₅ alcohols, having a viscosity at 37.8° C. of about 100 cst. Said ether contains about 22 propylene oxide units per molecule.

PREPARATIONS A TO F

Esters have been prepared, by a usual esterification method from the following carboxylic acids:

dodecanedioic acid.

industrial "dimeric acid," obtained by dimerization of unsaturated aliphatic C₁₈ monocarboxylic acids (Trademark "Epol 1040" of Unilever-Emery)

Molecular weight—565

Saponification index—191-197

Purity grade—95-97%

industrial "trimeric acid," obtained by trimerization of unsaturated aliphatic C₁₈ monocarboxylic acids (Trademark "Empol 1040" of Unilever-Emery)

Molecular weight—850

Saponification index—192-200

Purity grade—95%

Esters A to F were the following:

Ester A.—Dodecanedioate of Ether I

Viscosity at 37.8° C.—190 SSU

Viscosity index (VI_E)—190

Ester B.—Ester of "dimeric acid" with a mixture (50-50 by moles) of Ether III and 2-ethylhexanol.

Ester C.—Ester of "trimeric acid" with Ether II.

Ester D.—Ester of "trimeric acid" with Ether III.

Ester E.—Ester of "trimeric acid" with a mixture (67-33 by moles) of Ether III and a mixture of saturated aliphatic C₁₃₋₁₅ alcohols.

Ester F.—Ester of "trimeric acid" with a mixture (67-33 by moles) of Ether III and dodecanol.

Some physical characteristics of Esters B to F are given hereinafter.

Ester	Viscosity (est.) at—		Pour point (° C.)
	37.8° C.	98.9° C.	
B-----	271	37.92	-36
C-----	470	61.84	-36
D-----	1,113	138.4	-24
E-----	853	105.0	-24
F-----	405	54.45	-18

EXAMPLES 1 TO 3

In these examples, lubricating compositions have been prepared by determining the proportions of Ester A to be added to various hydrocarbon oils so as to obtain multigrade oils having given viscosity characteristics. In some cases, a minor amount of a Vi-improver (polymethacrylate) had to be added.

By way of comparison, an attempt has been made to prepare multigrade oils exhibiting the same viscosity characteristics from pure hydrocarbon oils.

The viscosity characteristics required and the composition of the multigrade oils prepared have been reported in the following Table I.

To each of the base mixtures, 6% by weight of an antioxidant and detergent additive has also been added.

From this table, it is seen that the proportion of Vi-improver which it is necessary to add to composition according to this invention in order to reach the desired viscosimetric characteristics is substantially reduced with respect to the proportion which must be added to compositions consisting essentially of mineral oils.

acid-refined mineral oils, the hydrorefined oils and the synthetic oils obtained by oligomerization of olefinic hydrocarbons having 2-20 carbon atoms and (B) at least one compound complying with the general formula:

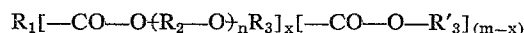


TABLE I

Example number	Viscosity characteristics desired		Nature of the components	Composition		VI improver (percent b.w.)
	Viscosity at 98.9° C.	VIE		Percent by weight		
1-----	~10	~185	Hydrorefined mineral oil 150 SSU at 37.8° C., VIE:132-----	10 }		0.5
Comparison-----			Ester A-----	90 }		
2-----			Hydrorefined mineral oil 140 SSU at 37.8° C., VIE:138-----	100 }		
3-----	~10	~150	Solvent refined mineral oil 200 SSU at 37.8° C., VIE:100-----	70 }		2.2
Comparison-----			Ester A-----	30 }		
4-----			Solvent refined mineral oil 350 SSU at 37.8° C., VIE: 100-----	45 }		
5-----			Ester A-----	55 }		0
6-----			Solvent refined mineral oil 160 SSU at 37.8° C., VIE: 100-----	100 }		

EXAMPLES 4 TO 14

Multigrade oils have been prepared by adding Esters B-F to hydrocarbon oils. In some cases, a "third solvent" isodecyladipate, has been added to improve the miscibility of the Ester in the hydrocarbon oil, when necessary, a minor amount of a Vi-improver has also been added (polymethacrylate).

To each of the base mixtures, 0.5% by weight of an anti-gelling additive and 5% by weight of a detergent additive have also been added.

The composition and some physical characteristics of the multigrade oils are given in the following Table II, in which the characteristics of some commercial mineral oils have also been indicated, by way of comparison.

The volatility of the oils is determined according to ASTM D972-56 modified by using nitrogen instead of air and a duration of 6 hours instead of 22 hours.

From Table II, it is seen that the proportion of Vi-improver which must be added to compositions according to this invention to impart thereto the viscosimetric characteristics corresponding to a given SAE category is very low or even nullified.

TABLE II

Example number	Composition (percent by weight)					VI improver percent b.w.	Viscosity at--			VIE	SAE	Pour point (° C.)	Volatility (percent b.w.)
	Mineral oil	Percent	Ester	Percent	Isodecyl adipate		98.9° C., cst.	37.8° C., cst.	-17.8° C., poises				
4-----	350 neutral	70	B	30	-----	-----	16.6	135	96	143	20W40	-30	3.0
5-----	200 neutral	70	B	30	-----	-----	13.2	95.9	51.5	146	20W40	-30	7.5
6-----	do	70	B	30	-----	3.5	17.7	138	57	161	20W50	-33	9.0
7-----	do	50	C	30	20	-----	13.77	90.4	40.6	167	20W40	-30	10.7
8-----	do	60	D	20	20	-----	13.75	89.1	38	168	20W40	-30	11.0
9-----	do	70	D	14	16	3	15.07	102	37	165	20W40	-33	11.4
10-----	150 neutral	75	E	25	-----	-----	13.9	92.4	42.5	165	20W40	-30	13.9
11-----	200 neutral	90	E	10	-----	2.5	13.05	94.5	42	146	20W40	-30	12
12-----	280 neutral	55	E	25	20	-----	15.75	106.6	53	167	20W40	-36	7.5
13-----	do	75	F	25	-----	-----	15.35	122	52.5	141	20V40	-24	5
14-----	do	60	F	25	15	-----	13.7	95.75	50	155	20W40	-24	7
-----	Commercial	-----	-----	-----	-----	-----	15.8	100	35	179	20W40	-33	20.4
-----	Commercial	-----	-----	-----	-----	-----	18.0	129	67	165	20W50	-30	13

It is seen further that the volatility of compositions according to this invention is reduced with respect to volatility of commercial multigrade oils of the same SAE category.

From the foregoing description, one skilled in the art can easily ascertain the essential characteristics of this invention, and without departing from the spirit and scope thereof, can make various changes and modifications of the invention to adapt it to various changes and modifications of the invention to adapt it to various usages and conditions.

What is claimed is:

1. A lubricating composition of high viscosity index suitable for use as base lubricant for multigrade oils comprising lubricating amounts of a mixture of (A) a hydrocarbon oil of lubricating viscosity selected from the group consisting of the solvent-refined mineral oils, the

where m is 2 or 3, x is from 0.15 m to m inclusive; when m is 2, R_1 is the divalent hydrocarbon radical of a dicarboxylic acid selected from the group consisting of unsaturated dicarboxylic acids having 28-44 carbon atoms resulting from dimerization of unsaturated fatty acids of 14-22 carbon atoms, and the corresponding saturated dicarboxylic acids, and when m is 3, R_1 is a trivalent hydrocarbon radical of a tricarboxylic acid selected from the group consisting of unsaturated tricarboxylic acids having 42-66 carbon atoms resulting from trimerization of unsaturated fatty acids of 14-22 carbon atoms, and the corresponding saturated tricarboxylic acids; R_2 is selected from the alkylene radicals having 2-5 carbon atoms, n is an integer from 2 to 50 and each of R_3 and R'_3 is the monovalent hydrocarbon radical of a compound selected from the group consisting of aliphatic monoalcohols of 1-25 carbon atoms, alicyclic monoalcohols of 3-25 carbon atoms and unsubstituted and alkyl-substituted monophenols of 6-25 carbon atoms, the proportion of said compound (B) with respect to said hydrocarbon oil (A) being sufficient to impart to said composition the desired high viscosity index, and components (A) and (B) to

together constituting the predominant component of said composition.

2. A composition as defined by claim 1, wherein, in the formula of compound (B), R_2 is selected from the group consisting of ethylene and propylene.

3. A composition as defined by claim 1, wherein, in the formula of compound (B), n is an integer from 5 to 30.

4. A composition as defined by claim 1, wherein, in the formula of compound (B), x is from 0.30 m to m inclusive.

5. A composition as defined by claim 1, wherein compound (B) has a viscosity of 98.9° C. of from 20 to 500 cst.

6. A composition as defined by claim 1 wherein compound (B) has a viscosity of 98.9° C. of from 40 to 200 cst.

7. A multigrade oil comprising a major part of a lubricating composition as defined by claim 1.

8. A composition as defined by claim 1, wherein the hydrocarbon oil (A) is selected from the group consisting of solvent-refined paraffinic mineral oils and hydrorefined oils having a viscosity at 37.8° C. of at least 100 SSU.

9. A composition as defined by claim 8, wherein the viscosity at 37.8° C. of the hydrocarbon oil is from 150 to 350 SSU.

10. A composition as defined by claim 1, wherein the hydrocarbon oil (A) represents from 5 to 95% by weight and compound (B) from 95 to 5% by weight.

11. A composition as defined by claim 10, wherein x is m .

12. A composition as defined by claim 1, wherein m is 2.

13. A multigrade oil comprising a major part of a lubricating composition as defined by claim 12.

14. A composition as defined by claim 1, wherein m is 3.

15. A multigrade oil comprising a major part of a lubricating composition as defined by claim 14.

16. A composition as defined by claim 1, wherein m is 2 and R_1 is the divalent hydrocarbon radical of a dicarboxylic acid selected from the group consisting of unsaturated dicarboxylic acids having 36 carbon atoms which result from dimerization of unsaturated fatty acids of 18 carbon atoms, and the corresponding saturated dicarboxylic acids.

17. A composition as defined by claim 16 wherein the major part of R_2 and R'_2 contains at least 10 carbon atoms.

18. A multigrade oil comprising a major part of a lubricating composition as defined by claim 16.

19. A composition as defined by claim 16, wherein R_2 is selected from the group consisting of ethylene and propylene.

20. A composition as defined by claim 19, wherein all R_2 radicals are propylene.

21. A composition as defined by claim 19, wherein the ratio of R_2 radicals consisting of ethylene to R_2 radicals consisting of propylene is at most 1/1.

22. A composition as defined by claim 16, further comprising a minor amount of a third solvent selected from the group consisting of esters of aliphatic dicarboxylic acids with aliphatic monoalcohols and esters of aliphatic monocarboxylic acids with aliphatic polyalcohols.

23. A composition as defined by claim 22, wherein x is m .

24. A composition as defined by claim 16 wherein x is m .

25. A composition as defined by claim 24, wherein the hydrocarbon oil (A) represents from 5 to 50% by weight and component (B) 95 to 50% by weight.

26. A composition as defined by claim 24, wherein the hydrocarbon oil (A) represents from 50 to 95% by weight and compound (B) from 50 to 5% by weight.

27. A composition as defined by claim 24, wherein R_2 is selected from the group consisting of ethylene and propylene.

28. A composition as defined by claim 24, wherein all R_2 radicals are propylene.

29. A composition as defined by claim 24, wherein the

ratio of R_2 radicals consisting of ethylene to R_2 radicals consisting of propylene is at most 1/1.

30. A composition as defined by claim 24, wherein the major part of R_3 and R'_3 contains at least 10 carbon atoms.

31. A composition as defined by claim 24, further comprising a minor amount of a third solvent selected from the group consisting of esters of aliphatic dicarboxylic acids with aliphatic monoalcohols and esters of aliphatic monocarboxylic acids with aliphatic polyalcohols.

32. A composition as defined by claim 24, wherein the hydrocarbon oil (A) represents from 5 to 95% by weight and compound (B) from 95 to 5% by weight.

33. A multigrade oil comprising a major part of a lubricating composition as defined by claim 24.

34. A composition as defined by claim 1, wherein m is 3 and R_1 is the trivalent hydrocarbon radical of a tricarboxylic acid selected from the group consisting of unsaturated tricarboxylic acids having 54 carbon atoms, which result from trimerization of unsaturated fatty acids of 18 carbon atoms, and the corresponding saturated tricarboxylic acids.

35. A composition as defined by claim 34, wherein the major part of R_3 and R'_3 contains at least 10 carbon atoms.

36. A composition as defined by claim 34, wherein x is m .

37. A composition as defined by claim 34, further comprising a minor amount of a third solvent selected from the group consisting of esters of aliphatic dicarboxylic acids with aliphatic monoalcohols and esters of aliphatic monocarboxylic acids with aliphatic polyalcohols.

38. A multigrade oil comprising a major part of a lubricating composition as defined by claim 34.

39. A composition as defined by claim 34, wherein R_2 is selected from the group consisting of ethylene and propylene.

40. A composition as defined by claim 39, wherein all R_2 radicals are propylene.

41. A composition as defined by claim 39, wherein the ratio of R_2 radicals consisting of ethylene to R_2 radicals consisting of propylene is at most 1/1.

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