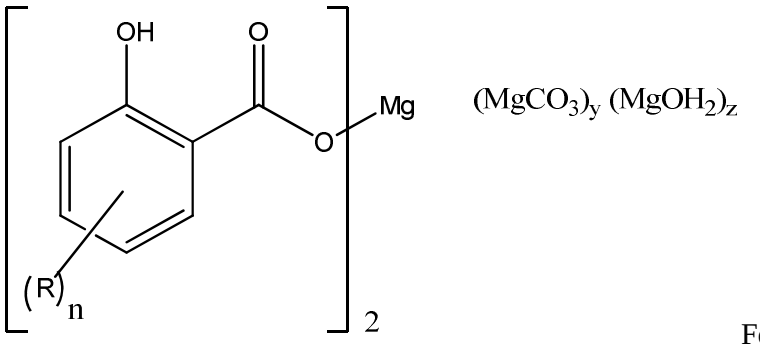
What is Claimed is:

1. A magnesium alkylhydroxybenzoate detergent wherein the alkyl group is derived from an isomerized alpha olefin having from 10 to 40 carbon atoms per molecule, and having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4.

2. The magnesium alkylhydroxybenzoate detergent of claim 1 having the following structure (Formula 1):



Formula 1

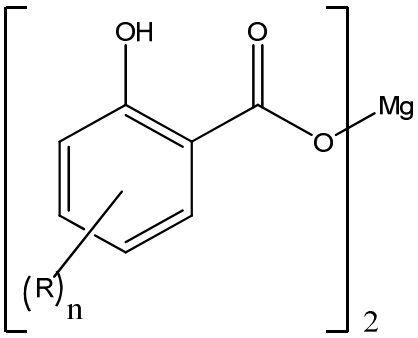
where R is an alkyl group derived from an isomerized alpha olefin having from 10 to 40 carbon atoms per molecule, having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4, n is an integer from 1 to 4, and y and z are independently integers or fractional numerical values.

3. A lubricating oil composition comprising:

(a) a major amount of an oil of lubricating viscosity; and
(b) a magnesium alkylhydroxybenzoate detergent wherein the alkyl group is derived from an isomerized alpha olefin having from 10 to 40 carbon atoms per molecule, and having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4.

4. A lubricating oil composition comprising:

a) a major amount of an oil of lubricating viscosity; and
b) a magnesium alkylhydroxybenzoatedetergent having the following structure (Formula 1):



$(MgCO_3)_y\ (MgOH_2)_z$

Formula 1,

where R is an alkyl group derived from an isomerized alpha olefin having from 10 to 40 carbon atoms per molecule, having an isomerization level (l) of the normal alpha olefin of from 0.1 to 0.4, n is an integer from 1 to 4, and y and z are independently integers or fractional numerical values.

5. The magnesium alkylhydroxybenzoate detergent of claim 1, wherein said detergent is prepared by the process comprising:

(a) alkylating a hydroxyaromatic compound with at least one normal alpha olefin having from 10 to 40 carbon atoms per molecule that has been isomerized to obtain an isomerized alpha olefin having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4, thereby producing an alkylated hydroxyaromatic compound;

(b) neutralizing the resulting alkylated hydroxyaromatic compound with an alkali metal base such as KOH or NaOH to provide an alkali metal salt of the alkylated hydroxyaromatic compound;

(c) carboxylating the alkali metal salt from step (b) with CO_2 thereby producing an alkylated hydroxybenzoic acid alkali metal salt;

(d) acidifying the salt produced in step (c) with acid to produce the alkylated hydroxybenzoic acid;

(e) neutralizing the alkylated hydroxybenzoic acid with magnesium oxide, magnesium hydroxide, or magnesium carbonate; and

(f) optionally, overbasing the magnesium alkylhydroxybenzoate produced in step (e) with a magnesium compound such as MgO, Mg(OH)2, MgCO3 in the presence of CO2 thereby producing an overbased magnesium alkylated hydroxybenzoate.

6. The lubricating oil composition of claim 3 further comprising a molybdenum containing compound.

7. The lubricating oil composition of claim 3, further comprising a detergent.

8. The lubricating oil composition of claim 7, wherein the detergent is salicylate, phenate, sulfonate, or a combination thereof.

9. The lubricating oil composition of claim 7, wherein the detergent is a magnesium salicylate.

10. The lubricating oil composition of claim 1, further comprising a non-dispersant olefin copolymer VII.

11. The lubricating oil composition of claim 1, further comprising a primary or secondary zinc dithiophosphate compound or a mixture thereof.

12. The lubricating oil composition of claim 1, further comprising a friction modifier.

13. The lubricating oil composition of claim 12, wherein the friction modifier is molybdenum dithiocarbamate.

14. The magnesium alkylhydroxybenzoate detergent of claim 1, wherein the TBN is 10-450mgKOH/gm on an oil-free basis.

15. The magnesium alkylhydroxybenzoate detergent of claim 5, wherein the TBN is 10-450 mgKOH/gm on an oil-free basis.

16. A method for improving oxidation performance of lubricating oil in an internal combustion engine comprising, operating said internal combustion engine with a lubricating oil composition comprising:

(a) a major amount of an oil of lubricating viscosity; and
(b) a magnesium alkylhydroxybenzoate detergent wherein the alkyl group is derived from an isomerized alpha olefin having from 10 to 40 carbon atoms

per molecule, and having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4.

17. A method for improving fuel economy performance of lubricating oil in an internal combustion engine comprising, operating said internal combustion engine with a lubricating oil composition comprising:

(a) a major amount of an oil of lubricating viscosity; and

(b) a magnesium alkylhydroxybenzoate detergent wherein the alkyl group is derived from an isomerized alpha olefin having from 10 to 40 carbon atoms per molecule, and having an isomerization level (I) of the normal alpha olefin of from 0.1 to 0.4.