Case No. 3968-01

What is claimed is:

1. A process for preparing a sulfurized alkaline earth metal dodecylphenate, comprising:

(a) reacting (i) dodecylphenol with

(ii) an alkaline earth metal hydroxide or an alkaline earth metal oxide in an amount of about 0.25 to about 0.7 moles per mole of dodecylphenol charged and

(iii) an alkylene glycol in an amount of about 0.13 to about 0.6 moles per mole of dodecylphenol charged; and

(b) reacting the product of step (a) with

(iv) sulfur in an amount of about 1.6 to about 3 moles per mole of dodecylphenol charged;

and thereafter optionally

(c) reacting the product of step (b) with additional alkaline earth metal hydroxide or alkaline earth metal oxide and with carbon dioxide so as to form an overbased phenate.

2. The process of claim 1 wherein the amount of alkylene glycol is about 0.13 to about 0.26 moles per mole of dodecylphenol charged.

3. The process of claim 1 or claim 2 wherein the alkaline earth metal comprises calcium or magnesium.

4. The process of any of claims 1 through 3 wherein the alkaline earth metal comprises calcium.

5. The process of any of claims 1 through 4 wherein step (a) is conducted at about 100°C to about 140°C and step (b) is conducted at about 160°C to about 230°C, or about 180°C to about 230°C.

6. The process of any of claims 1 through 5 wherein optional step (c) is performed.

7. The process of any of claims 1 through 6 wherein optional step (c) is performed and includes the addition of an additional amount of sulfur, provided that the total amount of sulfur added throughout the steps of the process does not exceed about 3 moles per mole of dodecylphenol charged.

8. The process of any of claims 1 through 7 wherein optional step (c) is performed and includes the addition of diluent oil and one or more hydroxy-containing materials comprising at least one material selected from the group consisting of an alkylene glycol, an alcohol of about 6 to about 20 carbon atoms, and an alkylbenezene-sulfonic acid, and mixtures thereof; and the subsequent removal of volatile materials.

9. The process of claim 8 wherein the amount of the one or more hydroxy-containing materials is about 1 to about 3 moles per mole of dodecylphenol charged.

10. The process of any of claims 1 through 9 wherein step (c) is performed and the amount of additional calcium hydroxide or calcium oxide is sufficient to provide a product with a total base number of about 200 to about 600 on an oil free basis.

11. The product prepared by the process of any of claims 1 through 10.

12. The product of claim 11 wherein the mole ratio of sulfur to PDDP monomer units within the product is about 0.95:1 to about 1.5:1 (or 1.0:1 to 1.2:1).

13. The product of claim 11 or claim 12 having less than about 15 percent by weight of monomeric PDDP monomer units, based on the total amount of PDDP units present.

14. A lubricant composition comprising an oil of lubricating viscosity and the product of any of claims 11 through 13.

15. A method for lubricating an internal combustion engine, comprising supplying thereto the lubricant composition of claim 14.

What is claimed is:

1. A process for preparing a sulfurized alkaline earth metal dodecylphenate, comprising:

(a) reacting (i) dodecylphenol with

(ii) an alkaline earth metal hydroxide or an alkaline earth metal oxidein an amount of 0.25 to 0.7 moles per mole of dodecylphenol charged and

(iii) an alkylene glycol in an amount of 0.13 to 0.6 moles per mole of dodecylphenol charged; and

(b) reacting the product of step (a) with

(iv) sulfur in an amount of 1.9 to 3 moles per mole of dodecylphenol charged; and thereafter optionally

(c) reacting the product of step (b) with additional alkaline earth metal hydroxide or alkaline earth metal oxide and with carbon dioxide so as to form an overbased phenate.

2. The process of claim 1 wherein the amount of alkylene glycol is 0.13 to 0.26 moles per mole of dodecylphenol charged.

3. The process of claim 1 or claim 2 wherein the alkaline earth metal comprises calcium or magnesium.

4. The process of any one of claims 1 through 3 wherein the alkaline earth metal comprises calcium.

5. The process of any one of claims 1 through 4 wherein step (a) is conducted at 100°C to 140°C and step (b) is conducted at 160°C to 230°C, or 180°C to 230°C.

6. The process of any one of claims 1 through 5 wherein optional step (c) is performed.

7. The process of any one of claims 1 through 6 wherein optional step (c) is performed and includes the addition of an additional amount of sulfur, provided that the total amount of sulfur added throughout the steps of the process does not exceed 3 moles per mole of dodecylphenol charged.

8. The process of any one of claims 1 through 7 wherein optional step (c) is performed and includes the addition of diluent oil and one or more hydroxy-containing materials comprising at least one material selected from the group consisting of an

alkylene glycol, an alcohol of 6 to 20 carbon atoms, and an alkylbenezenesulfonic acid, and mixtures thereof; and the subsequent removal of volatile materials.

9. The process of claim 8 wherein the amount of the one or more hydroxy-containing materials is 1 to 3 moles per mole of dodecylphenol charged.

10. The process of any one of claims 1 through 9 wherein step (c) is performed and the amount of additional calcium hydroxide or calcium oxide is sufficient to provide a product with a total base number of 200 to 600 on an oil free basis.

11. The process of any one of claims 1 through 10 wherein the amount of sulfur is 2.2 to 3 moles per mole of dodecylphenol charged.

12. A product prepared by the process of any one of claims 1 through 11.

13. The product of claim 12 wherein the mole ratio of sulfur to PDDP monomer units within the product is 0.95:1 to 1.5:1 or 1.0:1 to 1.2:1.

14. The product of claim 12 or claim 13 having less than 15 percent by weight of monomeric PDDP monomer units, based on the total amount of PDDP units present.

15. A lubricant composition comprising an oil of lubricating viscosity and the product of any one of claims 12 through 14.

16. A method for lubricating an internal combustion engine, comprising supplying thereto the lubricant composition of claim 15.