(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight molybdenum to a lubricant composition based on a total weight of the lubricant composition containing the additive composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of a lubricant composition containing the additive composition; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on the total weight of the lubricant composition containing the additive composition, wherein the ~~hydocarbyl-~~hydrocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography~~;~~

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1~~. The lubricant additive composition includes (a) an organomolybdenum compound contributing from about 50 to about 300 ppm by

weight molybdenum to a lubricant composition based on a total weight of the lubricant composition containing the additive composition; (b) a boronated hydrocarbyl substituted succinimide dispersant; and (c) a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride. The hydocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography. A weight ratio of (b) to (c) ranges from about 1:1 to about 4:1.

[0004a] In another aspect, there is provided a lubricant composition comprising the additive composition as defined above.

[0005] Another embodiment of the disclosure provides a method for controlling piston depositions in an engine. In another aspect, there is provided a method for controlling piston depositions in an engine, comprising lubricating the engine with lubricant composition comprising a base oil of lubricating viscosity and a lubricant additive composition comprising:

(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of the lubricant composition; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on a total weight of the lubricant compositions, wherein the ~~hydocarbyl~~ hydrocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography~~;~~

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1~~.

The method includes lubricating the engine with a lubricant composition that includes a base oil of lubricating viscosity and an additive composition that includes: (a) an organomolybdenum compound contributing from about 50 to about 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition; (b) a boronated hydrocarbyl substituted succinimide dispersant; and (c) a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride. The hydocarbyl group of the

hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography. A weight ratio of (b) to (c) ranges from about 1:1 to about 4:1.

[0006] A further embodiment of the disclosure provides a method for maintaining an emulsion stability of an engine lubricant composition. In another aspect, there is provided a method for maintaining an emulsion stability of an engine lubricant composition, comprising lubricating an engine with lubricant composition comprising a base oil of lubricating viscosity and a lubricant additive composition comprising:

(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of the lubricant compositin; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on a total weight of the lubricant composition, wherein the ~~hydocarbyl~~ hydrocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography;

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1.~~

The method includes lubricating the engine with a lubricant composition that includes a base oil of lubricating viscosity and a lubricant additive composition that contains: (a) an organomolybdenum compound contributing from about 50 to about 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition; (b) a boronated hydrocarbyl substituted succinimide dispersant; and (c) a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride. The hydocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography. A weight ratio of (b) to (c) ranges from about 1:1 to about 4:1.

What is claimed is:

1. A lubricant additive composition comprising:

(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight molybdenum to a lubricant composition based on a total weight of the lubricant composition containing the additive composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of a lubricant composition containing the additive composition; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on the total weight of the lubricant composition containing the additive composition, wherein the ~~hydocarbyl~~ hydrocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography~~;~~

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1~~.

2. The additive composition of claim 1, wherein component (iii) comprises 1,8-naphthalic anhydride.

3. The additive composition of claim 1, wherein the hydrocarbyl substituent of component (b) is derived from a polyolefin having a number average molecular weight ranging from about 1000 to about 1600 Daltons as determined by gel permeation chromatography

4. The additive composition of claim 1, wherein from about 0.25 to about 1.5 moles of the fused aromatic compound are reacted per mole of component (ii).

~~5. The additive composition of claim 1, wherein a lubricant composition containing the additive comprises from about 0.5 to about 5 percent by weight of components (b) and (c).~~

~~6~~5. The additive composition of claim 1, wherein component (i) comprises a polyalkenyl-substituted succinic acid or anhydride.

~~7~~6. The additive composition of claim ~~6~~5, wherein component (i) comprises a polyisobutenyl succinic acid or anhydride, component (iii) comprises 1,8-naphthalic anhydride, and component (iv) comprises maleic anhydride.

~~8~~7. The additive composition of claim ~~7~~6, wherein the polyisobutenyl group is derived from polyisobutylene having greater than 50 mole percent terminal vinylidene content.

~~9~~8. The additive composition of claim 1, wherein from about 0.25 to about 1.5 moles of component (iv) are reacted per mole of component (ii).

~~10~~9. A lubricant composition comprising the additive composition of claim 1.

~~11~~10. The lubricant composition of claim ~~10~~9, further comprising one or more of the members of the group selected from detergents, non-metallic friction modifiers, antioxidants, rust inhibitors, viscosity index improvers, emulsifiers, demulsifiers, corrosion inhibitors, antiwear agents, metal dihydrocarbyl dithiophosphates, ash-free amine phosphate salts, antifoam agents, and pour point depressants.

~~12~~11. The lubricant composition of claim ~~10~~9, further comprising an oil-soluble titanium-containing additive.

~~13~~12. A method for controlling piston depositions in an engine, comprising lubricating the engine with a lubricant composition comprising a base oil of lubricating viscosity and a lubricant additive composition comprising:

(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of the lubricant composition; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on a total weight of the lubricant composition, wherein the ~~hydocarbyl~~ hydrocarbyl group of the hydrocarbyl-dicarboxylic

acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography;

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1.~~

~~14~~13. The method of claim ~~13~~12, wherein the hydrocarbyl substituent of component (b) is derived from a polyolefin having a number average molecular weight ranging from about 1000 to about 1600 Daltons as determined by gel permeation chromatography.

~~15~~14. The method of claim ~~13~~12, wherein component (c)(iii) comprises 1,8-naphthalic anhydride.

~~16~~15. The method of claim ~~13~~12, wherein component (c)(i) comprises maleic anhydride.

~~17. The method of claim 13, wherein the lubricant composition comprises from about 0.5 to about 5 percent by weight of the dispersant additive composition.~~

~~18~~16. The method of claim ~~13~~12, wherein component (c)(i) comprises a polyisobutenyl succinic acid or anhydride and component (c)(ii) comprises a polyamine containing from 3 to 5 nitrogen atoms.

~~19~~17. The method of claim ~~13~~12, wherein a mole ratio of component (c)(iii) reacted with components (c)(i) and (c)(ii) ranges from about 0.25 to about 1.5 and a mole ratio of component (c)(iv) reacted with components (c)(i) and (c)(ii) ranges from about 0.25 to about 1.5.

~~20~~18. The method of claim ~~13~~12, wherein the lubricant composition further comprises one or more of the members of the group selected from detergents, dispersants, friction modifiers, antioxidants, rust inhibitors, viscosity index improvers, emulsifiers, demulsifiers, corrosion inhibitors, antiwear agents, metal dihydrocarbyl dithiophosphates, ash-free amine phosphate salts, antifoam agents, and pour point depressants.

~~21~~19. The method of claim ~~13~~12, wherein the lubricant composition further comprises an oil-soluble titanium-containing additive.

~~22~~20. A method for maintaining an emulsion stability of an engine lubricant composition, comprising lubricating an engine with a lubricant composition comprising a base oil of lubricating viscosity and a lubricant additive composition comprising:

(a) an organomolybdenum compound contributing from about 20 to no greater than 300 ppm by weight of molybdenum to the lubricant composition based on a total weight of the lubricant composition;

(b) from about 0.9 to about 2.2 weight % of a boronated hydrocarbyl substituted succinimide dispersant based on a total weight of the lubricant composition; and

(c) from about 0.4 to about 1.7 weight % of a reaction product of (i) a hydrocarbyl-dicarboxylic acid or anhydride, (ii) a polyamine, (iii) a dicarboxyl-containing or anhydride-containing fused aromatic compound, and (iv) a non-aromatic dicarboxylic acid or anhydride based on a total weight of the lubricant composition, wherein the ~~hydocarbyl~~ hydrocarbyl group of the hydrocarbyl-dicarboxylic acid or anhydride has a number average molecular weight of greater than 1800 Daltons as determined by gel permeation chromatography~~;~~

~~wherein a weight ratio of (b) to (c) ranges from about 1:1 to about 4:1~~.

~~23~~21. The method of claim ~~22~~20, wherein the hydrocarbyl group of component (c)(i) comprises a polyisobutenyl group derived from polyisobutene having greater than 50 mole percent terminal vinylidene content.