What is claimed is:

1. A method for lubricating an internal combustion engine comprising a supplying to the internal combustion engine a lubricating composition, wherein the lubricating composition comprises:

(a) 0.001 wt % to 15 wt % of a polymethacrylate polymer with radial or star architecture, wherein the polymer contains 20 wt % or more of a mono-vinyl monomer;

(b) an overbased detergent;

(c) a dispersant; and

(d) an oil of lubricating viscosity.

2. The method of claim 1, wherein the polymer contains 55 wt % or more, or 70 wt % or more, or 95 wt % or more of a mono-vinyl monomer.

3. The method of claim 1 or 2, wherein the polymer has a weight average molecular weight of 100,000 to 1,000,000, or 300,000 to 1,000,000, or 350,000 to 1,000,000, or 400,000 to 800,000.

4. The method of any one of claims 1 to 3, wherein the polymer is a copolymer.

5. The method of any one of claims 1 to 4, wherein the lubricating composition further comprises a portion of linear polymer chains.

6. The method of any one of claims 1 to 5, wherein the polymer comprises arms with random, tapered, di-block, tri-block, or multi-block architecture.

7. The method of any one of claims 1 to 6, wherein the polymer is obtained from RAFT, ATRP, nitroxide mediated, or anionic polymerisation processes.

8. The method of claim 7, wherein the polymer is obtained from RAFT, ATRP, or anionic polymerisation processes.

9. The method of claim 8, wherein the polymer is obtained from RAFT or ATRP polymerisation processes.

10. The method of claim 9, wherein the polymer is obtained from RAFT polymerisation processes.

11. The method of any one of claims 1 to 10, wherein the polymer comprises at least one of (a) a polymer derived from monomers comprising: (i) a vinyl aromatic monomer; and (ii) a carboxylic monomer or derivatives thereof; (b) a poly(meth)acrylate; (c) a functionalised polyolefin; (d) an ethylene vinyl acetate copolymer; (e) a fumarate copolymer; (f) a copolymer derived from (i) an α–olefin and (ii) a carboxylic monomer or derivatives thereof; or (g) mixtures thereof.

12. The method of any one of claims 1 to 11, wherein the polymethacrylate is derived from a monomer composition consisting of:

(a) 50 wt % to 100 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 10 to 20, or 12 to 15 carbon atoms;

(b) 0 wt % to 40 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 1 to 9 carbon atoms; and

(c) 0 wt % to 10 wt % of a nitrogen containing monomer.

13. The method of any one of claims 1 to 12, wherein the polymer is present at 0.01 to 12 wt %, or 0.075 to 8 wt % of the lubricating composition.

14. The method of any one of claims 1 to 13, wherein the overbased detergent comprises one or more of phenates, sulphonates, salixarates, salicylates, carboxylates, overbased phosphorus acids, or saligenin detergents.

15. The method of claim 14, wherein the overbased detergent comprises one or more of salixarates, phenates, sulphonates, or salicylates.

16. The method of any one of claims 1 to 15, wherein the overbased detergent is present at 0.1 wt % to 10 wt %, or 0.1 wt % to 8 wt % of the lubricating composition.

17. The method of any one of claims 1 to 16, wherein the dispersant comprises one or more of succinimide dispersants, Mannich dispersants, ester-containing dispersants, condensation products of a long chain hydrocarbyl monocarboxylic acylating agent with an amine or ammonia, alkyl amino phenol dispersants, hydrocarbyl-amine dispersants, polyether dispersants, or polyetheramine dispersants.

18. The method of claim 17, wherein the dispersant comprises one or more of succinimide dispersants.

19. The method of any one of claims 1 to 18, wherein the dispersant is present at 0.1 wt % to 20 wt %, or 0.25 wt % to 15 wt %, or 0.5 wt % to 10 of the lubricating composition.

20. The method of any one of claims 1 to 19 further comprising an antiwear agent.

21. The method of claim 20, wherein the antiwear agent comprises a metal dialkyldithiophosphate.

22. The method of any one of claims 1 to 21 further comprising an antioxidant.

23. The method of claim 22, wherein the antioxidant is selected from the group consisting of sulphurised olefins, alkylated diphenylamines, hindered phenols, molybdenum compounds, and mixtures thereof.

24. The method of claim 23, wherein the antioxidant is a molybdenum compound.

25. The method of claim 23, wherein the antioxidant is an alkylated diphenylamine.

26. The method of claim 23, wherein the antioxidant is a hindered phenol.

27. The method of any one of claims 1 to 26, wherein the oil of lubricating viscosity is an API Group II, Group III or Group IV oil or mixtures thereof.

28. The method of claim 27, wherein the oil of lubricating viscosity is an API Group III oil.

29. The method of any one of claims 1 to 28, wherein the lubricating composition has a (i) a sulphur content of 0.5 wt % or less, (ii) a phosphorus content of 0.1 wt % or less, and (iii) a sulphated ash content of 1.5 wt % or less.

30. The method of any one of claims 1 to 29, wherein the lubricating composition has a SAE viscosity grade from XW-Y, where X is an integer from 0 to 20 and Y is an integer from 20 to 50.

What is claimed is:

1. An engine oil lubricating composition comprising:

(a) 0.075 to 8 wt % of a polymer with radial or star architecture, wherein the polymer is a polymethacrylate, or mixtures thereof; wherein the polymethacrylate is derived from a monomer composition consisting essentially of:

(i) 65 wt % to 95 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 12 to 18 carbon atoms;

(ii) 5 wt % to 30 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 1 to 9 carbon atoms; and

(iii) 0 wt % to 10 wt % of a nitrogen containing monomer; and

wherein the polymer is obtained from a RAFT or ATRP polymerisation process and the polymethacrylate polymeric arm architecture is random; and

wherein the polymer has a weight average molecular weight of 300,000 to 800,000;

(b) 1 wt % to 4 wt % of an overbased detergent, wherein the overbased detergent comprises one or more of salixarates, phenates, sulphonates, or salicylates;

(c) 0.25 wt % to 15 wt % of a dispersant, wherein the dispersant comprises one or more of succinimide dispersants; and

(d) an oil of lubricating viscosity, wherein the oil of lubricating viscosity is an API Group II or Group III oil or mixtures thereof;

wherein the engine oil lubricating composition provides improved viscosity while maintaining Orbahn shear.

2. The lubricating composition of claim 1, wherein the polymer contains 70 wt % or more of a mono-vinyl monomer.

3. The lubricating composition of claim 1, wherein the polymer is a copolymer.

4. The lubricating composition of claim 1, wherein the lubricating composition further comprises a portion of linear polymer chains.

5. The lubricating composition of claim 1, wherein the polymer comprises arms with random, tapered, di-block, tri-block, or multi-block architecture.

6. The lubricating composition of claim 1 further comprising an antiwear agent.

7. The lubricating composition of claim 6, wherein the antiwear agent comprises a metal dialkyldithiophosphate.

8. The lubricating composition of claim 1 further comprising an antioxidant.

9. The lubricating composition of claim 8, wherein the antioxidant is selected from the group consisting of sulphurised olefins, alkylated diphenylamines, hindered phenols, molybdenum compounds, and mixtures thereof.

10. The lubricating composition of claim 9, wherein the antioxidant is a molybdenum compound, an alkylated diphenylamine or a hindered phenol.

11. The lubricating composition of claim 1, wherein the lubricating composition has a (i) a sulphur content of 0.5 wt % or less, (ii) a phosphorus content of 0.1 wt % or less, and (iii) a sulphated ash content of 1.5 wt % or less.

12. The lubricating composition of claim 1, wherein the lubricating composition has a SAE viscosity grade from XW-Y, where X is an integer from 0 to 20 and Y is an integer from 20 to 50.

13. A method for lubricating an internal combustion engine comprising supplying to the internal combustion engine a lubricating composition, wherein the lubricating composition comprises:

(a) 0.075 to 8 wt % of a polymer with radial or star architecture, wherein the polymer is a polymethacrylate, or mixtures thereof; wherein the polymethacrylate is derived from a monomer composition consisting essentially of:

(i) 65 wt % to 95 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 10 to 20 carbon atoms;

(ii) 5 wt % to 30 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 1 to 9 carbon atoms; and

(iii) 0 wt % to 10 wt % of a nitrogen containing monomer; and

wherein the polymer is obtained from a RAFT or ATRP polymerisation process and the polymethacrylate polymeric arm architecture is random; and

wherein the polymer has a weight average molecular weight of 300,000 to 800,000;

(b) 1 wt % to 4 wt % of an overbased detergent, wherein the overbased detergent comprises one or more of salixarates, phenates, sulphonates, or salicylates;

(c) 0.25 wt % to 15 wt % of a dispersant, wherein the dispersant comprises one or more of succinimide dispersants; and

(d) an oil of lubricating viscosity.

14. The lubricating composition of claim 1, wherein the polymer has a weight average molecular weight of 400,000 to 800,000.

15. The lubricating composition of claim 1, wherein the polymer has 7 or more arms.

16. The lubricating composition of claim 1, wherein the polymer arms are random.

17. A method of providing improved viscosity index while maintaining Orbahn shear in an engine oil, comprising lubricating the engine with a lubricating composition comprising:

(a) 0.075 to 8 wt % of a polymer with radial or star architecture, wherein the polymer is a polymethacrylate, or mixtures thereof; wherein the polymethacrylate is derived from a monomer composition consisting essentially of:

(i) 65 wt % to 95 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 12 to 18 carbon atoms;

(ii) 5 wt % to 30 wt % of an alkyl methacrylate, wherein the alkyl group of the methacrylate has 1 to 9 carbon atoms; and

(iii) 0 wt % to 10 wt % of a nitrogen containing monomer; and

wherein the polymer is obtained from a RAFT or ATRP polymerisation process and the polymethacrylate polymeric arm architecture is random; and

wherein the polymer has a weight average molecular weight of 300,000 to 800,000;

(b) 1 wt % to 4 wt % of an overbased detergent, wherein the overbased detergent comprises one or more of salixarates, phenates, sulphonates, or salicylates;

(c) 0.25 wt % to 15 wt % of a dispersant, wherein the dispersant comprises one or more of succinimide dispersants; and

(d) an oil of lubricating viscosity, wherein the oil of lubricating viscosity is an API Group II or Group III oil or mixtures thereof.