Claims

1. A polyalkyl(meth)acrylate polymer, comprising:

(a) 0% to 8% by weight of methyl (meth)acrylate;
(b) 1.5% to 4.5% by weight of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and
(c) 87.5% to 98.5% by weight of C_{12-18} alkyl (meth)acrylates, wherein
the polyalkyl(meth)acrylate polymer has a weight-average molecular weight M_w in the range of 30,000 to 130,000 g/mol.

2. The polyalkyl(meth)acrylate polymer according to claim 1, comprising:

(a) 2% to 8% by weight, of methyl (meth)acrylate;
(b) 1.9% to 4.0% by weight, of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and
(c) 88.0% by weight to 96.1% by weight of C_{12-18} alkyl (meth)acrylates.

3. The polyalkyl(meth)acrylate polymer according to claim 1 or 2, wherein the hydroxyl-substituted C_{2-4} alkyl (meth)acrylate is hydroxyethyl methacrylate (HEMA) or hydroxypropyl methacrylate (HPMA).

4. The polyalkyl(meth)acrylate polymer according to claim 1 or 2, wherein it has a weight-average molecular weight M_w in the range of 40,000 to 100,000 g/mol.

5. The polyalkyl(meth)acrylate polymer according to claim 1 or 2, wherein it has a weight-average molecular weight M_w in the range of 40,000 to 95,000 g/mol.

6. The polyalkyl(meth)acrylate polymer according to claim 1 or 2, wherein it has a weight-average molecular weight M_w in the range of 50,000 and 70,000 g/mol.

7. An additive composition, comprising:

(A) an apolar base oil selected from the group consisting of API Group II oils and API Group III oils and mixtures thereof, and
(B) a polyalkyl(meth)acrylate polymer comprising:
  (a) 0% to 8% by weight of methyl (meth)acrylate;
  (b) 1.5% to 4.5% by weight of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and
  (c) 87.5% to 98.5% by weight of C_{12-18} alkyl (meth)acrylates,

wherein the polyalkyl(meth)acrylate polymer has a weight-average molecular weight M_w in the range of 30,000 to 130,000 g/mol.

8. The additive according to claim 7, wherein the polyalkyl(meth)acrylate polymer (B) comprises:

(a) 2% to 8% by weight, of methyl (meth)acrylate;

(b) 1.9% to 4.0% by weight of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and

(c) 88.0% by weight to 96.1% by weight of C_{12-18} alkyl (meth)acrylates.

9. The additive composition according to claim 7 or 8, wherein component (A) is present in an amount of 20% to 45% by weight and the polyalkyl(meth)acrylate polymer (B) is present in an amount of 55% to 80% by weight, based on the weight of the total composition.

10. The additive composition according to claim 7 or 8, wherein component (A) is present in an amount of 25% to 40% by weight and the polyalkyl(meth)acrylate polymer (B) is present in an amount of 60% to 75% by weight, based on the weight of the total composition.

11. The additive composition according to any one of claims 7 to 10, wherein the hydroxyl-substituted C_{2-4} alkyl (meth)acrylate of component (b) is hydroxyethyl methacrylate (HEMA) or hydroxypropyl methacrylate (HPMA).

12. A lubricating oil composition, comprising:

(A) 84% to 97% by weight of an apolar base oil selected from the group consisting of API Group II oils and API Group III oils and mixtures thereof;

(B) 3% to 16% by weight of a polyalkyl(meth)acrylate polymer comprising:

(a) 0% to 8% by weight of methyl (meth)acrylate;

(b) 1.5% to 4.5% by weight of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and

(c) 87.5% to 98.5% by weight of C_{12-18} alkyl (meth)acrylates,

wherein the polyalkyl(meth)acrylate polymer has a weight-average molecular weight M_w in the range of 30,000 to 130,000 g/mol; and

(C) optionally one or more further additives.

13. The lubricating oil composition according to claim 12, wherein the polyalkyl(meth)acrylate polymer (B) comprises:

(a) 2% to 8% by weight, of methyl (meth)acrylate;

(b) 1.9% to 4.0% by weight, of a hydroxyl-substituted C_{2-4} alkyl (meth)acrylate; and

(c) 88.0% by weight to 96.1% by weight of C_{12-18} alkyl (meth)acrylates.

14. The lubricating oil composition according to claim 12 or 13, wherein the hydroxyl-substituted C_{2-4} alkyl (meth)acrylate of component (b) is hydroxyethyl methacrylate (HEMA) or hydroxypropyl methacrylate (HPMA).

15. The lubricating oil composition according to claim 12 or 14, wherein the one or more further additives (C) are selected from the group consisting of pour point depressants, dispersants, defoamers, detergents, demulsifiers, antioxidants, antiwear additives, extreme pressure additives, friction modifiers, anticorrosion additives, dyes and mixtures thereof.

16. Use of a polyalkyl(meth)acrylate polymer according to any one of claims 1 to 6 as viscosity index (VI) improvers which, at the same time, improve the demulsibility performance of high VI lubricating oil compositions based on apolar base oils.

17. Method of improving the VI and the demulsibility performance of lubricating oil compositions based on apolar base oils by applying a polyalkyl(meth)acrylate polymer according to any one of claims 1 to 6.

18. Use of an additive composition according to any one of claims 7 to 11 as viscosity index (VI) improvers which, at the same time, improve the demulsibility performance of high VI lubricating oil compositions based on apolar base oils.

19. Method of improving the VI and the demulsibility performance of lubricating oil compositions based on apolar base oils by applying an additive composition according to any one of claims 7 to 11.