What is claimed is:

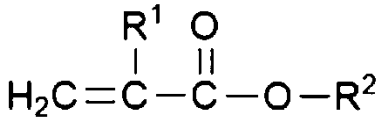
1. A lubricating oil additive comprising a polymer, the polymer comprising:

a main chain polymer structure; and

a side chain polymer structure,

wherein the side chain polymer structure contains a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms, and

at least one of the main chain polymer structure or the side chain polymer structure contains a constitutional unit derived from a (meth)acrylate (b) represented by General Formula (1),



・・・（１）

in the formula, R^1 represents a hydrogen atom or a methyl group, and R^2 represents a hydrogen atom or an organic group containing a polar group, provided that the organic group containing a polar group does not include an alkoxyalkyl group,

the polar group of the (meth)acrylate (b) is a hydroxyl group, a carboxy group, an amino group, or an amide group,

a proportion of the side chain polymer structure is 2% to 75% by mass, with respect to a total mass of the polymer,

an amount of the constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms is 30% by mass or more, with respect to the total mass of the side chain polymer structure, and

an amount of the constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms is 20% to 90% by mass, with respect to a total mass of the polymer.

3. The lubricating oil additive according to Claim 1, wherein a polar group of the (meth)acrylate (b) is a hydroxyl group.

4. The lubricating oil additive according to Claim 1, wherein the polymer further contains a constitutional unit derived from an alkyl (meth)acrylate (c) having an alkyl group having 1 to 10 carbon atoms.

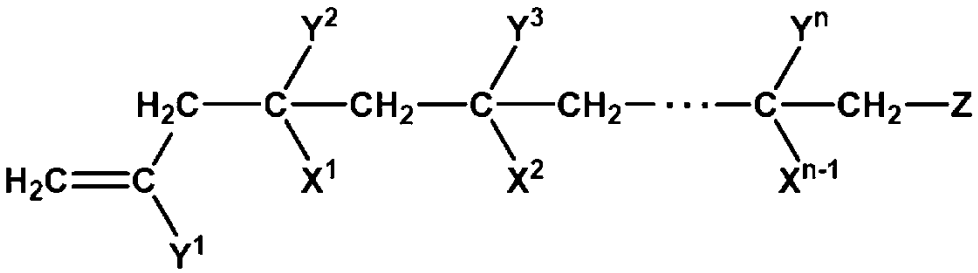
5. The lubricating oil additive according to Claim 1, wherein the main chain polymer structure contains a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms.

6. The lubricating oil additive according to Claim 1, wherein the main chain polymer structure contains a constitutional unit derived from a vinyl-based radical polymerizable monomer (m1), and at least a part of the constitutional unit derived from the vinyl-based radical polymerizable monomer (m1) is the constitutional unit derived from the (meth)acrylate (b).

7. The lubricating oil additive according to Claim 6, wherein the side chain polymer structure contains a constitutional unit derived from a macromonomer (M).

8. The lubricating oil additive according to Claim 7, wherein the macromonomer (M) contains the constitutional unit derived from the alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms.

9. The lubricating oil additive according to Claim 7, wherein the macromonomer (M) has a structure of Formula (2),



・・・（2）

in the formula, X^1 to X^{n-1} each independently represent a hydrogen atom, a methyl group, or CH_2OH, Y^1 to Y^n each independently represent a substituent other than X^1 to X^{n-1} which is bonded to a vinyl group of a vinyl-based radical polymerizable monomer (m2) that is a monomeric constitutional unit of the macromonomer (M), Z represents a terminal group, and n represents an integer of 2 to 10000.

11. A friction reducer for a lubricating oil, comprising:

the lubricating oil additive according to any one of Claims 1, and 3 to 9; and

a solvent.

12. A lubricating oil composition comprising:

the friction reducer for a lubricating oil according to Claim 11.

13. The friction reducer for a lubricating oil according to Claim 11, wherein the solvent is a base oil.

14. A lubricating oil composition comprising:

the friction reducer for a lubricating oil according to Claim 13.

15. A lubricating oil additive comprising a polymer, the polymer comprising:

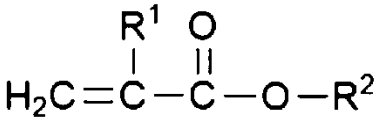
a main chain polymer structure; and

a side chain polymer structure,

wherein the side chain polymer structure contains a constitutional unit derived from a macromonomer (M) that contains a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms, and

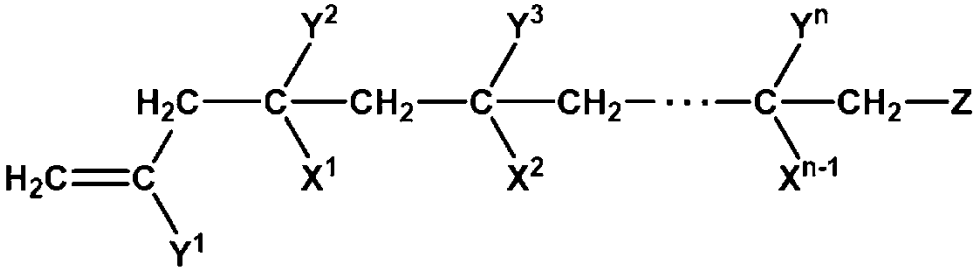
at least one of the main chain polymer structure or the side chain polymer structure contains a constitutional unit derived from a (meth)acrylate (b) represented by General Formula (1), and

the macromonomer (M) has a structure of Formula (2),



・・・（1）

in the formula, R^1 represents a hydrogen atom or a methyl group, and R^2 represents a hydrogen atom or an organic group containing a polar group, provided that the organic group containing a polar group does not include an alkoxyalkyl group,



・・・（2）

in the formula, X^1 to X^{n-1} each independently represent a hydrogen atom, a methyl group, or CH_2OH, Y^1 to Y^n each independently represent a substituent other than X^1 to X^{n-1} which is bonded to a vinyl group of a vinyl-based radical polymerizable monomer (m2) that is a monomeric constitutional unit of the macromonomer (M), Z represents a terminal group, and n represents an integer of 2 to 10000,

wherein a contained amount of the constitutional unit derived from the macromonomer (M) is 1% to 70% by mass, with respect to a total mass of the polymer,

an amount of a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms is 20% to 90% by mass, with respect to a total mass of the polymer, and

an amount of a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms is 50% by mass or more, with respect to the total mass of

the component (M).

16. The lubricating oil additive according to Claim 15, wherein a polar group of the (meth)acrylate (b) is a hydroxyl group, a carboxy group, an amino group, or an amide group.

17. The lubricating oil additive according to Claim 15, wherein a polar group of the (meth)acrylate (b) is a hydroxyl group.

18. The lubricating oil additive according to Claim 15, wherein the polymer further contains a constitutional unit derived from an alkyl (meth)acrylate (c) having an alkyl group having 1 to 10 carbon atoms.

19. The lubricating oil additive according to Claim 15, wherein the main chain polymer structure contains a constitutional unit derived from an alkyl (meth)acrylate (a) having an alkyl group having 11 to 30 carbon atoms.

20. The lubricating oil additive according to Claim 15, wherein the main chain polymer structure contains a constitutional unit derived from a vinyl-based radical polymerizable monomer (m1), and at least a part of the constitutional unit derived from the vinyl-based radical polymerizable monomer (m1) is the constitutional unit derived from the (meth)acrylate (b).

21. A friction reducer for a lubricating oil, comprising:

the lubricating oil additive according to any one of Claims 15 to 20; and

a solvent.

22. A lubricating oil composition comprising:

the friction reducer for a lubricating oil according to Claim 21.

23. The friction reducer for a lubricating oil according to Claim 21, wherein the solvent is a base oil.

24. A lubricating oil composition comprising:

the friction reducer for a lubricating oil according to Claim 23.