**Claims**

1. A lubricant composition, characterized in that the lubricant composition comprises a base oil and rubber particles having radiation crosslinked structure dispersed therein, wherein the base oil is the continuous phase and the rubber particles are the dispersed phase, wherein the rubber particles have an average particle size of 20-2000 nm.

2. The lubricant composition according to claim 1, wherein the amount of the rubber particles is 0.001 to 200 parts by weight in relation to 100 parts by weight of the base oil.

3. The lubricant composition according to claim 1, wherein the rubber particles have an average particle size of 70-500 nm.

4. The lubricant composition according to claim 1, wherein the rubber particles have a gel content of 60 wt% or more.

5. The lubricant composition according to claim 1, wherein the rubber particles are of a homogeneous structure.

6. The lubricant composition according to claim 1, wherein the rubber particles are at least one selected from the group consisting of natural rubber, styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber, polybutadiene rubber, silicone rubber, chloroprene rubber, acrylate rubber, styrene-butadiene pyridine rubber, isoprene rubber, butyl rubber, polysulfide rubber, acrylate-butadiene rubber, polyurethane rubber, fluoro rubber and ethylene-vinyl acetate rubber, and preferably at least one selected from the group consisting of styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber, acrylate rubber and ethylene-vinyl acetate rubber.

7. The lubricant composition according to claim 1, wherein the base oil is a mineral base oil and/or a synthetic base oil.

8. The lubricant composition according to claim 1, wherein the lubricant composition contains at most 60 parts by weight rubber particles having chemically crosslinked structure in relation to 100 parts of weight of the base oil.

9. A lubricant composition, characterized in that the lubricant composition comprises a base oil and rubber particles having radiation crosslinked structure dispersed therein, wherein the base oil is the continuous phase and the rubber particles are the dispersed phase, and wherein the rubber particles are modified physically or chemically.

10. A method for preparing a lubricant composition, which comprises mixing rubber particles having a radiation crosslinked structure with a base oil in which the rubber particles are dispersed, wherein the rubber particles have an average particle size of 20-2000 nm.

11. The method according to claim 10, further comprising at least one redispersion step.

12. A method for preparing a lubricant composition, comprising mixing rubber particles having a radiation crosslinked structure with a base oil in which the rubber particles are dispersed, which mixing comprises:

(1) adding the rubber particles to be dispersed into the base oil and mixing by mechanical stirring, so that the rubber particles are dispersed or suspended in the base oil to obtain a preliminarily dispersed composition;

(2) redispersing the preliminarily dispersed composition until the dispersed rubber particles have an average particle size of 20-2000 nm.

13. The method according to claim 12, which further comprises step (3), wherein the composition obtained in step (2) is subjected to the secondary redispersion, after placing at a temperature not lower than 80°C for at least 1 hour.

14. The method according to claim 12, wherein the redispersing in step (2) and the secondary redispersing in step (3) are performed, independently of each other, in at least one mixing device selected from a homogenizer, a glass bead mill, a three-roll mill, a single-screw extruder, a multi-screw extruder, a kneader, a dissolver, and an ultrasonic disperser, and the placing operation in step (3) is performed in a sealed heating device.

15. The method according to claim 10, wherein the amount of the rubber particles to be dispersed is 0.001 to 200 parts by weight in relation to 100 parts by weight of the base oil.

16. The method according to claim 10, wherein the rubber particles to be dispersed are rubber particle clusters formed by agglomeration of rubber particles having an average particle size of 20-2000 nm.

17. The method according to claim 10, wherein the rubber particles to be dispersed have a gel content of 60 wt% or more.

18. The method according to claim 10, wherein the rubber particles to be dispersed are of a homogeneous structure.

19. The method according to claim 10, wherein the rubber particles to be dispersed are at least one selected from the group consisting of natural rubber, styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber, polybutadiene rubber, silicone rubber, chloroprene rubber, acrylate rubber, styrene-butadiene pyridine rubber, isoprene rubber, butyl rubber, polysulfide rubber, acrylate-butadiene rubber, polyurethane rubber, fluoro rubber and ethylene-vinyl

acetate rubber, and preferably at least one selected from the group consisting of styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber, acrylate rubber and ethylene-vinyl acetate rubber.

20. The method according to claim 10, wherein the base oil is a mineral base oil and/or a synthetic base oil.

21. A lubricant composition prepared by the method according to claim 10.

22. A method of using a lubricant composition according to claim 1 comprising applying the lubricant composition to a machinery in the form of a lubricating oil or lubricating grease.

23. A method of preparing a lubricant composition, comprising providing rubber particles having the radiation crosslinked structure according to claim 1, and forming the lubricant composition.

24. The lubricant composition according to claim 1, wherein the amount of the rubber particles is 0.5 to 50 parts by weight in relation to 100 parts by weight of the base oil.

25. The lubricant composition according to claim 1, wherein the rubber particles have a gel content of 80 wt% or more.

26. The lubricant composition according to claim 1, wherein the base oil is a mineral base oil and/or a synthetic base oil;

the mineral base oil being at least one selected from the group consisting of low viscosity index mineral base oil having viscosity index VI ≤ 40, medium viscosity index mineral base oil having 40 < viscosity index VI ≤ 90, high viscosity index mineral base oil having 90 < viscosity index VI ≤ 120, very high viscosity index mineral base oil having 120 < viscosity index VI ≤ 140 and ultrahigh viscosity index mineral base oil having viscosity index VI > 140; and

the synthetic base oil being at least one selected from the group consisting of synthetic hydrocarbons, alkyl aromatic hydrocarbons, synthetic esters, polyethers, halogenated hydrocarbons, polysiloxanes, and fluorine-containing oils, wherein:

the synthetic hydrocarbon is at least one selected from the group consisting of ethylene oligomers, propylene oligomers, polybutene, polyisobutylene, poly(α-olefin), poly(internal olefin) and halogenated products of the above synthetic hydrocarbons,

the alkyl aromatic hydrocarbon is at least one selected from the group consisting of alkylbenzenes, alkylnaphthalenes and hetero atom-containing alkyl aromatic hydrocarbons,

the synthetic ester is at least one selected from the group consisting of monoesters, diesters, polyol esters, polymer esters, carbonates, phosphates, citrates, silicates and olefin-acrylate copolymers,

the polyether is at least one selected from the group consisting of aliphatic polyethers, polyphenylene oxides, polythioethers and perfluoroalkyl polyethers, and

the polysiloxane is at least one selected from the group consisting of dimeric siloxanes, trimeric siloxanes, tetrameric siloxanes, octameric siloxanes and cyclic tetrasiloxane.

27. The lubricant composition according to claim 1, wherein the lubricant composition contains at most 50 parts by weight of rubber particles having chemically crosslinked structure in relation to 100 parts of weight of the base oil.

28. The method according to claim 10, further comprising at least two redispersion steps.

29. The method according to claim 10, which comprises:

(1) adding the rubber particles to be dispersed into the base oil and mixing by mechanical stirring, so that the rubber particles are dispersed or suspended in the base oil to obtain a preliminarily dispersed composition;

(2) redispersing the preliminarily dispersed composition until the dispersed rubber particles have an average particle size of 70-500 nm.

30. The method according to claim 12, which further comprises step (3), wherein the composition obtained in step (2) is subjected to the secondary redispersion, after placing at a temperature not lower than 100°C for at least 1 hour.

31. The method according to claim 12, wherein the redispersing in step (2) and the secondary redispersing in step (3) are performed, independently of each other, in a homogenizer and the placing operation in step (3) is performed in a sealed heating device.

32. The method according to claim 10, wherein the amount of the rubber particles to be dispersed is 0.5 to 50 parts by weight in relation to 100 parts by weight of the base oil.

33. The method according to claim 10, wherein the rubber particles to be dispersed are rubber particle clusters formed by agglomeration of rubber particles having an average particle size of 70-500 nm.

34. The method according to claim 10, wherein the rubber particles to be dispersed have a gel content of 80 wt% or more.

35. The method according to claim 10, wherein the base oil is a mineral base oil and/or a synthetic base oil;

the mineral base oil being at least one selected from the group consisting of low viscosity index mineral base oil having viscosity index VI ≤ 40, medium viscosity index mineral base oil having 40 < viscosity index VI ≤ 90, high viscosity index mineral base oil having 90 < viscosity index VI ≤ 120, very high viscosity index mineral base oil having 120 < viscosity index VI ≤ 140 and ultrahigh viscosity index mineral base oil having viscosity index VI > 140; and

the synthetic base oil being at least one selected from the group consisting of synthetic hydrocarbons, alkyl aromatic hydrocarbons, synthetic esters, polyethers, halogenated hydrocarbons, polysiloxanes, and fluorine-containing oils,

wherein the synthetic hydrocarbon is at least one selected from the group consisting of ethylene oligomers, propylene oligomers, polybutene, polyisobutylene, poly(α-olefin), poly(internal olefin) and halogenated products of the above synthetic hydrocarbons,

the alkyl aromatic hydrocarbon is at least one selected from the group consisting of alkylbenzenes, alkylnaphthalenes and hetero atom-containing alkyl aromatic hydrocarbons,

the synthetic ester is at least one selected from the group consisting of monoesters, diesters, polyol esters, polymer esters, carbonates, phosphates, citrates, silicates and olefin-acrylate copolymers,

the polyether is at least one selected from the group consisting of aliphatic polyethers, polyphenylene oxides, polythioethers and perfluoroalkyl polyethers, and

the polysiloxane is at least one selected from the group consisting of dimeric siloxanes, trimeric siloxanes, tetrameric siloxanes, octameric siloxanes and cyclic tetrasiloxane.