Claims

[Claim 1]

A resin composition comprising:

an epoxy resin (A);

a curing agent (B);

a first filler (C);

a second filler (D); and

a wetting dispersant (E),

wherein the first filler (C) is borate particles coated with hexagonal boron nitride.

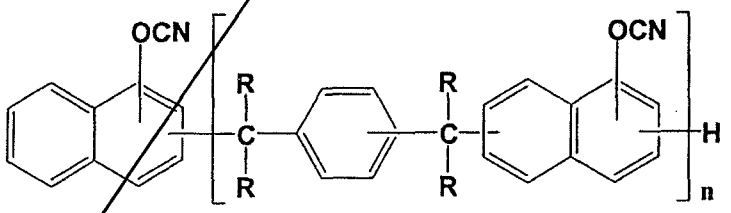
[Claim 2]

The resin composition according to claim 1, wherein the borate particles are magnesium or calcium borate particles.

[Claim 3]

The resin composition according to claim 1 or 2, wherein the curing agent (B) is represented by the following general formula (II):

[Formula 1]



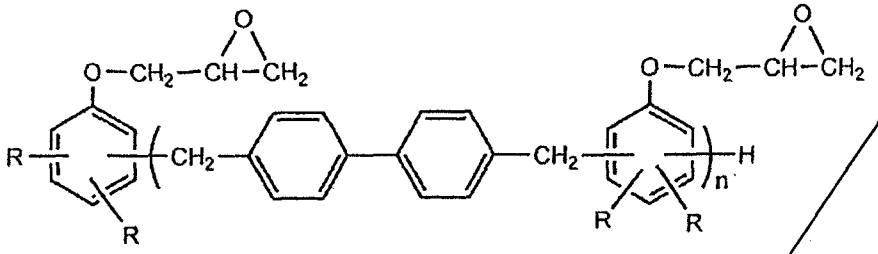
・・・(II)

wherein R represents a hydrogen atom or a methyl group, and n represents an integer of 1 to 50.

[Claim 4]

The resin composition according to any one of claims 1 to 3, wherein the epoxy resin (A) is represented by the following general formula (I):

[Formula 2]



... (I)

wherein a plurality of R are each independently present and represent a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or a phenyl group; and n is an average value and represents $1 < n \leq 20$.

[Claim 5]

The resin composition according to any one of claims 1 to 4, wherein the second filler (D) is at least one selected from the group consisting of alumina, magnesium oxide, magnesium carbonate, magnesium hydroxide, aluminum nitride, aluminum hydroxide, boehmite, titanium oxide, zinc oxide, silica and talc.

[Claim 6]

The resin composition according to any one of claims 1 to 5, wherein an average particle size (D_{50}) of the second filler (D) is 0.1 to 10 μm.

[Claim 7]

The resin composition according to any one of claims 1 to 6, further comprising a silane coupling agent.

[Claim 8]

The resin composition according to any one of claims 1 to 7, wherein a content of the first filler (C) is 1 to 400 parts by mass based on 100 parts by mass of a total of the epoxy resin (A) and the curing agent (B).

[Claim 9]

The resin composition according to any one of claims 1 to 8, wherein a content of the second filler (D) is 1 to 700 parts by mass based on 100 parts by mass of a total of the epoxy resin (A) and the curing agent (B).

[Claim 10]

The resin composition according to any one of claims 1 to 9, wherein the wetting dispersant (E) comprises a copolymer containing at least one functional group comprising an acid group.

[Claim 11]

The resin composition according to any one of claims 1 to 10, wherein the wetting dispersant (E) is a polymer wetting dispersant having an acid value of 20 to 200 mgKOH/g.

[Claim 12]

The resin composition according to any one of claims 1 to 11, wherein a content of the wetting dispersant (E) is 0.1 to 20 parts by mass based on 100 parts by mass of a total of the components (A) to (D).

[Claim 13]

A prepreg formed by impregnating a base material (F) with the resin composition according to any one of claims 1 to 12 or applying the resin composition according to any one of claims 1 to 12 onto a base material (F).

[Claim 14]

A laminate formed by laminate-molding the prepreg according to claim 13.

[Claim 15]

A metal foil-clad laminate formed by laminate-molding the prepreg according to claim 13 and a metal foil.

Claims

1. A resin composition comprising:

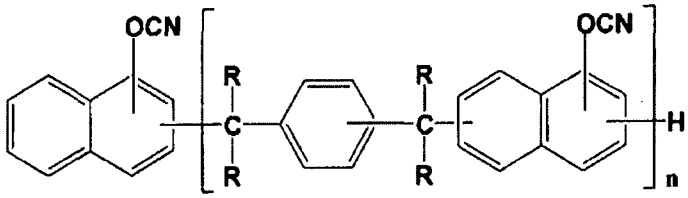
an epoxy resin (A);
a curing agent (B);
a first filler (C);
a second filler (D); and
a wetting dispersant (E),

wherein the first filler (C) is borate particles coated with hexagonal boron nitride.

2. The resin composition according to claim 1, wherein the borate particles are magnesium or calcium borate particles.

3. The resin composition according to claim 1 or 2, wherein the curing agent (B) is represented by the following general formula (II):

[Formula 1]

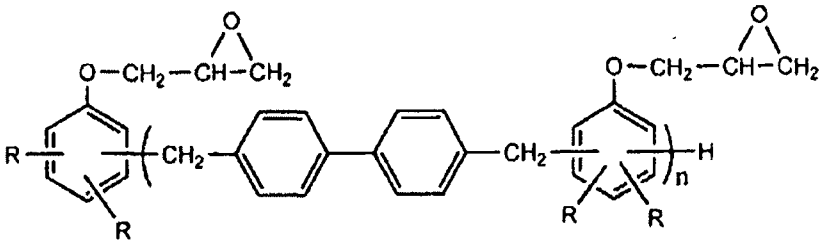


. . . (I I)

wherein R represents a hydrogen atom or a methyl group, and n represents an integer of 1 to 50.

4. The resin composition according to any one of claims 1 to 3, wherein the epoxy resin (A) is represented by the following general formula (I):

[Formula 2]



. . . (I)

wherein a plurality of R are each independently present and represent a hydrogen atom, an alkyl group having 1 to 5 carbon atoms or a phenyl group; and n is an average value and represents $1 < n \leq 20$.

5. The resin composition according to any one of claims 1 to 4, wherein the second filler (D) is at least one selected from the group consisting of alumina, magnesium oxide, magnesium carbonate, magnesium hydroxide, aluminum nitride, aluminum hydroxide, boehmite, titanium oxide, zinc oxide, silica and talc.

6. The resin composition according to any one of claims 1 to 5, wherein an average particle size (D_{50}) of the second filler (D) is 0.1 to 10 μm, wherein D_{50} is measured by a wet laser diffraction/scattering method.

7. The resin composition according to any one of claims 1 to 6, further comprising a silane coupling agent.

8. The resin composition according to any one of claims 1 to 7, wherein a content of the first filler (C) is 1 to 400 parts

by mass based on 100 parts by mass of a total of the epoxy resin (A) and the curing agent (B).

9. The resin composition according to any one of claims 1 to 8, wherein a content of the second filler (D) is 1 to 700 parts by mass based on 100 parts by mass of a total of the epoxy resin (A) and the curing agent (B).

10. The resin composition according to any one of claims 1 to 9, wherein the wetting dispersant (E) comprises a copolymer containing at least one functional group comprising an acid group.

11. The resin composition according to any one of claims 1 to 10, wherein the wetting dispersant (E) is a polymer wetting dispersant having an acid value of 20 to 200 mgKOH/g.

12. The resin composition according to any one of claims 1 to 11, wherein a content of the wetting dispersant (E) is 0.1 to 20 parts by mass based on 100 parts by mass of a total of the components (A) to (D).

13. A prepreg formed by impregnating a base material (F) with the resin composition according to any one of claims 1 to 12 or applying the resin composition according to any one of claims 1 to 12 onto a base material (F).

14. A laminate formed by laminate-molding the prepreg according to claim 13.

15. A metal foil-clad laminate formed by laminate-molding the prepreg according to claim 13 and a metal foil.