Claims

[Claim 1]

A resin composition comprising at least an epoxy resin (A), a cyanate ester compound (B), and an inorganic filler (C),

wherein the inorganic filler (C) comprises at least a surface-treated silicon carbide (C-1) of a silicon carbide powder having at least a part of the surface treated with an inorganic oxide, and at least a second inorganic filler (C-2) other than the surface-treated silicon carbide (C-1),

the surface-treated silicon carbide (C-1) is contained in an amount of 150 to 600 parts by mass based on a total of 100 parts by mass of resin solid components,

the second inorganic filler (C-2) is contained in an amount of 150 to 500 parts by mass based on a total of 100 parts by mass of resin solid components, and

wherein the surface-treated silicon carbide (C-1) contains the inorganic oxide in an amount of 0.5 to 15 parts by mass based on total 100 parts by mass of silicon carbide powder.

[Claim 2]

The resin composition according to claim 1,

wherein the surface-treated silicon carbide (C-1) comprises a core particle of the silicon carbide powder and the inorganic oxide formed on at least a part of the surface of the core particle.

[Claim 3]

The resin composition according to claim 2,

wherein the core particle has an average particle diameter of 0.5 to 20 μm.

[Claim 4]

The resin composition according to any one of claims 1 to 3,

wherein the inorganic oxide is at least one or more selected from the group consisting of silica, titania, alumina, and zirconium oxide.

[Claim 5]

The resin composition according to any one of claims 1 to 4,

wherein the inorganic oxide has a thickness of 10 to 70 nm.

[Claim 6]

The resin composition according to any one of claims 1 to 5,

wherein the inorganic filler (C) is contained in an amount of 300 to 900 parts by mass based on a total of 100 parts by mass of resin solid components.

[Claim 7]

The resin composition according to any one of claims 1 to 6,

wherein the second inorganic fillers (C-2) comprises at least one or more selected from the group consisting of alumina, magnesium oxide, boron nitride, and aluminum nitride, other than the surface-treated silicon carbide (C-1).

[Claim 8]

The resin composition according to any one of claims 1 to 7,

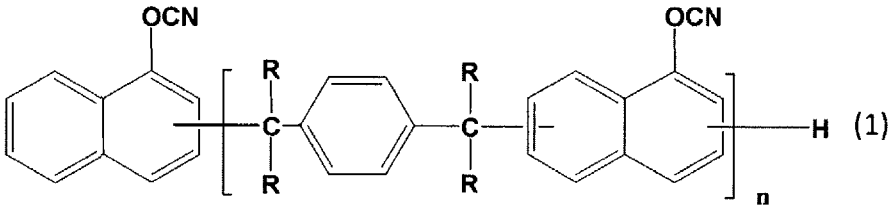
wherein the epoxy resin (A) is at least one or more selected from the group consisting of a biphenyl aralkyl-based epoxy resin, a polyoxynaphthylene-based epoxy resin, a triphenolmethane-based epoxy resin, a bisphenol A-based epoxy resin, a bisphenol F-based epoxy resin, a phenol novolac-based epoxy resin, a cresol novolac-based epoxy resin, a bisphenol A novolac-based epoxy resin, a brominated bisphenol A-based epoxy resin, a brominated phenol novolac-based epoxy resin, a biphenyl-based epoxy resin, a phenol aralkyl-based epoxy resin, and naphthol aralkyl-based epoxy resin.

[Claim 9]

The resin composition according to any one of claims 1 to 8,

wherein the cyanate ester compound (B) is at least one or more selected from the group consisting of a naphthol aralkyl-based cyanate ester compound represented by the following general formula (1), a novolac-based cyanate ester compound represented by the following general formula (2), and a biphenyl aralkyl-based cyanate ester compound represented by the following general formula (3):

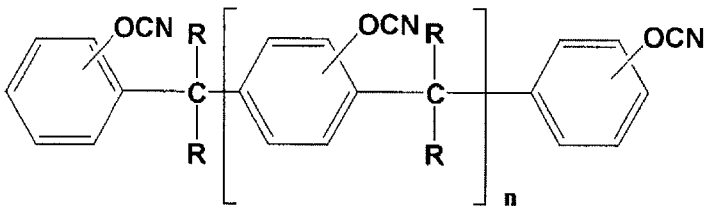
[Formula 1]



(1)

wherein each R independently represents a hydrogen atom or a methyl group, and n represents an integer of 1 or more;

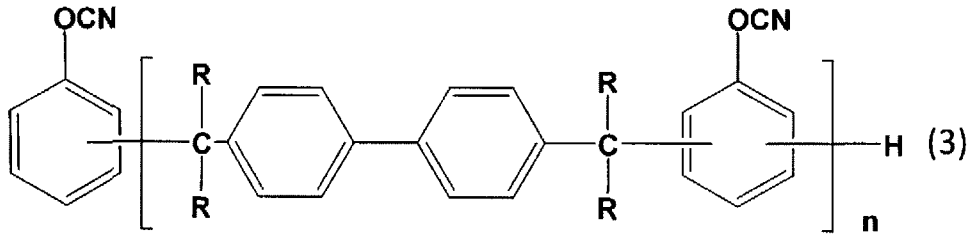
[Formula 2]



(2)

wherein each R independently represents a hydrogen atom or a methyl group, and n represents an integer of 0 or more;

[Formula 3]



(3)

wherein each R independently represents a hydrogen atom or a methyl group, and n represents an integer of 1 or more.

[Claim 10]

The resin composition according to any one of claims 1 to 9,

wherein the epoxy resin (A) is contained in an amount of 10 to 90 parts by mass based on a total of 100 parts by mass of the epoxy resin (A) and the cyanate ester compound (B).

[Claim 11]

The resin composition according to any one of claims 1 to 10,

wherein the cyanate ester compound (B) is contained in an amount of 10 to 90 parts by mass based on a total of 100 parts by mass of the epoxy resin (A) and the cyanate ester compound (B).

[Claim 12]

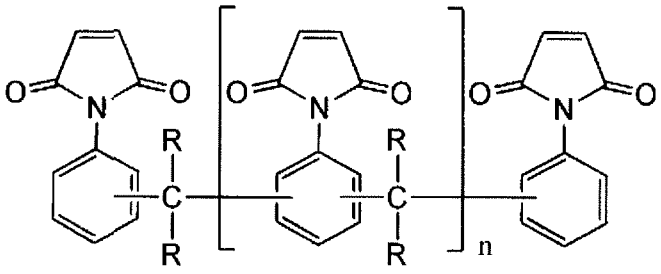
The resin composition according to any one of claims 1 to 11, further comprising a maleimide compound (D).

[Claim 13]

The resin composition according to claim 12,

wherein the maleimide compound (D) is at least one or more selected from the group consisting of bis(4-maleimidophenyl)methane, 2,2-bis(4-(4-maleimidephenoxy)-phenyl)propane, bis(3-ethyl-5-methyl-4-maleimidophenyl)methane, and a maleimide compound represented by the following general formula (4):

[Formula 4]



(4)

wherein each R independently represents a hydrogen atom or a methyl group, and n represents an integer of 1 to 10 as an average value.

[Claim 14]

The resin composition according to claim 12 or 13,

wherein the maleimide compound (D) is contained in an amount of 5 to 50 parts by mass based on a total of

100 parts by mass of the epoxy resin (A), the cyanate ester compound (B), and the maleimide compound (D).

[Claim 15]

The resin composition according to any one of claims 12 to 14,

wherein the epoxy resin (A) is contained in an amount of 10 to 90 parts by mass based on a total of 100 parts by mass of the epoxy resin (A), the cyanate ester compound (B), and the maleimide compound (D).

[Claim 16]

The resin composition according to any one of claims 12 to 15,

wherein the cyanate ester compound (B) is contained in an amount of 10 to 90 parts by mass based on a total of 100 parts by mass of the epoxy resin (A), the cyanate ester compound (B), and the maleimide compound (D).

[Claim 17]

A prepreg comprising a substrate and the resin composition according to any one of claims 1 to 16 which the substrate is impregnated with or which is attached to the substrate.

[Claim 18]

A metal foil clad laminate comprising the prepreg according to claim 17 as an insulating layer, and a metal foil disposed on a single side or both sides of the prepreg.

[Claim 19]

A printed wiring board comprising an insulating layer and a conductive layer formed on the surface of the insulating layer, wherein the insulating layer comprises the resin composition according to any one of claims 1 to 16.