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.

[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 150 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 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.~~

[Claim ~~8~~7]

The resin composition according to any one of claims 1 to ~~7~~6,

wherein the ~~inorganic filler (C) further comprises at least one or more~~ 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 9]~~

~~The resin composition according to claim 8,~~

~~wherein 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.~~

[Claim ~~10~~8]

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

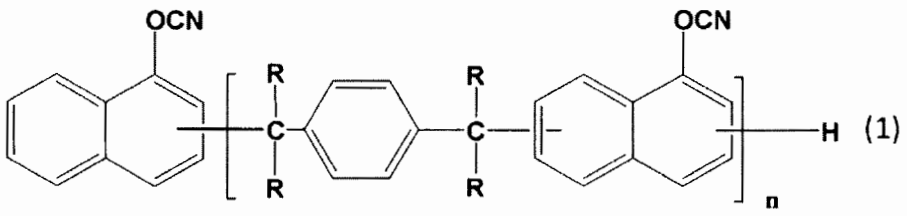
epoxy resin, a bisphenol F-based epoxy resin, a phenol novolac-based epoxy resin, a cresol novolac-based epoxy resin, a bisphenol A novolac-based epoxy resin, a brominated bisphenol A-based epoxy resin, a brominated phenol novolac-based epoxy resin, a biphenyl-based epoxy resin, a phenol aralkyl-based epoxy resin, and naphthol aralkyl-based epoxy resin.

[Claim ~~11~~9]

The resin composition according to any one of claims 1 to ~~10~~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):

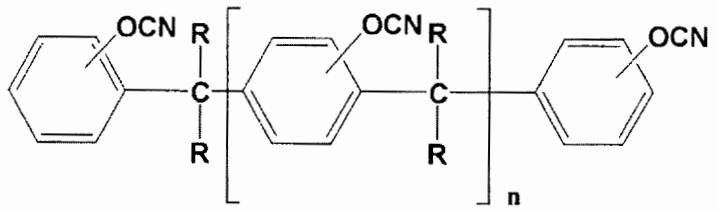
[Formula 1]



(1)

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

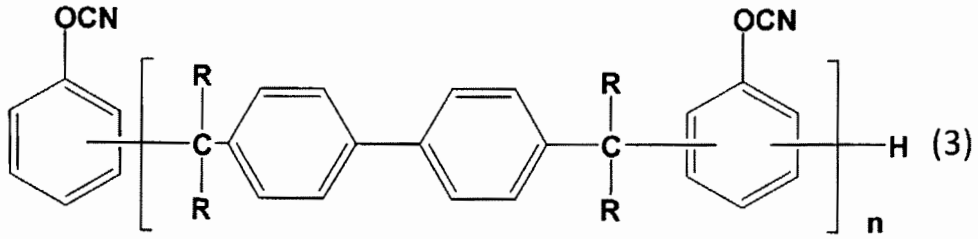
[Formula 2]



(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 ~~12~~10]

The resin composition according to any one of claims 1 to ~~11~~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 ~~13~~11]

The resin composition according to any one of claims 1 to ~~12~~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 ~~14~~12]

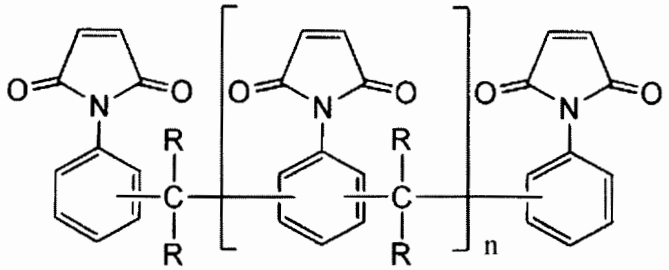
The resin composition according to any one of claims 1 to ~~13~~11, further comprising a maleimide compound (D).

[Claim ~~15~~13]

The resin composition according to claim ~~14~~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 ~~16~~14]

The resin composition according to claim ~~14~~ 12 or ~~15~~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 ~~17~~15]

The resin composition according to any one of claims ~~14~~ 12 to ~~16~~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 ~~18~~16]

The resin composition according to any one of claims ~~14~~ 12 to ~~17~~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 ~~19~~17]

A prepreg comprising a substrate and the resin composition according to any one of claims 1 to ~~18~~16 which the substrate is impregnated with or which is attached to the substrate.

[Claim ~~20~~18]

A metal foil clad laminate comprising the prepreg according to claim ~~19~~17 as an insulating layer, and a metal foil disposed on a single side or both sides of the prepreg.

[Claim ~~21~~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 ~~18~~16.