CLAIMS

1. A photosensitive composition satisfying the following condition (α), and comprising a binder resin (A) and a photosensitizer (C) and further comprising a radical polymerizable compound (B) and/or a cross-linking agent (F), wherein

the binder resin (A) contains the following resin (A1) and/or resin (A2):

resin (A1): a resin that contains, in structural units in a resin main chain, one or more selected from the group consisting of an imide structure, an amide structure, an oxazole structure, and a siloxane structure;

resin (A2): a resin having a phenolic hydroxyl group in the structural units in the resin main chain; and

(α) one or more selected from the group consisting of sulfonic acids, phosphate esters, phosphonic acids, phosphonate esters, phosphite esters, phosphinic acids, hypophosphite esters, and carboxylic acids containing a fluorine element is/are further contained, and the following condition (1x) is satisfied:

(1x) a total content of the sulfonic acids, the phosphate esters, the phosphonic acids, the phosphonate esters, the phosphite esters, the phosphinic acids, the hypophosphite esters, and the carboxylic acids containing a

fluorine element in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass.

2. The photosensitive composition according to claim 1, wherein

the sulfonic acids, and the phosphate esters, the phosphonic acids, the phosphonate esters, the phosphite esters, the phosphinic acids, and the hypophosphite esters (hereinafter, referred to as "organic acids containing a phosphorus element") have the following specific substituent a,

the carboxylic acids containing a fluorine element have the following specific substituent b, and

the condition (α) is the following condition (α2), and the following condition (α2) is satisfied:

(α2) one or more selected from the group consisting of the sulfonic acids having the following specific substituent a, the organic acids containing a phosphorus element having the following specific substituent a, and the carboxylic acids containing a fluorine element having the following specific substituent b is/are further contained, and the following condition (1y) is satisfied:

specific substituent a: one or more selected from the group consisting of a 1 to 2 valent aliphatic group having 1 to 18 carbon atoms, a 1 to 2 valent alicyclic group

having 4 to 18 carbon atoms, a 1 to 2 valent aromatic group having 6 to 15 carbon atoms, a 1 to 2 valent fluorine-containing aliphatic group having 1 to 18 carbon atoms, a 1 to 2 valent fluorine-containing alicyclic group having 4 to 18 carbon atoms, and a 1 to 2 valent fluorine-containing aromatic group having 6 to 15 carbon atoms;

specific substituent b: one or more selected from the group consisting of a 1 to 2 valent fluorine-containing aliphatic group having 1 to 18 carbon atoms, a 1 to 2 valent fluorine-containing alicyclic group having 4 to 18 carbon atoms, and a 1 to 2 valent fluorine-containing aromatic group having 6 to 15 carbon atoms; and

(1y) a total content of the sulfonic acid having the specific substituent a, the organic acid containing a phosphorus element having the specific substituent a, and the carboxylic acid containing a fluorine element having the specific substituent b in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass.

3. The photosensitive composition according to claim 2, wherein

the condition (α2) is the following condition (α3) and the condition (α3) is satisfied,

the sulfonic acid contains one or more selected from

the group consisting of methanesulfonic acid, cyclohexanesulfonic acid, benzenesulfonic acid, toluenesulfonic acid, xylenesulfonic acid, trifluoromethanesulfonic acid, hexafluorocyclohexanesulfonic acid, hexafluorobenzenesulfonic acid, pentafluorotoluenesulfonic acid, tetrafluoroxylenesulfonic acid, trifluoromethylbenzenesulfonic acid, trifluoromethyltoluenesulfonic acid, and trifluoromethylxylenesulfonic acid, and

the carboxylic acid containing a fluorine element contains one or more selected from the group consisting of trifluoroacetic acid, trifluoropropionic acid, hexafluorocyclohexanecarboxylic acid, hexafluorobenzoic acid, and trifluoromethylbenzoic acid:

(α3) a sulfonic acid and/or a carboxylic acid containing a fluorine element is/are further contained, and the following condition (1z) is satisfied:

(1z) a total content of the sulfonic acid and the carboxylic acid containing a fluorine element in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass.

4. The photosensitive composition according to claim 1, further satisfying the following condition (β):

(β) one or more selected from the group consisting of a chloride ion, a bromide ion, a sulfate ion, a sulfite ion, a nitrate ion, a nitrite ion, a phosphate ion, a phosphite ion, a hypophosphite ion, a formate ion, and a fluoride ion is/are contained, and the following condition (2x) is satisfied:

(2x) a total content of the chloride ion, the bromide ion, the sulfate ion, the sulfite ion, the nitrate ion, the nitrite ion, the phosphate ion, the phosphite ion, the hypophosphite ion, the formate ion, and the fluoride ion in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass.

5. The photosensitive composition according to claim 1, further satisfying the following condition (γ):

(γ) one or more selected from the group consisting of benzene, toluene, xylene, and naphthalene is/are contained, and the following condition (3) is satisfied:

(3) a total content of the benzene, the toluene, the xylene, and the naphthalene in the photosensitive composition is 0.010 to 1,000 ppm by mass.

6. The photosensitive composition according to any one of claims 1 to 5, wherein

the binder resin (A) contains the resin (A1), and

the resin (A1) contains one or more selected from the group consisting of the following resin (A1-1), resin (A1-2), resin (A1-3), resin (A1-4), resin (A1-5), and resin (A1-6), and a copolymer consisting of two or more of the following resin (A1-1), resin (A1-2), resin (A1-3), resin (A1-4), resin (A1-5), and resin (A1-6):

resin (A1-1): polyimide;

resin (A1-2): polyimide precursor;

resin (A1-3): polybenzoxazole;

resin (A1-4): polybenzoxazole precursor;

resin (A1-5): polyamideimide; and

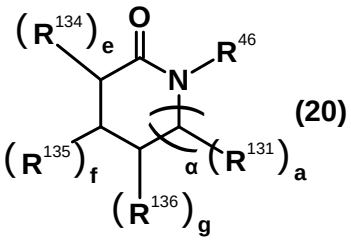
resin (A1-6): polyamideimide precursor.

7. The photosensitive composition according to claim 6, further comprising one or more selected from the group consisting of a cyclic amide compound represented by General Formula (20), an amide compound represented by General Formula (21), a cyclic urea compound represented by General Formula (22), a urea compound represented by General Formula (23), an oxazolidone compound represented by General Formula (24), and an isoxazolidone compound represented by General Formula (25)(hereinafter referred to as “specific nitrogen-containing compound”), and satisfying the following condition (4):

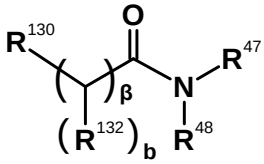
(4) a total content of the cyclic amide compound

represented by General Formula (20), the amide compound represented by General Formula (21), the cyclic urea compound represented by General Formula (22), the urea compound represented by General Formula (23), the oxazolidone compound represented by General Formula (24), and the isoxazolidone compound represented by General Formula (25) in the total solid content of the photosensitive composition is 0.010 to 5.0% by mass,

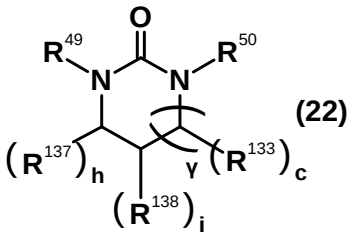
[Chemical Formula 1]



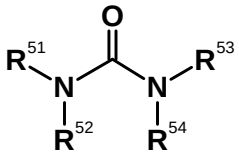
(20)



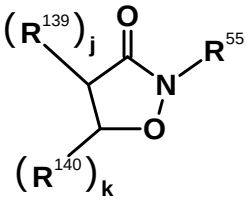
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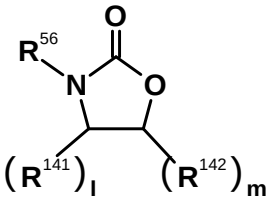
(22)



(23)



(24)



(25)

in General Formulae (20) to (25), R^{46} to R^{56} each independently represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a cycloalkyl group having 4 to 10 carbon atoms, an aryl group having 6 to 15 carbon atoms, or an alkenyl group having 2 to 6 carbon atoms, or a hydroxyalkyl group having 1 to 6 carbon atoms, R^{130} represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a hydroxyalkyl group having 1 to 6 carbon atoms, a

hydroxyalkoxy group having 1 to 6 carbon atoms, a hydroxy group, an amino group, a monoalkylamino group having 1 to 6 carbon atoms, or a dialkylamino group having 2 to 12 carbon atoms, R^{131} to R^{142} each independently represent an alkyl group having 1 to 6 carbon atoms, α, β, and γ each independently represent an integer of 0 to 6, a, b, c, e, f, g, h, i, j, k, l, and m each independently represent an integer of 0 to 2, in a case where α is 0, a is 0, in a case where β is 0, b is 0, and, in a case where γ is 0, c is 0.

8. The photosensitive composition according to claim 7, the specific nitrogen-containing compound contains one or more selected from the group consisting of an amide compound represented by General Formula (21), a cyclic urea compound represented by General Formula (22), a urea compound represented by General Formula (23), an oxazolidone compound represented by General Formula (24), and an isoxazolidone compound represented by General Formula (25).

9. The photosensitive composition according to claim 7, further comprising: one or more selected from the group consisting of a component containing a sodium element, a component containing a potassium element, a component containing a magnesium element, a component containing a

calcium element, a component containing an iron element, a component containing a copper element, and a component containing a chromium element, and satisfying the following condition (5):

(5) a total content of the sodium element, the potassium element, the magnesium element, the calcium element, the iron element, the copper element, and the chromium element in the total solid content of the photosensitive composition is 0.010 to 500 ppm by mass.

10. The photosensitive composition according to claim 1, wherein the photosensitizer (C) contains a photo-polymerization initiator (C1), and the photo-polymerization initiator (C1) contains an oxime ester-based compound (C1-1) and/or a phosphine oxide-based compound (C1-2).

11. The photosensitive composition according to claim 1, wherein the photosensitizer (C) contains a photo-polymerization initiator (C1), and the photo-polymerization initiator (C1) contains an oxime ester-based compound (C1-1) and/or a phosphine oxide-based compound (C1-2),

further comprising one or more selected from the group consisting of acetic acid, propionic acid, cyclopentanecarboxylic acid, cyclohexanecarboxylic acid, benzoic acid, methylbenzoic acid, and trimethylbenzoic acid

and satisfying the following condition (6), and/or

further comprising an aldoxime compound and/or a ketoxime compound and satisfying the following condition (7):

(6) a total content of the acetic acid, the propionic acid, the cyclopentanecarboxylic acid, the cyclohexanecarboxylic acid, the benzoic acid, the methylbenzoic acid, and the trimethylbenzoic acid in the total solid content of the photosensitive composition is 0.010 to 500 ppm by mass; and

(7) a total content of the aldoxime compound and the ketoxime compound in the total solid content of the photosensitive composition is 0.010 to 500 ppm by mass.

12. The photosensitive composition according to claim 11, further comprising one or more selected from the group consisting of a component containing a chlorine element, a component containing a bromine element, and a component containing a sulfur element and satisfying the following condition (8) and/or condition (9), and/or

further comprising water and satisfying the following condition (10):

(8) a total content of the chlorine element and the bromine element in the total solid content of the photosensitive composition is 0.010 to 500 ppm by mass;

(9) a content of the sulfur element in the total solid content of the photosensitive composition is 0.010 to 500 ppm by mass; and

(10) a content of the water in the photosensitive composition is 0.010 to 3.0% by mass.

13. The photosensitive composition according to any one of claims 1 to 5 and 11 to 12, further satisfying the following condition (1α):

(1α) a content of the fluorine element in the total solid content of the photosensitive composition is 1,000 ppm by mass or less.

14. The photosensitive composition according to any one of claims 1 to 5 and 11 to 12, further satisfying at least one of the following conditions (δ), (ε), and (ζ):

(δ) the radical polymerizable compound (B) contains the following first polymerizable compound (B1) and second polymerizable compound (B2);

(ε) the radical polymerizable compound (B) contains the following third polymerizable compound (B3) and fourth polymerizable compound (B4);

(ζ) the radical polymerizable compound (B) contains the following first polymerizable compound (B1) or second polymerizable compound (B2), and further contains the

following third polymerizable compound (B3) or fourth polymerizable compound (B4):

first polymerizable compound (B1): a compound having the following structure (I-b1) and further having at least two radical polymerizable groups:

structure (I-b1): a structure including an alicyclic structure and/or a structure including a heteroalicyclic structure;

second polymerizable compound (B2): a compound having the following structure (I-b2) and structure (II-b2) and further having at least two radical polymerizable groups:

structure (I-b2): a structure including an aromatic structure;

structure (II-b2): a structure including an aliphatic structure;

third polymerizable compound (B3): a compound having at least two (meth)acryloyl groups and further having the following structure (I-b3):

structure (I-b3): a structure that has at least two (meth)acryloyl groups linked with a minimum number of atoms of 4 to 10 and includes an aliphatic structure; and

fourth polymerizable compound (B4): a compound having at least two (meth)acryloyl groups and further having the following structure (I-b4):

structure (I-b4): a structure that has at least two

(meth)acryloyl groups linked with a minimum number of atoms of 11 to 45 and includes an aliphatic structure.

15. The photosensitive composition according to any one of claims 1 to 5 and 11 to 12, further comprising inorganic particles (G),

the inorganic particles (G) containing one or more selected from the group consisting of silica particles, alumina particles, titania particles, vanadium oxide particles, chromium oxide particles, ferric oxide particles, cobalt oxide particles, copper oxide particles, zinc oxide particles, zirconium oxide particles, niobium oxide particles, tin oxide particles, and cerium oxide particles.

16. A photosensitive composition satisfying one or more selected from the group consisting of the following conditions (α), (β), and (γ), and comprising a binder resin (A) and a photosensitizer (C) and further comprising a radical polymerizable compound (B) and/or a cross-linking agent (F), wherein

the binder resin (A) contains the following resin (A1) and/or resin (A2):

resin (A1): a resin that contains, in structural units in a resin main chain, one or more selected from the

group consisting of an imide structure, an amide structure, an oxazole structure, and a siloxane structure;

resin (A2): a resin having a phenolic hydroxyl group in the structural units in the resin main chain; and

(α) one or more selected from the group consisting of sulfonic acids, phosphate esters, phosphonic acids, phosphonate esters, phosphite esters, phosphinic acids, hypophosphite esters, and carboxylic acids containing a fluorine element is/are further contained, and the following condition (1x) is satisfied:

(1x) a total content of the sulfonic acids, the phosphate esters, the phosphonic acids, the phosphonate esters, the phosphite esters, the phosphinic acids, the hypophosphite esters, and the carboxylic acids containing a fluorine element in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass;

(β) one or more selected from the group consisting of a chloride ion, a bromide ion, a sulfate ion, a sulfite ion, a nitrate ion, a nitrite ion, a phosphate ion, a phosphite ion, a hypophosphite ion, a formate ion, and a fluoride ion is/are contained, and the following condition (2x) is satisfied:

(2x) a total content of the chloride ion, the bromide ion, the sulfate ion, the sulfite ion, the nitrate ion, the nitrite ion, the phosphate ion, the phosphite ion, the

hypophosphite ion, the formate ion, and the fluoride ion in the total solid content of the photosensitive composition is 0.010 to 1,000 ppm by mass; and

(γ) one or more selected from the group consisting of benzene, toluene, xylene, and naphthalene is/are contained, and the following condition (3) is satisfied:

(3) a total content of the benzene, the toluene, the xylene, and the naphthalene in the photosensitive composition is 0.010 to 1,000 ppm by mass.

17. A photosensitive composition film comprising a photosensitive composition coating and a support on which the photosensitive composition according to any one of claims 1 to 5, 11 to 12, and 16 is formed.

18. A cured product obtained by curing the photosensitive composition according to any one of claims 1 to 5, 11 to 12, and 16.

19. An electronic component comprising the cured product according to claim 18.

20. A method for producing a cured product, comprising:

(1) a step of forming a coating film of the photosensitive composition according to any one of claims 1

to 5, 11 to 12, and 16 on a substrate;

(2) a step of irradiating the coating film of the photosensitive composition with a chemical active ray via a photomask;

(3) a step of performing development with a developer so that a pattern of the photosensitive composition is formed; and

(4) a step of heating the pattern so that a cured pattern of the photosensitive composition is obtained.

21. An electronic component comprising a cured product, wherein

the cured product contains the following resin (XA1) and/or resin (XA2) and

satisfies the following condition (Xα):

resin (XA1): a resin that contains, in structural units in a resin main chain, one or more selected from the group consisting of an imide structure, an amide structure, an oxazole structure, and a siloxane structure;

resin (XA2): a resin having a phenolic hydroxyl group in the structural units in the resin main chain; and

(Xα) one or more selected from the group consisting of sulfonic acids, phosphate esters, phosphonic acids, phosphonate esters, phosphite esters, phosphinic acids, hypophosphite esters, and carboxylic acids containing a

fluorine element is/are further contained, and the following condition (X1x) is satisfied:

(X1x) a total content of the sulfonic acids, the phosphate esters, the phosphonic acids, the phosphonate esters, the phosphite esters, the phosphinic acids, the hypophosphite esters, and the carboxylic acids containing a fluorine element in the cured product is 0.010 to 1,000 ppm by mass.