CLAIMS

[Claim 1] A resin being one or more resins selected from the group consisting of a polyimide, a polyimide precursor, a polybenzoxazole, a polybenzoxazole precursor, a polyamideimide, a polyamideimide precursor, and a copolymer thereof, wherein

the resin has a first amine residue (DA1): an amine residue having a phenolic hydroxyl group, and the first amine residue (DA1) has at least two structures (Ia): a cyclic structure having a phenolic hydroxyl group, and a structure (IIa): a structure linking at least two of the structures (Ia), and

the structure (IIa) is a sulfonyl group, an alkylene group, a condensed polycyclic structure, a hydrocarbon group including an ether bond, a direct bond, an ether bond, a sulfide bond, a carbonyl group, a carboxylate ester bond, an amide bond, a urea bond, a urethane bond, a carbonate ester bond, a cycloalkylene group, an arylene group, a condensed polycyclic heterocyclic structure, a hydrocarbon group including a carbonyloxy group, or a hydrocarbon group including a carbonyl amide group, and

the resin satisfies the following condition (P1a):

(P1a) a content of a fluorine element in the structure of the resin is 10,000 ppm by mass or less.

[Claim 2] The resin according to claim 1, further comprising a second amine residue (DA2): an amine residue having no phenolic hydroxyl group, and satisfying the following condition (α1) and/or condition (α2), wherein

(α1) the second amine residue (DA2) has at least two structures (Ib): a cyclic structure having no phenolic hydroxyl group, and a structure (IIb): a structure linking at least two of the structures (Ib), and

the structure (IIb) is a sulfonyl group, an alkylene group, a condensed polycyclic structure, a hydrocarbon group including an ether bond, a direct bond, an ether bond, a sulfide bond, a carbonyl group, a carboxylate ester bond, an amide bond, a urea bond, a urethane bond, a carbonate ester bond, a cycloalkylene group, an arylene group, a condensed polycyclic heterocyclic structure, a hydrocarbon group including a carbonyloxy group, or a hydrocarbon group including a carbonyl amide group;

(α2) the second amine residue (DA2) has a structure (IIIb): a silicone structure and/or a siloxane structure.

[Claim 3] The resin according to claim 2 comprising a polyimide unit and a polyimide precursor unit, wherein

a content ratio of a polyimide unit to a total of the polyimide unit and the polyimide precursor unit is 1.0 mol%

or more and 30 mol% or less, and

a content ratio of an amic acid ester structure to a total of an amic acid structure and an amic acid ester structure in the polyimide precursor unit is 40 mol% or more and 99 mol% or less.

[Claim 4] The resin according to claim 3, wherein the first amine residue (DA1) has an amine residue satisfying the following conditions (S1x), and/or the second amine residue (DA2) has an amine residue satisfying at least one of the following conditions (S1x) and (S2x):

(S1x) an amine residue has a C_1 symmetry axis as a molecular symmetry and does not have a C_2 symmetry axis;

(S2x) an amine residue has at least one of a chiral center, a chiral axis, a chiral plane, and a helical axis.

[Claim 4] The resin according to claim 2 or 3 comprising a polyimide unit and/or a polyimide precursor unit, and

the resin has one or more selected from the group consisting of a polybenzoxazole unit, a polybenzoxazole precursor unit, a polyamideimide unit, and a polyamideimide precursor unit, wherein

a total content ratio of a polybenzoxazole unit, a polybenzoxazole precursor unit, a polyamideimide unit, and a polyamideimide precursor unit to a total of a polyimide unit, a polyimide precursor unit, a polybenzoxazole unit, a

polybenzoxazole precursor unit, a polyamideimide unit, and a polyamideimide precursor unit of the resin is 10 mol% or more and 90 mol% or less.

[Claim 5] The resin according to any one of claims 2 to 4, wherein

the second amine residue (DA2) satisfies the condition (α1), or satisfies both the condition (α1) and the condition (α2), and

the first amine residue (DA1) has an amine residue satisfying the following condition (S1x), or

the second amine residue (DA2) satisfies the condition (α1), and

the second amine residue (DA2) has an amine residue satisfying at least one of the following conditions (S1x) and (S2x):

(S1x) an amine residue has a C_1 symmetry axis as a molecular symmetry and does not have a C_2 symmetry axis;

(S2x) an amine residue has at least one of a chiral center, a chiral axis, a chiral plane, and a helical axis.

[Claim 6] The resin according to any one of claims 1 to 5, wherein the first amine residue (DA1) has an amine residue satisfying the following condition (S1x):

(S1x) an amine residue has a C_1 symmetry axis as a

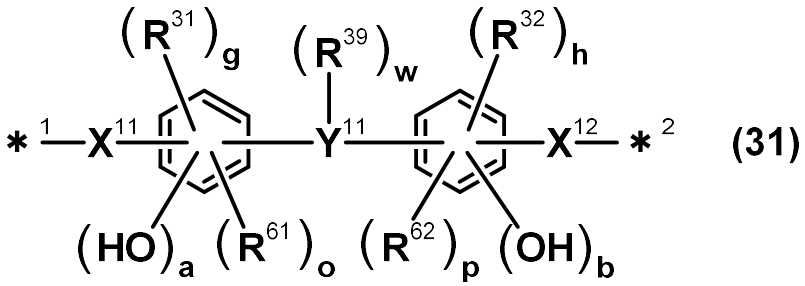
molecular symmetry and does not have a C_2 symmetry axis.

[Claim 7] The resin according to claim 6, wherein the (DA1) first amine residue has an amine residue represented by formula (31), and
the amine residue represented by formula (31) satisfies the condition of (1), (2), (3), (4), (5), or (6) below:
(1) The chemical structure of R^{39} satisfies the condition of (S1x) above;
(2) At least one of the following conditions is satisfied: (a) the chemical structures of R^{31} and R^{32} are not identical; (b) the substitution positions of R^{31} and R^{32} bonded to the aromatic ring in formula (31) are different (asymmetric substitution positions); and (c) g and h each independently represent integers of 0 to 3 that are different from each other;
(3) At least one of the following conditions is satisfied: (d) the chemical structures of R^{61} and R^{62} are not identical; (e) the substitution positions of R^{61} and R^{62} bonded to the aromatic ring in formula (31) are different (asymmetric substitution positions); and (f) o and p each independently represent integers of 0 to 3 that are different from each other;
(4) At least one of the following conditions is satisfied: (g) the substitution positions of at least two phenolic

hydroxyl groups bonded to the aromatic ring in formula (31) are different (asymmetric substitution positions); and (h) a and b each independently represent integers of 1 to 4 that are different from each other;

(5) At least one of the following conditions is satisfied: (i) the chemical structures of X^{11} and X^{12} are not identical; and (j) the substitution positions of X^{11} and X^{12} bonded to the aromatic ring in formula (31) are different (asymmetric substitution positions);

(6) The chemical structure of Y^{11} satisfies the condition of (S1x) above;



(31)

In formula (31), R^{31} and R^{32} each independently represent a carboxy group, a mercapto group, or a sulfonic acid group; R^{39} represents a hydrocarbon group, a hydrocarbon group containing an ether bond, or a hydrocarbon group containing a carbonyl group; R^{61} and R^{62} each independently represent an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 4 to 10 carbon atoms, an aryl group having 6 to 15 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkoxy group having 1 to 10 carbon atoms, an

alkenyloxy group having 2 to 10 carbon atoms, or an acyl group having 1 to 10 carbon atoms; X^{11} and X^{12} each independently represent a direct bond, a hydrocarbon group, a hydrocarbon group containing an ether bond, or a hydrocarbon group containing a carbonylamide group; Y^{11} represents a sulfonyl group, an alkylene group, a condensed polycyclic structure, a hydrocarbon group containing an ether bond, a direct bond, an ether bond, a sulfide bond, a carbonyl group, a carboxylic acid ester bond, an amide bond, a urea bond, a urethane bond, a carbonate bond, a cycloalkylene group, an arylene group, a condensed polycyclic hetero ring structure, a hydrocarbon group containing a carbonyloxy group, or a hydrocarbon group containing a carbonylamide group; a and b each independently represent an integer of 1 to 4; g and h each independently represent an integer of 0 to 3; o and p each independently represent an integer of 0 to 3; w represents an integer of 0 to 6; Note that $1 \leq a + g + o \leq 4$ and $1 \leq b + h + p \leq 4$; $*^1$ and $*^2$ each independently represent a bonding point in the resin.

[Claim 8] A photosensitive composition comprising a binder resin (A) and a photosensitive agent (C), and further comprising a radical polymerizable compound (B) and/or a crosslinking agent (F), wherein

the binder resin (A) includes the resin according to any one of claims 1 to 7.

[Claim 9] A photosensitive composition comprising a binder resin (A) and a photosensitive agent (C), and further comprising a radical polymerizable compound (B) and/or a crosslinking agent (F), wherein

the binder resin (A) includes a resin (Ax): one or more resins selected from the group consisting of a polyimide, a polyimide precursor, a polybenzoxazole, a polybenzoxazole precursor, a polyamideimide, a polyamideimide precursor, and a copolymer thereof, and

the resin (Ax) has a first amine residue (DA1): an amine residue having a phenolic hydroxyl group, and the first amine residue (DA1) has at least two structures (Ia): a cyclic structure having a phenolic hydroxyl group, and a structure (IIa): a structure linking at least two of the structures (Ia), and

the structure (IIa) is a sulfonyl group, an alkylene group, a condensed polycyclic structure, a hydrocarbon group including an ether bond, a direct bond, an ether bond, a sulfide bond, a carbonyl group, a carboxylate ester bond, an amide bond, a urea bond, a urethane bond, a carbonate ester bond, a cycloalkylene group, an arylene group, a condensed polycyclic heterocyclic structure, a

hydrocarbon group including a carbonyloxy group, or a hydrocarbon group including a carbonyl amide group, and

the first amine residue (DA1) has an amine residue satisfying the following condition (S1x), and

the photosensitive composition satisfies the following condition (1a):

(S1x) an amine residue has a C_1 symmetry axis as a molecular symmetry and does not have a C_2 symmetry axis;

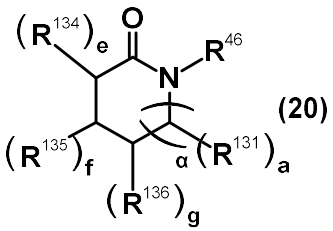
(1a) a content of a fluorine element in a total solid content of the photosensitive composition is 1,000 ppm by mass or less.

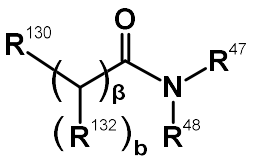
[Claim 10] The photosensitive composition according to claim 8 or 9, further comprising a nitrogen-containing compound (H), wherein the nitrogen-containing compound (H) includes one or more selected from the group consisting of a cyclic amide compound, an amide compound, a cyclic urea compound, a urea compound, an oxazolidone compound, and an isoxazolidone compound (hereinafter, "specific nitrogen-containing compounds"), and the photosensitive composition satisfies the following condition (4):

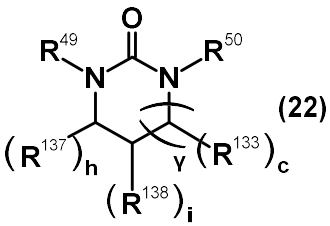
(4) a total content of a cyclic amide compound, an amide compound, a cyclic urea compound, a urea compound, an oxazolidone compound, and an isoxazolidone compound in the total solid content of the photosensitive composition is

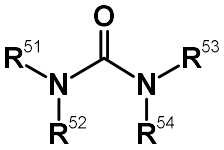
0.010 mass% or more and 5.0 mass% or less,

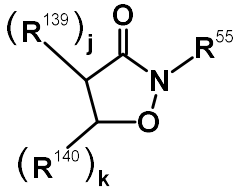
wherein the specific nitrogen-containing compounds include one or more selected from the group consisting of a cyclic amide compound represented by Formula (20), an amide compound represented by Formula (21), a cyclic urea compound represented by Formula (22), a urea compound represented by Formula (23), an oxazolidone compound represented by Formula (24), and an isoxazolidone compound represented by Formula (25).

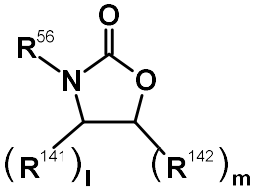

(20)


(21)


(22)


(23)


(24)


(25)

[Claim 11] The photosensitive composition according to any one of claims 8 to 10, further comprising a resin (A1y): a resin having a phenolic hydroxyl group in a structural unit of the resin,

the resin (A1y) comprises one or more resins selected from the group consisting of a phenolic resin, polyhydroxystyrene, a phenol group-containing epoxy resin, and a phenol group-containing acrylic resin, and

a total content ratio of the resin (A1y) to a total of 100 mass% of the binder resin (A) is 5.0 mass% or more and 70 mass% or less.

[Claim 12] A cured product obtained by curing the photosensitive composition according to any one of claims 8 to 11.

[Claim 13] A display device comprising the cured product according to claim12.

[Claim 14] A method for producing a cured product, the method comprising: (1) a step of forming a coating film of the photosensitive composition according to any one of claims 8 to 11 on a substrate; (2) a step of irradiating the coating film of the photosensitive composition with actinic radiation through a photomask; (3) a step of performing development with a developer to form a pattern of the photosensitive composition; and (4) a step of heating the pattern of the photosensitive composition to obtain a cured pattern of the photosensitive composition.

[Claim 15] A display device comprising a substrate, a first electrode, a second electrode, a pixel dividing layer, a light emitting layer, and a TFT planarization

layer, wherein the pixel dividing layer and/or the TFT planarization layer includes one or more resins selected from the group consisting of a polyimide, a polyimide precursor, a polybenzoxazole, a polybenzoxazole precursor, a polyamideimide, a polyamideimide precursor, and a copolymer thereof, and

the resin has an amine residue having a phenolic hydroxyl group, and the amine residue having a phenolic hydroxyl group has at least two structures (XIa): a cyclic structure having a phenolic hydroxyl group, and a structure (XIIa): a structure linking at least two of the structures (XIa), and

the structure (XIIa) is a sulfonyl group, an alkylene group, a condensed polycyclic structure, a hydrocarbon group including an ether bond, a direct bond, an ether bond, a sulfide bond, a carbonyl group, a carboxylate ester bond, an amide bond, a urea bond, a urethane bond, a carbonate ester bond, a cycloalkylene group, an arylene group, a condensed polycyclic heterocyclic structure, a hydrocarbon group including a carbonyloxy group, or a hydrocarbon group including a carbonyl amide group, and

the amine residue having a phenolic hydroxyl group has an amine residue satisfying the following condition (S1x), and

the display device satisfies the following condition

(X1a):

(S1x) an amine residue has a C_1 symmetry axis as a molecular symmetry and does not have a C_2 symmetry axis;

(X1a) a content of a fluorine element in the pixel dividing layer is 1,000 ppm by mass or less, and/or a content of a fluorine element in the TFT planarization layer is 1,000 ppm by mass or less.