CLAIMS

1. A photosensitive composition satisfying a condition (α) or a condition (β) below, wherein

a double bond equivalent in total solid content is 600 to 6,000 g/mol:

the condition (α): containing a compound of (I) described below and/or a compound of (II) described below:

(I) a compound having a weakly acidic group (WA) below and a radical polymerizable group;

(II) a compound having a weakly acidic group (WA) below and a compound having a radical polymerizable group; or

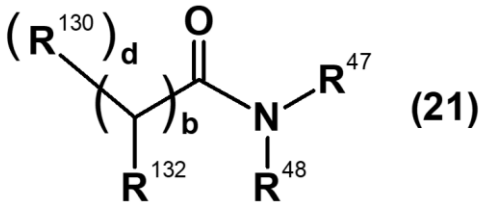
the condition (β): containing an alkali-soluble resin (A), a radical polymerizable compound (B), and a photosensitive agent (C):

the weakly acidic group (WA): one or more groups selected from the group consisting of a phenolic hydroxyl group, a hydroxyimide group, a hydroxyamide group, a silanol group, a 1,1-bis(trifluoromethyl) methylol group, and a mercapto group.

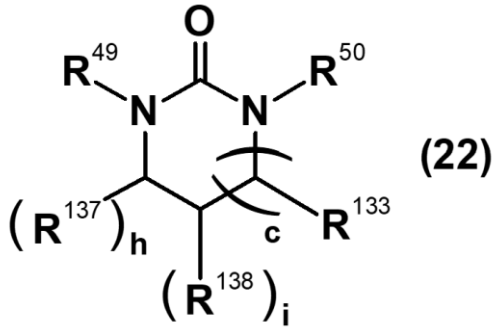
2. The photosensitive composition according to claim 1, wherein a weakly acidic group equivalent in total solid content is 400 to 6,000 g/mol.

3. The photosensitive composition according to claim 1 or 2, further comprising 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), and a urea compound represented by general formula (23), and a condition (4) described below is satisfied:

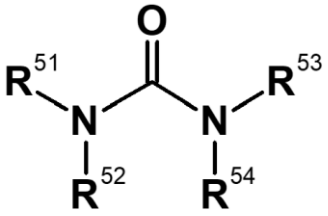
(4) a total content of the amide compound represented by the general formula (21), the cyclic urea compound represented by the general formula (22), and the urea compound represented by the general formula (23) in the total solid content of the photosensitive composition is 0.010% to 5.0% by mass,



(21)



(22)



(23)

wherein in the general formulae (21) to (23), R^{47} to

R^{54} 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, 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^{132}, R^{133}, R^{137} and R^{138} each independently represent an alkyl group having 1 to 6 carbon atoms, b, and c each independently represent an integer of 0 to 6, d represents 1 or 2, h, and i each independently represent an integer of 0 to 2, and in a case where b is 0, d is 1.

4. The photosensitive composition according to claim 1 or 2, further comprising one or more of a specific nitrogen-containing compound which is selected from the group of N,N'-dimethylformamide, N,N'-diethylformamide, N,N'-dimethylacetamide, N,N'-dimethylpropionamide, N,N'-dimethylisobutyramide, N,N'-dimethyl-3-methoxypropionamide, N,N'-dimethyl-3-butoxypropionamide, 1,3-dimethyl-2-imidazolidinone, 1,3-diethyl-2-imidazolidinone, N,N'-

dimethylpropyleneurea, 1,1,3,3-tetramethylurea, and 1,1,3,3-tetraethylurea; and

wherein (4) total content of the specific nitrogen-containing compound in the total solid content of the photosensitive composition is 0.010% to 5.0% by mass.

5. The photosensitive composition according to claim 3 or 4, 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 a condition (5) described below is satisfied:

(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.

6. The photosensitive composition according to any one of claims 2 to 5, further comprising a radical polymerizable compound (B), and satisfying at least one of conditions (γ) and (δ) below:

the condition (γ): the radical polymerizable compound (B) contains a fourth polymerizable compound (B4) and a fifth polymerizable compound (B5) below;

the condition (δ): the radical polymerizable compound (B) contains a sixth polymerizable compound (B6) and a seventh polymerizable compound (B7) below; and

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

the structure (I-b4): a structure including a condensed polycyclic alicyclic structure and/or a cyclic structure having at least two nitrogen atoms,

the fifth polymerizable compound (B5): a compound having a structure (I-b5) and a structure (II-b5) below and further having at least two radical polymerizable groups:

the structure (I-b5): a structure including a benzene structure or a biphenyl structure; and

the structure (II-b5): a structure including an alkylene group, an oxyalkylene group, and an alkylene group including a hydroxy group, an oxyalkylene group including a hydroxy group, an alkylene carbonyl group, an oxyalkylene carbonyl group, or an aminoalkylene carbonyl group,

the sixth polymerizable compound (B6): a compound having at least two (meth)acryloyl groups and further having a structure (I-b6) below:

the structure (I-b6): a structure having at least two (meth)acryloyl groups linked with a minimum number of atoms of 4 to 10 and a structure including an alkylene group, an oxyalkylene group, and an alkylene group including a hydroxy group, an oxyalkylene group including a hydroxy group, an alkylene carbonyl group, an oxyalkylene carbonyl group, or an aminoalkylene carbonyl group, and

the seventh polymerizable compound (B7): a compound having at least two (meth)acryloyl groups and further having a structure (I-b7) below:

the structure (I-b7): a structure having at least two (meth)acryloyl groups linked with a minimum number of atoms of 11 to 45 and an aliphatic structure including an alkylene group, an oxyalkylene group, and an alkylene group including a hydroxy group, an oxyalkylene group including a hydroxy group, an alkylene carbonyl group, an oxyalkylene carbonyl group, or an aminoalkylene carbonyl group.

7. The photosensitive composition according to any one of claims 2 to 6, wherein

the weakly acidic group equivalent in total solid content is 400 to 1,500 g/mol, and

the double bond equivalent is 750 to 6,000 g/mol.

8. The photosensitive composition according to any one

of claims 2 to 7, further comprising one or more selected from the group consisting of a halogen element-containing component, a sulfur element-containing component, and a phosphorus element-containing component, and satisfying one or more of conditions (1) to (3) below:

(1) a content of the halogen elements in the photosensitive composition is 0.01 to 100 ppm by mass;

(2) a content of the sulfur elements in the photosensitive composition is 0.01 to 100 ppm by mass; and

(3) a content of the phosphorus elements in the photosensitive composition is 0.01 to 100 ppm by mass.

9. The photosensitive composition according to any one of claims 2 to 8, further comprising inorganic particles (I),

wherein the inorganic particles (I) contain silica particles (I1).

10. The photosensitive composition according to any one of claims 2 to 9, comprising an alkali-soluble resin (A); a radical polymerizable compound (B); and a photosensitive agent (C),

wherein the alkali-soluble resin (A) contains a resin having a radical polymerizable group and a resin not having a radical polymerizable group, and

the photosensitive agent (C) contains a photo-polymerization initiator (C1).

11. The photosensitive composition according to claim 10, comprising an alkali-soluble resin (A),

wherein the alkali-soluble resin (A) contains one or more selected from the group consisting of a resin (A1), a resin (A2), and a resin (A3) below, the resin having a radical polymerizable group contains a resin (A2) and/or a resin (A3b), and the resin not having a radical polymerizable group contains a resin (A1) and /or a resin (A3a):

the resin (A1): a resin having the weakly acidic group (WA), further having a structural unit containing one or more selected from the group consisting of an imide structure, an amide structure, an oxazole structure, and a siloxane structure, and having no radical polymerizable group;

the resin (A2): a resin having a radical polymerizable group;

the resin (A3): a resin having a phenolic hydroxyl group;

the resin (A3a): a resin having a phenolic hydroxyl group and having no radical polymerizable group, among the resins (A3); and

the resin (A3b): a resin having a phenolic hydroxyl group and a radical polymerizable group, among the resins (A3).

12. The photosensitive composition according to claim 11, wherein the alkali-soluble resin (A) contains the resin (A1) and/or the resin (A3), and further contains the resin (A2), and the resin having a radical polymerizable group contains a resin (A2), and the resin not having a radical polymerizable group contains a resin (A1) and /or a resin (A3a).

13. A cured product obtained by curing the photosensitive composition according to any one of claims 2 to 12.

14. A display device comprising the cured product according to claim 13.

15. An electronic component comprising the cured product according to claim 13.

16. A method for producing a cured product, the method comprising:

(1) forming a coating film of the photosensitive composition according to any one of claims 2 to 12 on a

substrate;

(2) irradiating a coating film of the photosensitive composition with active actinic rays through a photomask;

(3) developing using an alkaline solution to form a pattern of the photosensitive composition; and

(4) heating the pattern to obtain a cured pattern of the photosensitive composition,

wherein the photomask is a halftone photomask including a light-transmitting portion, a light-shielding portion, and a partial light-transmitting portion between the light-transmitting portion and the light-shielding portion, the partial light-transmitting portion having a transmittance lower than a value of the light-transmitting portion and a transmittance higher than a value of the light-shielding portion.

17. A display device comprising at least a substrate, a first electrode, a second electrode, and a pixel defining layer, and

further comprising an organic EL layer including a light-emitting layer and/or a light extraction layer including a light-emitting layer,

wherein

the pixel defining layer is formed so as to overlap a part of the first electrode,

the organic EL layer including the light-emitting layer and/or the light extraction layer including the light-emitting layer are formed on the first electrode and between the first electrode and the second electrode,

the pixel defining layer includes a colorant (D-DL), and optical density of the pixel defining layer at a wavelength of visible light per 1 μm of film thickness is 0.5 to 5.0,

the pixel defining layer contains a resin having a weakly acidic group (WA) below,

a resin having a weakly acidic group (WA) contains one or more selected from the group consisting of a resin (XA3-1), a resin (XA3-2), a resin (XA3-3), and a resin (XA3-4) below, and

the display device satisfies conditions (1x) and/or (2x) below:

the weakly acidic group (WA) is one or more groups selected from the group consisting of a phenolic hydroxyl group, a hydroxyimide group, a hydroxyamide group, a silanol group, a 1,1-bis(trifluoromethyl) methylol group, and a mercapto group;

the resin (XA3-1): a phenol resin;

the resin (XA3-2): polyhydroxystyrene;

the resin (XA3-3): a phenol group-containing epoxy resin;

the resin (XA3-4): a phenol group-containing acrylic resin;

(1x) when a maximum value of a surface roughness of a surface of a thin film part in a step shape of the pixel defining layer is represented by ($Ra_{HT/max}$) and a maximum value of a surface roughness of a surface of a thick film part in a step shape of the pixel defining layer is represented by ($Ra_{FT/max}$), a difference $|\Delta (Ra_{HT/max} - Ra_{FT/max})|$ between ($Ra_{HT/max}$) and ($Ra_{FT/max}$) is 1.0 to 50.0 nm; and

(2x) when ($Ra_{DL/max}$) is a maximum value of surface roughness on a surface of the pixel defining layer, and ($Ra_{SP/max}$) is a maximum value of surface roughness on a surface of a spacer layer on the pixel defining layer, a difference $|\Delta(Ra_{DL/max} - Ra_{SP/max})|$ between ($Ra_{DL/max}$) and ($Ra_{SP/max}$) is 1.0 to 50.0 nm.