There is provided a photosensitive colored resin composition including an alkali-soluble resin (a), a photosensitive compound (b), and a compound (c) having an absorption maximum in the wavelength range of 400 nm or more and less than 490 nm, the photosensitive compound (b) containing a photosensitive compound (b1), the photosensitive compound (b1) being such that its maximum absorption wavelength in the range of 350 nm or more and 450 nm or less is located within the wavelength range of 350 nm or more and 390 nm or less.

[0008a]

In an aspect, there is provided a photosensitive colored resin composition comprising an alkali-soluble resin (a), a photosensitive compound (b), and a compound (c) having an absorption maximum in the wavelength range of 400 nm or more and less than 490 nm, the photosensitive compound (b) consisting of a photoacid generating agent and containing a photosensitive compound (b1), and a photosensitive compound other than photosensitive compound (b1), the photosensitive compound (b1) being such that its maximum absorption wavelength in the range of 350 nm or more and 450 nm or less is located within the wavelength range of 350 nm or more and 390 nm or less, wherein the photosensitive compound (b1) accounts for 5 parts by mass or more and 90 parts by mass or less, relative to the total quantity, which accounts for 100 parts by mass, of the photosensitive compound (b).

[0009]

The photosensitive colored resin composition may further include a compound (d) having an absorption maximum in the wavelength range of 490 nm or more and less than 580 nm and a compound (e) having an absorption maximum in the wavelength range of 580 nm or more and less than 800 nm.

[0010]

In another aspect, there is provided a production method for heat resistant colored resin film including a coating step for coating a substrate with a photosensitive colored resin composition to form a coating film, a drying step for drying the coating film, a light exposure step for exposing the dried photosensitive colored resin film to light, a development step for developing the exposed photosensitive colored resin film, and a heat treatment step for heat-treating the developed photosensitive colored resin film.

[0011]

The present disclosure also provides a display element including a first electrode formed on a substrate, an insulating layer formed to cover the periphery of the first electrode, and a second electrode formed to face the first electrode, the insulating layer being a heat-resistant colored resin film formed mainly of the photosensitive colored resin composition as defined above.

[0011a]
In another aspect, there is provided a display device comprising a first electrode formed on a substrate, an insulation layer formed to cover the periphery of the first electrode, and a second electrode located so as to face the first electrode, the insulation layer being a cured film produced by curing a photosensitive colored resin composition as set forth above.

[0012]
In another aspect, there is provided a display device including a thin film transistor (TFT) having wiring formed on a substrate, a planarizing film provided so as to cover irregularities on the TFT having wiring, and a display element formed on the planarizing film, the planarizing film being a heat-resistant colored resin film formed mainly of the photosensitive colored resin composition as defined above.

Advantageous Effect

[0013]
According to the present disclosure, it is possible to provide a photosensitive colored resin composition that can reduce the light transmittance in the visible light region of 400 nm or more and has a high sensitivity to light in the wavelength range from 350 nm to 450 nm, which is generally used for light exposure, particularly in the so-called broadband wavelength range that contains the g-line (436 nm), h-line (405 nm), and i-line (365 nm).

Claims

[Claim 1]

A photosensitive colored resin composition comprising an alkali-soluble resin (a), a photosensitive compound (b), and a compound (c) having an absorption maximum in the wavelength range of 400 nm or more and less than 490 nm, the photosensitive compound (b) consisting of a photoacid generating agent and containing a photosensitive compound (b1), and a photosensitive compound other than photosensitive compound (b1), the photosensitive compound (b1) being such that its maximum absorption wavelength in the range of 350 nm or more and 450 nm or less is located within the wavelength range of 350 nm or more and 390 nm or less, wherein the photosensitive compound (b1) accounts for 5 parts by mass or more and 90 parts by mass or less, relative to the total quantity, which accounts for 100 parts by mass, of the photosensitive compound (b).

[Claim 2]

A photosensitive colored resin composition as set forth in claim 1, wherein the photosensitive compound (b1) is a 4-naphthoquinone diazide sulfonyl ester compound.

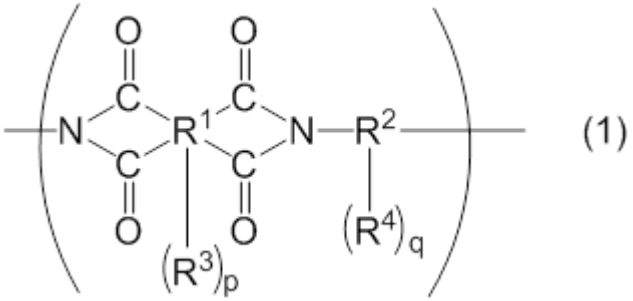
[Claim 3]

A photosensitive colored resin composition as set forth in claim 1 or 3, wherein the alkali-soluble resin (a) is at least one alkali-soluble resin selected from the group consisting polyimides, polyimide precursors, polybenzoxazoles, polybenzoxazole precursors, phenol resins, polymers containing a radical polymerizable monomer having an alkali-soluble group, siloxane polymers, cyclic olefin polymers, and cardo resins, or a copolymer thereof.

[Claim 4]

A photosensitive colored resin composition as set forth in any one of claims 1 to 3, wherein the alkali-soluble resin (a) has a structural unit as represented by general formula (1) or general formula (2):

[Chemical compound 1]

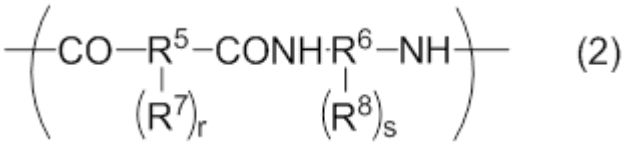


(1)

wherein R^1 is a tetravalent to decavalent organic group, R^2 being a divalent to octavalent organic group, R^3 and R^4 each being a phenolic hydroxyl group, carboxy group, sulfonic group, or thiol group that may be a single group or a combination of different ones thereof,

and p and q each being an integer of 0 to 6.

[Chemical compound 2]



(2)

wherein, R^5 is a divalent to octavalent organic group, R^6 being a divalent to octavalent organic group, R^7 and R^8 each being a phenolic hydroxyl group, sulfonic group, thiol group, or $COOR^9$ that may be present as a single group or a combination of different ones thereof, R^9 being a hydrogen atom or a monovalent hydrocarbon group containing 1 to 20 carbon atoms, and r and s each being an integer of 0 to 6 and meeting the relation of $r + s > 0$.

[Claim 5]

A photosensitive colored resin composition as set forth in any one of claims 1 to 4, further comprising a compound (d) having an absorption maximum in the wavelength range 490 nm or more and less than 580 nm and a compound (e) having an absorption maximum in the wavelength range 580 nm or more and less than 800 nm.

[Claim 6]

A photosensitive colored resin composition as set forth in any one of claims 1 to 5, wherein the compound (c) having an absorption maximum in the wavelength range of 400 nm or more and less than 490 nm, the compound (d) having an absorption maximum in the wavelength range 490 nm or more and less than 580 nm, and the compound (e) having an absorption maximum in the wavelength range 580 nm or more and less than 800 nm are dyes.

[Claim 7]

A photosensitive colored resin composition as set forth in claim 6, wherein the compound (c) having an absorption maximum in the wavelength range of 400 nm or more and less than 490 nm is a yellow or orange dye; the compound (d) having an absorption maximum in the wavelength range 490 nm or more and less than 580 nm is a red or violet dye; and the compound (e) having an absorption maximum in the wavelength range 580 nm or more and less than 800 nm is a blue or green dye.

[Claim 8]

A production method for heat resistant colored resin films comprising a coating step for coating a substrate with a photosensitive colored resin composition as set forth in any one of

claims 1 to 7 to form a coating film, a drying step for drying the coating film to form a photosensitive colored resin film, a light exposure step for exposing the dried photosensitive colored resin film to light, a development step for developing the exposed photosensitive colored resin film, and a heat treatment step for heat-treating the developed photosensitive colored resin film.

[Claim 9]

A production method for heat resistant colored resin films as set forth in claim 8, wherein the coating step contains a step for coating a substrate with the photosensitive colored resin composition by the slit nozzle coating method to form a coating film and the drying step contains a step for drying the coating film under reduced pressure to form a photosensitive colored resin film.

[Claim 10]

A production method for heat resistant colored resin films as set forth in either claim 8 or 9, wherein the light exposure step contains a step for performing exposure to broadband light.

[Claim 11]

A display device comprising a first electrode formed on a substrate, an insulation layer formed to cover the periphery of the first electrode, and a second electrode located so as to face the first electrode, the insulation layer being a cured film produced by curing a photosensitive colored resin composition as set forth in any one of claims 1 to 7.

[Claim 12]

A display device comprising a thin film transistor (TFT) having wiring formed on a substrate, a planarizing film provided so as to cover irregularities on the TFT having wiring, and a display element formed on the planarizing film, the planarizing film being a cured film formed by curing a photosensitive colored resin composition as set forth in any one of claims 1 to 7.

[Claim 13]

A display device as set forth in either claim 11 or 12 having a resolution of 50 ppi or more.