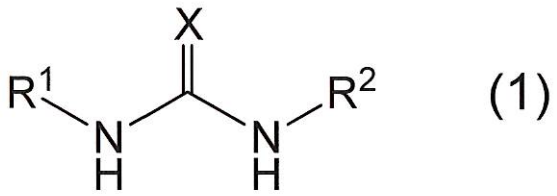
[Chem. 1]



(1)

wherein, in the general formula (1), R^1 and R^2 each independently represent a C_1-C_{20} monovalent organic group; and

X represents a sulfur atom, and at least one of R^1 and R^2 in the compound represented by the general formula (1) is an organic group containing an alkoxysilyl group.

In another aspect, there is provided a method for producing a cured resin film, comprising the steps of: coating a substrate with the photosensitive resin composition as defined above and drying the composition to obtain a resin film; exposing the resin film obtained from the previous step; developing the exposed resin film using an alkali aqueous solution to form a pattern out of the resin film; and heating the developed resin film.

In another aspect, there is provided a method for producing a photosensitive uncured sheet, comprising the steps of: coating a substrate with the photosensitive

CLAIMS

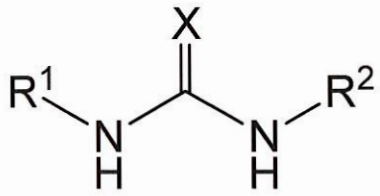
1. A photosensitive resin composition comprising:

one or more kinds of alkali-soluble resins selected from a polyimide, a polybenzoxazole, a polyimide precursor, a polybenzoxazole precursor, and a copolymer of two or more kinds of polymers selected therefrom; and

a photosensitizer;

wherein the photosensitive resin composition further comprises a compound represented by the following general formula (1):

[Chem. 1]



(1)

wherein, in the general formula (1), R^1 and R^2 each independently represent a C_1-C_{20} monovalent organic group; and

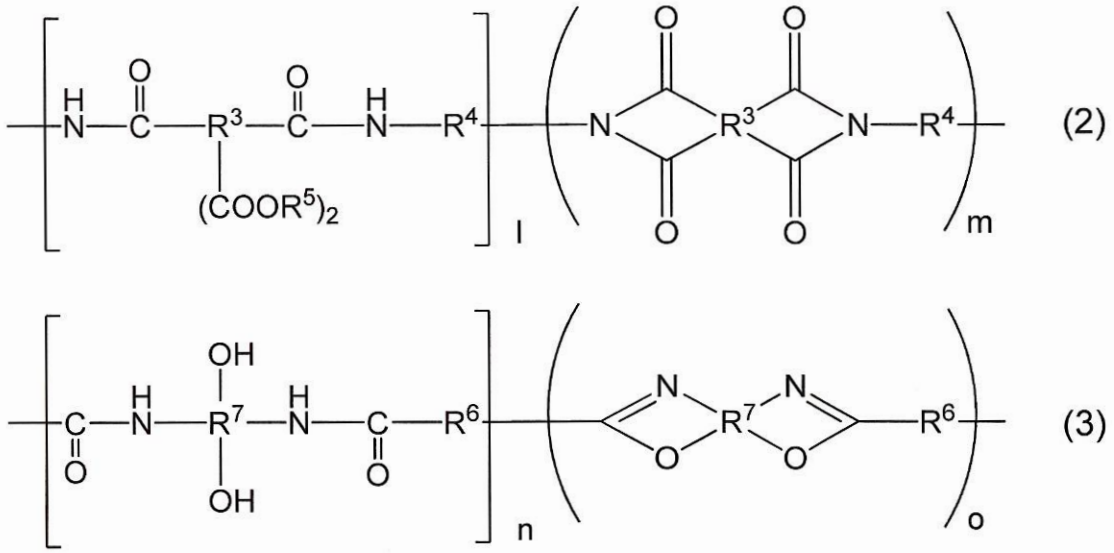
X represents a sulfur atom, and at least one of R^1 and R^2 in the compound represented by the general formula (1) is an organic group containing an alkoxysilyl group.

2. The photosensitive resin composition according to claim 1, comprising 0.1 to 5.0 parts by weight of the compound represented by the general formula (1) relative to 100 parts by weight of the alkali-soluble resin.

3. The photosensitive resin composition according to claim 1 or 2, wherein the

alkali-soluble resin comprises a structure represented by the following general formula (2) or (3):

[Chem. 2]



(2)

(3)

wherein, in the general formulae (2) and (3), R^3 and R^7 each independently represent a C_6-C_{40} tetravalent organic group;

R^4 and R^6 each independently represent a C_2-C_{40} bivalent organic group;

R^5 represents hydrogen or a C_1-C_{20} monovalent organic group;

l, m, n, and o each independently represent an integer of 0 to 10,000;

$l + m > 1$; and

$n + o > 1$.

4. The photosensitive resin composition according to claim 3, wherein the alkali-soluble resin including the structure represented by the general formula (2) contains a phenolic hydroxyl group.

5. The photosensitive resin composition according to claim 3 or 4, wherein the alkali-soluble resin represented by the general formula (2) contains 30 mol% or more organic groups containing a fluorine atom relative to the total amount of the organic groups of both R^3 and R^4 as 100 mol%.

6. The photosensitive resin composition according to claim 3 or4, wherein the alkali-soluble resin represented by the general formula (3) contains 30 mol% or more organic groups containing a fluorine atom relative to the total amount of the organic groups of both R^6 and R^7 as 100 mol%.

7. The photosensitive resin composition according to any one of claims 1 to 6, wherein the photosensitive resin composition further comprises a crosslinking agent.

8. The photosensitive resin composition according to claim 7, wherein the crosslinking agent is a compound containing at least 4 alkoxymethyl groups or methylol groups, and the content of the crosslinking agent is 24 to 150 parts by mass relative to 100 parts by mass of the alkali-soluble resin.

9. A method for producing a cured resin film, comprising the steps of:

coating a substrate with the photosensitive resin composition according to any one of claims 1 to 8 and drying the composition to obtain a resin film;

exposing the resin film obtained from the previous step;

developing the exposed resin film using an alkali aqueous solution to form a pattern out of the resin film; and

heating the developed resin film.

10. The method for producing a cured resin film according to claim 9, wherein the substrate is a substrate on which metal wiring is formed.

11. The method for producing a cured resin film according to claim 9 or 10, further comprising the step of releasing the dried resin film to obtain a photosensitive uncured sheet.

12. A method for producing a photosensitive uncured sheet, comprising the steps of:

coating a substrate with the photosensitive resin composition according to any one of claims 1 to 8 and drying the composition to obtain a resin film; and

releasing the resin film obtained from the previous step.

13. A semiconductor device comprising a semiconductor element, wherein a cured film of the photosensitive resin composition according to any one of claims 1 to 8 is formed as an interlayer dielectric film on the semiconductor element, wherein wiring is formed on the cured film.

14. A semiconductor device comprising a substrate constituted of two or more kinds of materials, wherein a cured film of the photosensitive resin composition according to any one of claims 1 to 8 is formed as an interlayer dielectric film on the substrate, wherein wiring is formed on the cured film.