Patent Document 4: Japanese Patent Laid-open Publication No. 2010-196041

Patent Document 5: Japanese Patent Laid-open Publication No. 2007-183388

SUMMARYPROBLEMS TO BE SOLVED

[0009]

However, the known polyimide resins containing a tetracarboxylic anhydride having an alicyclic structure are too soluble in an alkaline developer and thus cannot easily form a thick film structure. Furthermore, the polyimide resin containing a hexafluoropropyl group and a tetracarboxylic anhydride having an alicyclic structure is very poor in residual film rate and thus cannot easily form a highly sensitive thick film structure.

[0010]

In consideration of the problems of the above-described known techniques, it is an object of the embodiments disclosed herein to provide a resin that has a high sensitivity and a high residual film rate when used in a photosensitive resin composition.

SOLUTIONS TO THE PROBLEMS

[0011]

The inventors of the present disclosure studied hard to attain the above object and found the present disclosure.

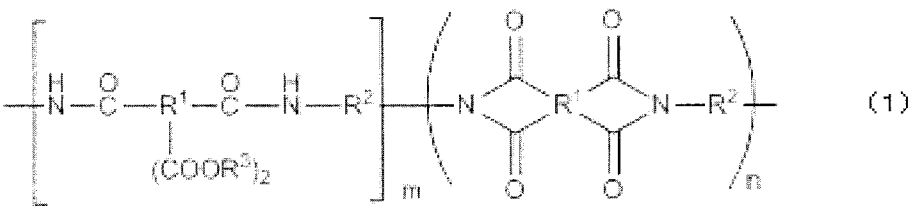
Specifically, the present disclosure has the following arrangements.

(1) In an aspect, there is provided a resin having a polyamide structure, a polyimide precursor structure, or a polyimide structure each of which contains an acid and/or an anhydride of the acid in an amount of 5 to 95 mol% assuming that the total amount of acids and/or anhydrides thereof is 100 mol%, the acid having a C6-C40 alicyclic structure or having a C6-C40 semi-alicyclic structure which has both an alicyclic structure and an aromatic ring.

(2) In another aspect, there is provided a resin having a structure represented by General Formula (1):

[0012]

[Chemical formula 1]



(1)

[0013]

(where each R^1 independently contains at least one organic group, which is selected from C6-C40 tetravalent organic groups having a monocyclic or fused polycyclic alicyclic structure, C6-C40 tetravalent organic groups each formed of organic groups having a monocyclic alicyclic structure which are bound together

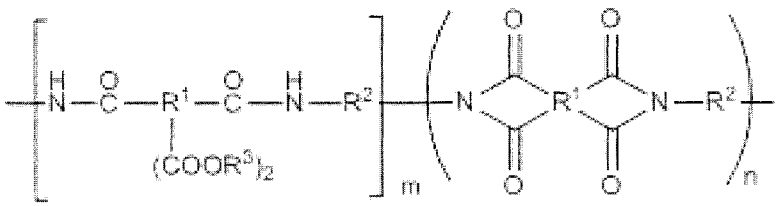
(8) The resin described in any of (2) to (6), wherein, in General Formula (1), each R^1 independently contains at least one organic group which is selected from C6-C40 tetravalent organic groups having a monocyclic or fused polycyclic alicyclic structure, C6-C40 tetravalent organic groups each formed of organic groups having a monocyclic alicyclic structure which are bound together directly or by a crosslink, and C6-C40 tetravalent organic groups having a semi-alicyclic structure having both an alicyclic structure and an aromatic ring, in an amount of 40 to 70 mol% assuming that the total amount of R^1 is 100 mol%.

(9) In another aspect, there is provided a photosensitive resin composition containing the resin described in any of (1) to (8).

(10) In another aspect, there is provided a photosensitive resin composition containing: (a) a resin containing as a main component a structure represented by General Formula (8); (b) a photo acid generator; and (c) a solvent, the photosensitive resin composition having a positive photosensitivity:

[0017]

[Chemical formula 4]



(8)

[0018]

(where each R^1 independently contains at least one organic group

which is selected from C6-C40 tetravalent organic groups having a monocyclic or fused polycyclic alicyclic structure, C6-C40 tetravalent organic groups each formed of organic groups having a monocyclic alicyclic structure which are bound together directly or by a crosslink, and C6-C40 tetravalent organic groups having a semi-alicyclic structure having both an alicyclic structure and an aromatic ring, in an amount of 5 to 95 mol% assuming that the total amount of R^1 is 100 mol%; each R^2 independently represents a C2-C40 divalent organic group; R^3 represents hydrogen or a C1-C20 monovalent organic group; m and n each represent 0 to 100,000; and $m + n > 2$, with the proviso that the structure represented by General Formula (8) essentially has a fluorine component and a phenolic hydroxyl group.)

(11) The photosensitive resin composition described in (9) or (10), wherein R^2 in General Formula (1) or (8) further contains an aliphatic organic group.

(12) The photosensitive resin composition described in (11), wherein the aliphatic organic group is an organic group containing an aliphatic alkyl group.

(13) In another aspect, there is provided a method of producing a heat-resistant resin film from the photosensitive resin composition described in any of (9) to (12), including: applying the photosensitive resin composition to a support substrate and drying the photosensitive resin composition to obtain a photosensitive resin film; exposing the

photosensitive resin film obtained in the step to light; developing the exposed photosensitive resin film by using an alkaline aqueous solution; and treating the developed photosensitive resin film with heat.

(14) In another aspect, there is provided an interlayer dielectric film which is obtained by the method described in (13).

(15) In another aspect, there is provided an interlayer dielectric film for a multilayer wiring structure, which has a total thickness of 10 μm or more and 50 μm or less and which is obtained by the method described in (13).

(16) In another aspect, there is provided a surface protective film which is obtained by the method described in (13).

(17) In another aspect, there is provided an electronic component including the interlayer dielectric film described in (14) or the surface protective film described in (16).

(18) In another aspect, there is provided a dielectric layer for an organic electroluminescent element, which is obtained by the method described in (13).

EFFECTS

[0019]

According to the present disclosure, it is possible to obtain a resin that has a high sensitivity and a high residual film rate when used in a photosensitive resin composition.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]